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Synthesis Report

Analysis of mobilisation in three BII renewable energy investments

An evaluation commissioned by the Foreign, Commonwealth and Development Office

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Disclaimer

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List of acronyms

ADB	Asian Development Bank
AfDB	African Development Bank
AIIB	Asian Infrastructure Investment Bank
BEIS	Department for Business, Energy & Industrial Strategy
BI	Business Integrity
BII	British International Investment (formerly CDC Group plc)
CIV	Collective Investment Vehicle
COP26	26th UN Climate Change Conference of the Parties
COP27	27th UN Climate Change Conference of the Parties
CSP	Concentrated Solar Power
DAC	Development Assistance Committee
DBSA	Development Bank of South Africa
DEG	Deutsche Investitions- und Entwicklungsgesellschaft
DFI	Development Finance Institution
DIC	Direct Investment in Companies
DISCOM	Distribution Company
E&S	Environmental and Social
EBRD	European Bank for Reconstruction and Development
EIB	European Investment Bank
EPC	Engineering, Procurement and Construction
ESG	Environmental, Social and Governance
ESIA	Environmental and Social Impact Assessment
FCDO	Foreign, Commonwealth & Development Office
FiT	Feed-In-Tariff
FMO	Dutch Entrepreneurial Development Bank
GGEF	Green Growth Equity Fund
GoI	Government of India
GW	Gigawatts
HMG	His Majesty's Government
HSES	Health, Safety, Environmental and Social
ICBC	Industrial and Commercial Bank of China
IFC	International Finance Corporation
IFI	International Financial Institution
IMF	International Monetary Fund
IPP	Independent Power Producer
IRP	Integrated Resource Plan
LMIC	Low- and Middle-Income Country
LMS	Longitudinal Mobilisation Study
LP	Limited Partner
M&A	Mergers and Acquisitions
MDB	Multilateral Development Bank
MW	Megawatt
NIIF	National Infrastructure Investment Fund
OECD	Organisation for Economic Co-operation and Development
OeEB	Oesterreichische Entwicklungsbank (the Development Bank of Austria)
OMLACSA	Old Mutual Life Assurance Company (South Africa) Limited
OPIC	Overseas Private Investment Corporation
PPA	Power Purchase Agreement
PS	Performance Standards
PV	Photovoltaic
RBI	Reserve Bank of India
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
SDG	Sustainable Development Goal
SECI	Solar Energy Corporation of India Ltd
SPV	Special Purpose Vehicle
UK	United Kingdom
US	United States (of America)

Executive summary

Introduction

This briefing paper summarises findings from case studies that explore British International Investment's (BII's) role in mobilising capital and creating demonstration effects in the renewable energy sector in in India, Egypt and South Africa. The studies are part of the Longitudinal Mobilisation Study (LMS), which seeks to understand both the extent to which BII has mobilised investment (directly and indirectly) and the drivers of this mobilisation. The ultimate aim is to help BII mobilise investment more effectively.

The resources of multilateral development banks (MDBs) and international financial institutions (IFIs) are only a fraction of the funds needed to fill the funding gap in investment for the renewable energy sector in emerging and developing economies. Therefore, IFIs and development finance institutions (DFIs) such as BII need to create positive demonstration effects as well as commercial returns and development impact, in order to leverage the additional funding needed.

The three case studies examined the following investments:

- **An investment in Ayana Renewable Power,** an independent solar and wind generation company in India ('Ayana'). BII established this renewable energy platform in 2018 with the goal of creating 300 megawatts (MW) of greenfield capacity. Today, India's National Infrastructure Investment Fund (NIIF) has a 50.1% majority stake in Ayana, and Ayana has a goal to reach 4 gigawatts (GW) in generating capacity through greenfield and mergers and acquisitions (M&A).
- **An investment in a solar power park in Egypt ('Benban').** Benban Solar Park is located near the village of Benban in the Aswan region of southern Egypt and is one of the largest solar energy facilities in the world. Benban comprises 41 plants with a capacity of 1.8GW. BII invested $92 million of debt[1] in a consortium led by the International Finance Corporation (IFC), directed towards nine plants in the park.
- **An investment in the Redstone Concentrated Solar Power (CSP) project in South Africa ('Redstone').** Redstone CSP Plant is a 100MW renewable energy project located in the Northern Cape province of South Africa. CSP technology is new to South Africa. In 2021, BII committed $50 million of debt as part of a consortium of DFIs, IFIs and commercial equity investors and lenders, of which the technical partner ACWA Power is the largest shareholder. Redstone is under construction and is not yet operational.

These case studies focus on investments made prior to BII's current 2022–26 strategy and are based mainly on information collected until 2021. As a result, the report reflects the context at that time.[2]

[1] BII (n.d.) 'Alcazar Energy Egypt Solar 1 SAE'. https://www.bii.co.uk/en/our-impact/direct-header/alcazar-energy-egypt-solar-1-sae/

[2] For more information on BII's current strategy, please see https://assets.bii.co.uk/wp-content/uploads/2022/01/06170001/2022-2026-technical-strategy-2.pdf

Direct mobilisation

The three renewable power case studies examine whether and how BII mobilised capital in the Ayana, Benban and Redstone projects, and aim to understand the successful characteristics of each deal and the dynamics that led to these, including – among others – BII's role in these processes.

BII's role in mobilising public finance

The case studies found that BII, either individually or as part of a consortium, mobilised direct investment into these case study companies from public sources of finance (other DFIs, IFIs and sovereign funds).

- With Ayana, BII created a platform that would otherwise not exist, and initially it was a 100% shareholder. BII mobilised equity from NIIF, a sovereign wealth fund and a fund anchored by NIIF and the United Kingdom (UK) Foreign, Commonwealth & Development Office (FCDO). Both equity co-investors were influenced to invest by Ayana's governance structure established by BII, the management team BII put in place, and BII's adjustment of its investment strategy to include acquisitions as well as greenfield development.
- In Benban, BII was a member of a consortium of IFIs and DFIs without which the project would not have been possible, within a structure designed by IFC, the European Bank for Reconstruction and Development (EBRD) and the government. IFC and EBRD played key roles as IFIs: dealing with the government – there was a centralised negotiating process to arrive at a tariff that all parties agreed was sustainable; managing their respective consortia; and bringing the deal to a financial close. In the IFC consortium, BII provided bridge financing of $10 million, without which one of the other DFIs would not have been able to invest.
- In the first iteration of the Redstone project, IFC withdrew, reportedly due to an internal strategic shift away from CSP. Consequently, most of the consortium of lenders also walked away. In the second iteration, Redstone's technical partner, ACWA Power, brought in the African Development Bank (AfDB) as the lead arranger. BII engaged very early on in the second iteration, and for AfDB, BII's presence was important: BII provided comfort to other DFIs in re-entering the deal.

BII's role in mobilising commercial finance

The case studies also concluded that BII – individually, in partnership and in consortia – provided commercial equity investors and lenders with the confidence needed, through de-risking an investment, for them to invest in these case study companies.

- Prior to Ayana's equity sale, BII mobilised significant debt co-investment. Commercial debt investors were given confidence by first BII's and then NIIF's presence in Ayana, as both committed to remain invested for the duration of the debt tenure.
- In Benban, BII is a lender in the IFC consortium. This consortium attracted equity investment of $170 million, most of which is from commercial investors. BII provided 14% of debt, leading to a pro rata share of mobilised equity of $24 million.
- The enhanced bankability of Redstone, with backing from AfDB, BII and other DFIs, attracted commercial lenders to the project. BII reportedly played an important bridging role between these public and private actors, whereby it was seen as more commercially minded than other DFIs.

Demonstration effects

Although BII had an important influence over the investments examined in the case studies, perhaps more significant in terms of longer-term mobilisation is the potential demonstration effects[3] arising from these investments in the four areas described below.

Project scale and construction

- The Ayana example demonstrated that it is possible to successfully operate an open-ended business model (a platform) comprising both greenfield and M&A.
- Benban was the largest solar facility in the world at the time of construction, resulting in a potential demonstration effect that a facility on this scale can be constructed on time and to budget in a country that had never completed a major renewable energy project before.

Tariffs and offtakers

- In Ayana's case, at state level there have been various attempts to renegotiate agreed tariffs, often under political pressure. The solution has been to bypass state offtakers through central rather than state auctions and through central power purchase agreement (PPA) contracts. A resulting potential demonstration effect is that a renewable energy project in India can avoid offtaker payment issues through central auctions.
- In large part, the success of the Benban project was due to finding a tariff and a set of supporting arrangements that both the government and investors found acceptable. The timely payments from the offtaker (government) de-risked the investment, which attracted subsequent investors into Benban, because this proved that the Egyptian government would follow through on commitments. The timeliness of Benban payments may have motivated subsequent investors into Benban and created a potential demonstration effect that could encourage other investors to make renewable sector investments in Egypt.
- In Redstone, ACWA and Eskom (the state utility) resolved negotiations when ACWA agreed to lower the tariff. The new price was still high enough to offset risk for ACWA, and although it is still high compared to alternatives, it has been lowered enough for Eskom to consider the price sustainable. This is a potential demonstration effect that it is possible to reach financial close with a higher tariff when investing in a new technology in South Africa.

Environmental, social and governance (ESG) and business integrity (BI)

- Ayana's case proved it is possible to succeed commercially in India with high BI standards. This potential demonstration effect may lead to changes in other platforms' approaches (designed with a similar deal structure) to BI in India.
- BII took the lead with IFC on ESG issues in their Benban consortia. BII identified the need to work with local regulators and embed IFC Performance Standards (PS) and then funded the training of local regulators on PS auditing and monitoring. This case suggests that high health, safety, environmental and social (HSES) standards are compatible with efficient construction and profitable operations in Aswan, creating a potential demonstration effect for other investors.
- In Redstone, BII co-designed Redstone's ESG approach and reportedly was able to influence the commercial actors in ESG. This resulted in a potential demonstration effect that a project can reach financial close with strong environmental and social (E&S) standards.

[3] The likelihood of future demonstration effects (in other words, that through the performance and direct impacts of these investments, it is likely that others will replicate similar approaches and mobilise more capital).

Financial success

- Ayana's commercial success has a potential demonstration effect for potential investors in Indian renewables – showing the profitability of greenfield developers, but only where projects are carefully selected and where risks are mitigated. In this case, it was through : (i) BII's role in Ayana governance, which influenced equity and debt investors' decisions to invest by de-risking investments; and (ii) the involvement of a well-connected shareholder (NIIF).
- Benban demonstrated that it can be run profitably, enhancing Egypt's reputation and increasing appetite for greenfield investments in the country. Benban also demonstrated that a domestic/international currency split is possible with a volatile domestic economy.
- Once built, Redstone will need to demonstrate that its CSP technology can perform well relative to other technologies (for example, compared to solar photovoltaic (PV) with battery) and can generate the anticipated returns for debt and equity investors.

Lessons and recommendations for mobilising investment in renewable energy

The investments in India, Egypt and South Africa followed different routes, but there are some common lessons behind the positive demonstration effects they created.

LESSON 1
Credible, public sector country partners are essential to renewable energy project success and subsequent demonstration effects.

Project success, and thus the potential for demonstration effects, is dependent on the involvement of a public sector country partner with the credibility and political influence to drive the project forwards: in the renewable energy sector, they can exert their influence in the regulatory environment on tariff-setting, access to land and potential obstacles during construction, and timely payments to independent power producers (IPPs).

In each of the three case studies, the projects benefited from an in-country partner that had the credibility and/or authority to keep the project moving and remove obstacles as they arose. In the absence of such a partner, a DFI such as BII would likely struggle to reach financial close with any similar project, although such partners come with potential reputational risks, given the countries in which BII operates.

Recommendation for BII: Make sure that credible public sector country partners are on board whenever possible. Identify the public agency that has the strongest influence over government agencies.

LESSON 2
The scale of project that can be delivered successfully, and that can therefore generate positive demonstration effects and future mobilisation, is dependent on market context and political economy in a country.

The rate at which renewable energy capacity can be expanded, and the way that this is done in terms of the number and scale of facilities, needs to vary according to country conditions. Benban and Ayana projects have built (or aim to build) similar levels of new capacity – 1.5GW–2GW. This has been done in very different ways, though. Benban delivered one large-scale project (which was possible in Egypt); Ayana has grown over time through building or acquiring smaller facilities.

Recommendation for BII: Structure projects to match local market and political economy conditions. In developing markets, the ideal approach would be to undertake a 'green growth diagnostics' analysis to assess this and design projects accordingly.

LESSON 3
At country level, tariffs need to change over time to build renewable energy markets, and at the project level they need to be sustainable for all parties over the life of a project. This will increase the likelihood that the project is deemed to be a success by investors, and therefore the likelihood that a positive demonstration effect will be created, mobilising further investment in the country.

Tariffs may need to be kept high initially to establish a country's track record for investors, including the credibility of its offtakers. Once this is established, tariffs can be lowered over the long term, but must continue to deliver attractive returns. At the same time, tariffs need to be low enough to be sustainable for the public agency to fund over the long term and to avoid the emergence of political pressure to renegotiate.

Recommendation for BII: Ensure there is or develop a mechanism to arrive at an acceptable, sustainable tariff.

LESSON 4:
IFIs and DFIs are essential in mobilising both public and commercial finance and thus reaching financial close when perceived risks are high.

In cases where investors see potential risk (whether an investment is in a new technology or in a new country context), having IFIs/DFIs invested provides essential finance, credibility and confidence in the project's bankability to other IFIs and commercial investors.

Recommendations for BII: Identify the IFI/DFI and or public finance agency which can provide most reassurance to public and private investors in a particular country, bringing them into a consortium/deal to enable mobilisation. Continue to replicate the approach whereby BII establishes platforms with commercially viable but developmentally impactful objectives4 – and then attract strategic local partners to drive the platform forwards.

[4] Note that BII has already created other platforms (e.g. Gridworks, MedAccess).

LESSON 5
IFI involvement improves ESG and BI practices, which can produce valuable demonstration effects if such practices prove to be a benefit and not a cost.

IFIs, DFIs and BII in particular are influential in establishing good ESG and BI practices on projects. This can also influence the practice of private actors on the projects and have a demonstration effect on actors in the wider ecosystem, where these practices can be shown not to adversely affect a project's commercial success.

Recommendation for BII: Keep investing in good ESG and BI practices and point to past success stories (e.g. Benban) to illustrate the value of this to other investors.

LESSON 6
Strong financial performance is essential to the creation of good demonstration effects and subsequent mobilisation of private investment, but this focus needs to be carefully balanced with other development objectives.

The financial performance of a renewable investment is dependent on: (i) the facility generating power as predicted; (ii) the technology performing well relative to other technology; and (iii) offtakers honouring revenue commitments. This strong financial performance is crucial to leveraging additional investment, and can create powerful demonstration effects if it can be achieved with high ESG and BI standards and strong development impacts.

Recommendation for BII: Continue to prioritise development impact and high ESG and BI standards alongside commercial performance to mobilise finance from impact investors in addition to those interested only in commercial returns.

Longitudinal Mobilisation Study

Development finance institutions (DFIs) can only hope to address a small part of the sustainable development goal (SDG) funding gap, including the gap in climate finance, through their own investments. A key part of their role is therefore to mobilise investment from others, particularly private investors. This briefing paper provides background on mobilisation in the renewable energy sector, looks at British International Investment's (BII's) mobilisation rates in this sector, and summarises findings from BII-backed cases in Egypt, India and South Africa. It highlights the key constraints to mobilisation at the deal, ecosystem[5] and investment climate[6] levels and suggests ways in which DFIs can improve the likelihood of success in co-investments and create demonstration effects.

1. Introduction

DFIs such as BII are at the forefront of efforts to increase investment into low- and middle-income countries (LMICs) in two main ways: investing their own capital, and mobilising investment from others. Mobilisation can take the form of co-investment in the same deal (direct mobilisation) or it can trigger future investment through the example of successful current activities (indirect mobilisation through 'demonstration effects'). The importance attached to this issue by His Majesty's Government (HMG) is shown by the fact that capital mobilised is one of the very few economic development indicators that the Foreign, Commonwealth & Development Office (FCDO) reports on to Parliament. In its Business Case for supporting BII, FCDO described its approach to mobilisation as follows:

> *Long-term patient capital from Development Finance Institutions (backed by high environmental, social and business integrity standards) helps businesses to grow, builds management skills, and adds to a track record of successful investments, demonstrating the financial viability of investing responsibly in the world's poorest countries, reducing costs and risk for private investors.*[7]

[5] 'Ecosystem' refers to the network of fund managers, entrepreneurs and returning diaspora, plus domestic and international investors.

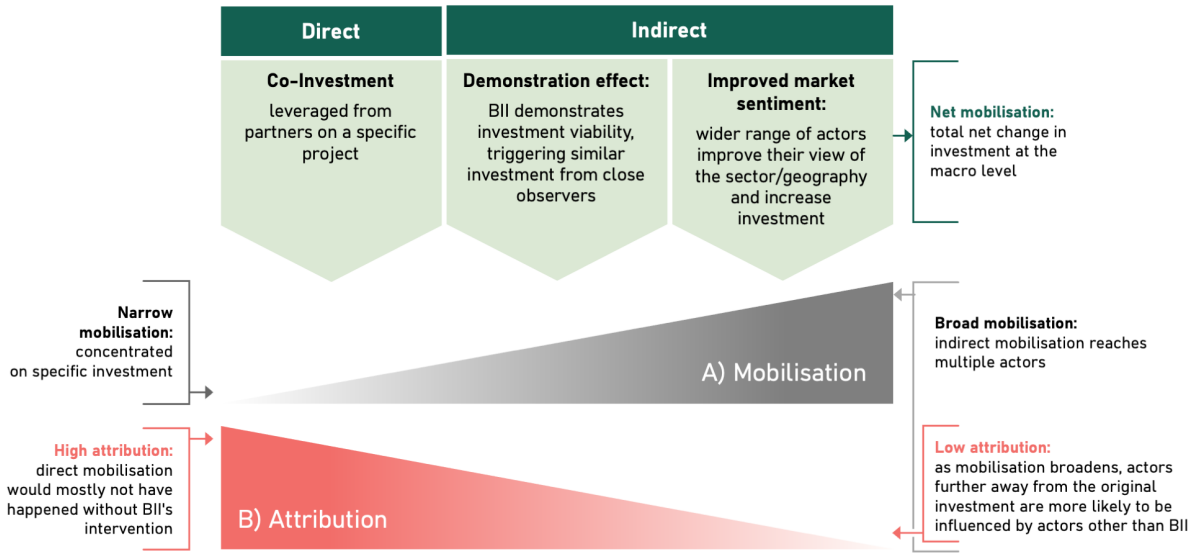
[6] 'Investment climate' refers to the broader enabling environment such as regulations, political/economic stability and market sentiment.

[7] FCDO (2017) Business Case: Capital increase to CDC, the UK's development finance institution. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/651848/2017_to_2021_CDC_capital_increase_business_case_publication_1038.pdf

Box 1. The Longitudinal Mobilisation Study

The 10-year LMS seeks to understand the extent to which BII has mobilised investment, the drivers of this mobilisation and the influence of country and sector contexts. The ultimate aim is to help BII mobilise investment more effectively, including through FCDO support for these efforts.

The LMS distinguishes between direct mobilisation and demonstration effects. Direct mobilisation refers to co-investment in BII deals, and demonstration effects refer to investment ('indirect mobilisation') or other practice changes (for example in environmental, social and governance (ESG) or business integrity (BI)) that have been influenced by BII but where BII is not a co-investor. Demonstration effects (including indirect mobilisation) are much more difficult to capture than direct mobilisation, but in the long run they are likely to be more important. Despite the difficulties involved, therefore, it is essential to improve our understanding of the drivers of demonstration effects, as well as how this can be increased. Accordingly, the LMS has developed a methodological approach that can be applied to both direct mobilisation and demonstration effects with increasing levels of robustness over time.



The LMS uses contribution analysis to estimate BII's role in mobilising investment. The approach is based upon logic models (theories of change) that link BII's activities to subsequent investment, with evidence gathered on how much this investment is the result of BII's activities. We have integrated Bayesian updating into the research framework, which enables us to systematically assess and improve the degrees of confidence we have in hypotheses – for example, that activity x is the most important driver of mobilisation in sector y and country z.

This briefing paper summarises lessons from case studies of BII-backed investments in renewable energy projects in India, Egypt and South Africa. Lessons from this comparative analysis help us to understand how BII can successfully mobilise debt and equity into renewable energy projects and how, through the subsequent success of these projects, BII can contribute to the creation of demonstration effects to increase the rate of investment in similar projects ('indirect mobilisation').

The purpose of focusing on a single sector is to enable more depth and comparability within a common framework. The decision to concentrate on renewables resulted from BII's and FCDO's focus on this sector, as reflected in BII's Climate Change Strategy[8] and its target of 30% of commitments to climate finance over the next five years,[9] and given the importance of climate finance and international commitments at recent United Nations Climate Change Conference of the Parties (COP) summits.

The brief is structured to provide:

- a background on mobilisation of private finance by multilateral development banks (MDBs) and an overview of mobilising climate finance, BII's renewable energy portfolio and mobilisation in this portfolio (section 2);
- the case study methodology (section 3);
- a summary of the state of the renewable energy sector in each of the three case study countries, a short introduction to each of the three case study deals, and findings from the case studies (section 4);
- six key lessons learned from the case study findings and accompanying recommendations for BII and FCDO (section 5); and
- final conclusions from the case study synthesis (section 6).

2. Background on mobilisation

In 2015, the International Conference on Financing for Development in Addis Ababa recognised the importance of increasing private investment to achieve the SDGs.[10] As of 2020 there was an estimated funding gap of $4.2 trillion in total and $3.7 trillion in developing countries.[11] BII states in its recent publication on mobilisation that "'Mobilising' commercial capital is thus central to the success of DFIs' endeavours."[12]

2.1 Mobilisation by MDBs and DFIs

2.1.1 Key actors involved in mobilisation

MDBs and bilateral DFIs often frame their goals in terms of private capital mobilisation (World Bank, 2021). This may involve the creation of demonstration effects to encourage investors into new geographies or sectors, or the sharing of risk with private investors to create bankable opportunities.

The main actors involved in mobilisation are MDBs and DFIs. Figure 1 gives Organisation for Economic Co-operation and Development (OECD) figures for the amounts directly mobilised[13] from 2018 to 2020 by these two categories. As we can see, MDBs mobilise around 69%

[8] BII (2020) *Investing for clean and inclusive growth*. https://assets.bii.co.uk/wp-content/uploads/2020/07/01181554/CDC-climate-change-strategy_FINAL-FOR-PUBLICATION-1.pdf

[9] BII (2022) *Productive, Sustainable and Inclusive Investment: 2022–26 Technical Strategy*. p.4. https://assets.bii.co.uk/wp-content/uploads/2022/01/06170001/2022-2026-technical-strategy-2.pdf

[10] UN (2015) *Report of the Third International Conference on Financing for Development Addis Ababa 13–16 July 2015*. https://documents.un.org/doc/undoc/gen/n15/219/32/pdf/n1521932.pdf?token=qlZVPOo443ii4BNM7t&fe=true

[11] OECD (2021) *Closing the SDG financing gap in the COVID-19 era, Scoping note for the Development Working Group of the Group of 20*. https://web-archive.oecd.org/2021-11-17/616672-OECD-UNDP-Scoping-Note-Closing-SDG-Financing-Gap-COVID-19-era.pdf

[12] BII (2023) *Discussion Paper: Understanding mobilisation*. https://assets.bii.co.uk/wp-content/uploads/2023/03/13125506/Understanding_Mobilisation.pdf

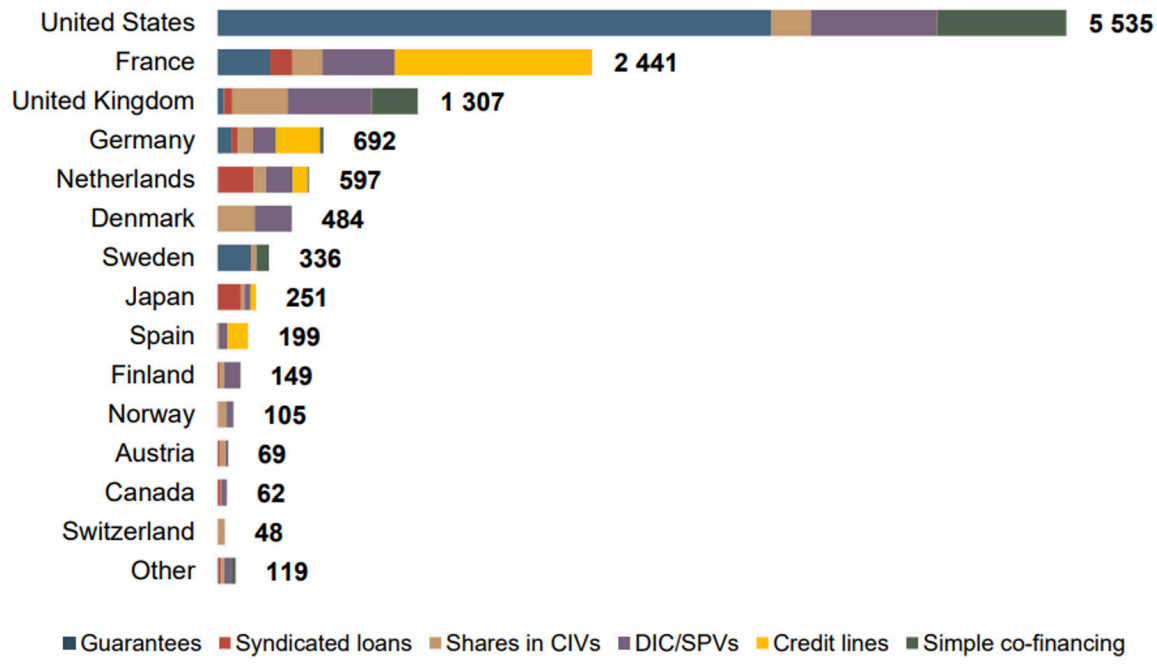
[13] 'The term "mobilisation" (or leveraging) refers to the ways in which specific mechanisms stimulate the allocation of additional financial resources to particular objectives; it requires a demonstrable causal link between finance made available for a specific project and the leveraging instrument used.' (OECD, 2023)

of private capital, with bilateral providers[14] responsible for 25%. The largest multilateral mobiliser by far is the International Finance Corporation (IFC), followed by the European Bank for Reconstruction and Development (EBRD), the European Investment Bank (EIB) and the African Development Bank (AfDB). The largest bilateral provider is the United States (US) Development Finance Corporation, providing 38% of all bilateral mobilisation. Other DFIs provide 34%, with the remaining bilateral mobilisation created by development agencies.[15]

Figure 1. Amounts mobilised by provider group, 2018–20 average (OECD, 2023)

Figure 2 shows private finance directly mobilised by bilateral institutions. The largest bilateral mobiliser is the US, followed by France and the United Kingdom (UK), with Germany, the Netherlands and Denmark in the next group down.

Figure 2. Mobilised private finance by bilateral providers, 2018–20 average, $ million (OECD, 2023)[16]



Private investors are also key actors, since it is their capital that MDBs and DFIs attempt to mobilise. These range from local banks in a given country, which might require concessional finance to allow them to provide loans for a broader customer base, to large institutional investors such as pension funds or insurance companies, both domestic and international (IFC, 2021).

Finally, policymakers play a significant role in creating an enabling environment that is

[14] The OECD (2023) report lists FCDO and the Department for Business, Energy & Industrial Strategy (BEIS) as the UK's other mobilising actors – although it does not give a breakdown of mobilisation split between these two.

[15] OECD (2023) *Private Finance Mobilised by Official Development Finance Interventions: Opportunities and challenges to increase its contribution towards the SDGs in developing countries*. OECD. https://www.oecd.org/dac/2023-private-finance-odfi.pdf

[16] 'CIVs' refers to 'Collective Investment Vehicles'; 'DIC/SPVs' refers to 'Direct Investment in Companies' and 'Special Purpose Vehicles'.

conducive to private investment, especially in LMICs, which have less of a track record of private investment (World Bank, 2021).

2.1.2 Mobilisation in the renewable energy sector

There is a funding gap of $1.35 trillion per year in investment for the renewable energy sector in emerging and developing economies.[17] However, mobilisation of private finance for renewable energy projects is still falling significantly behind this target. According to the OECD, in 2018–20, $6.8 billion of private finance was mobilised through official development finance for renewable energy projects. Renewables saw consistent mobilisation between 2012 and 2016, but saw a large increase in 2017 before peaking in 2018. Mobilisation in 2019–21 remained above 2016 levels. Key donors mobilising capital in renewables are predominantly from the Development Assistance Committee (DAC) countries or from multilaterals. Over time, the role of multilaterals in mobilising renewables finance has expanded, particularly in terms of the greater role being played by regional development banks – such as EBRD, AfDB, IDB and the Asian Development Bank (ADB) – and climate-specific funds, such as the Green Climate Fund.[18] The instruments used in mobilising this capital were usually guarantees and direct investments in companies or special purpose vehicles (SPVs), often in the form of project finance.[19] Private finance mobilised $4.8 billion from oil and gas projects and $1 billion from other non-renewable energy projects.[20]

2.2 BII investments and mobilisation in the renewable energy sector

2.2.1 BII's investments in renewable energy (2015–21)

BII's Climate Change Strategy during its 2017–21 strategy period (Investing for clean and inclusive growth)[21] had two main objectives:

- **1.** *Take responsibility for the climate impact of our [BII's] entire portfolio and pursue increased opportunities in climate sectors [through] (i) reduced greenhouse gas emissions [...]; (ii) transition to net zero development pathways; and (iii) greater resilience of our investees and countries.*
- **2.** *Future-proof our dual mandate of financial return and development impact [through] (i) governance structures supporting an orderly and just transition; (ii) appropriate risk management and forward-looking risk mitigation; and (iii) measurement and accountability through appropriate metrics.*[22]

Over time, BII's Power portfolio has been evolving towards renewable energy. About 48% of BII's active Independent Power Producer (IPP) portfolio is in renewable energy, which has grown significantly from 2015 (see Figure 3).

[17] World Economic Forum (2022) 'Opinion: How to close the world's $1 trillion renewable energy gap'. https://www.weforum.org/agenda/2022/09/renewable-energy-gap-solar-finance/

[18] https://stats.oecd.org/Index.aspx?QueryId=109254

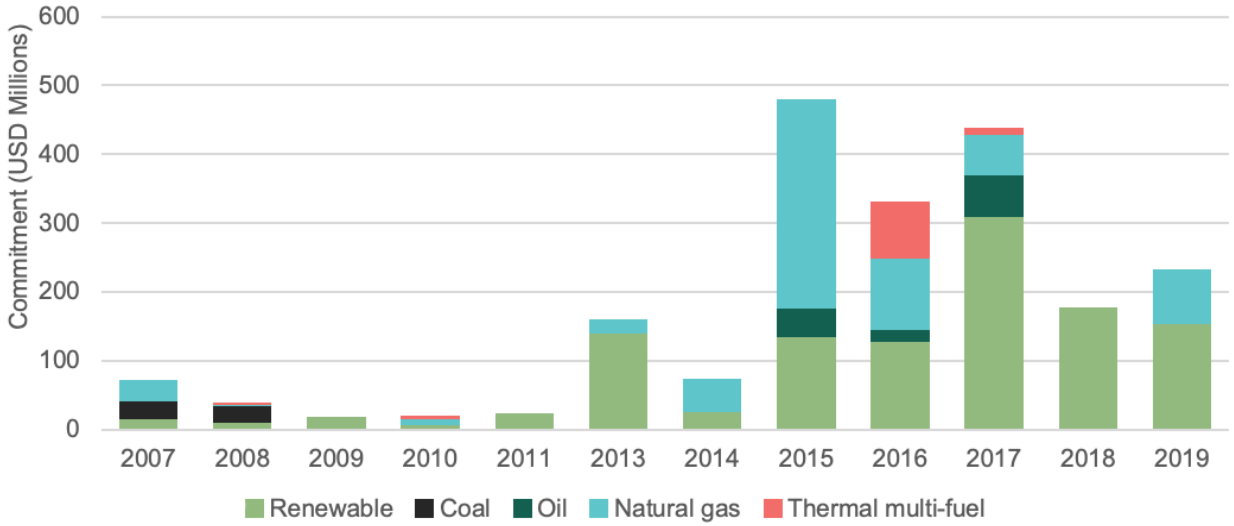
[19] OECD (2023) *Private Finance Mobilised by Official Development Finance Interventions: Opportunities and challenges to increase its contribution towards the SDGs in developing countries*. OECD. https://www.oecd.org/dac/2023-private-finance-odfi.pdf

[20] Ibid.

[21] BII (n.d.) 'Climate change strategy'. https://www.bii.co.uk/en/climate-change-strategy/

[22] BII (2020) *Investing for clean and inclusive growth*. https://assets.bii.co.uk/wp-content/uploads/2020/07/01181554/CDC-climate-change-strategy_FINAL-FOR-PUBLICATION-1.pdf

Figure 3. BII IPP commitments by generation technology and year of commitment

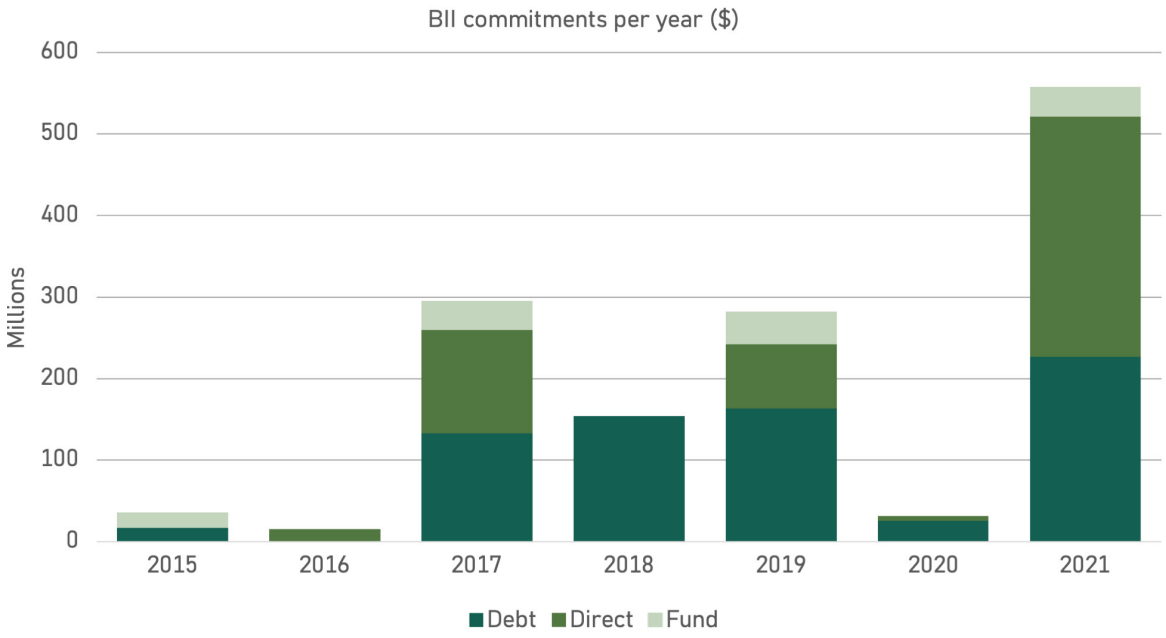


Source: Itad, Steward Redqueen, ODI (2022) Final Report Evaluating the Impact of British International Investment's Infrastructure Portfolio.

Between 2015 and 2021, BII made commitments to 37 renewable energy investees across debt, direct equity and funds.

Figure 4 shows the value of BII commitments in renewable energy from 2015 to 2021, increasing over time and peaking in 2021. BII has committed to renewables using different instruments, most consistently debt, but with direct equity accounting for the largest commitment volume in 2021.

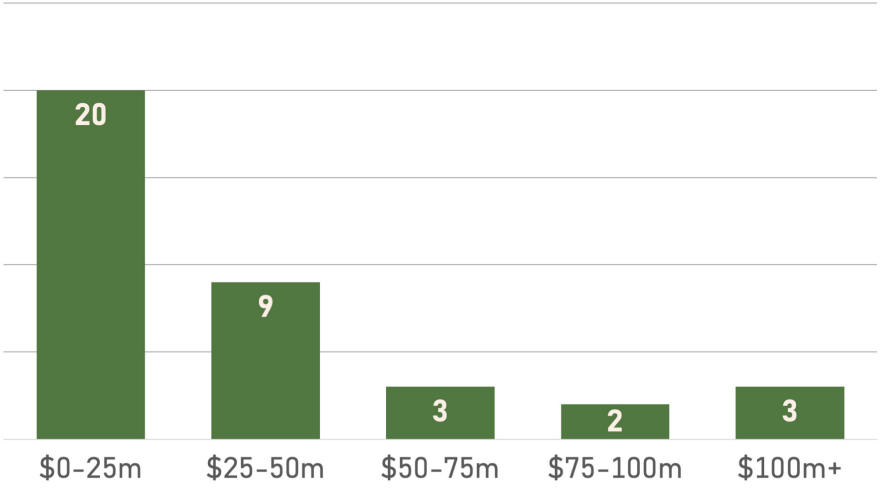
Figure 4. BII commitments to renewable projects per year ($)



Source: BII 2015–21 investment data.

Figure 5 shows the capital committed to different investees in BII's renewable energy portfolio – the majority of investees receive smaller amounts of capital ($0–$25 million), but with some receiving very large amounts. The three case studies are among the larger investments, the details of which are discussed in section 4.

Figure 5. Number of investees by total capital committed in renewable energy sector

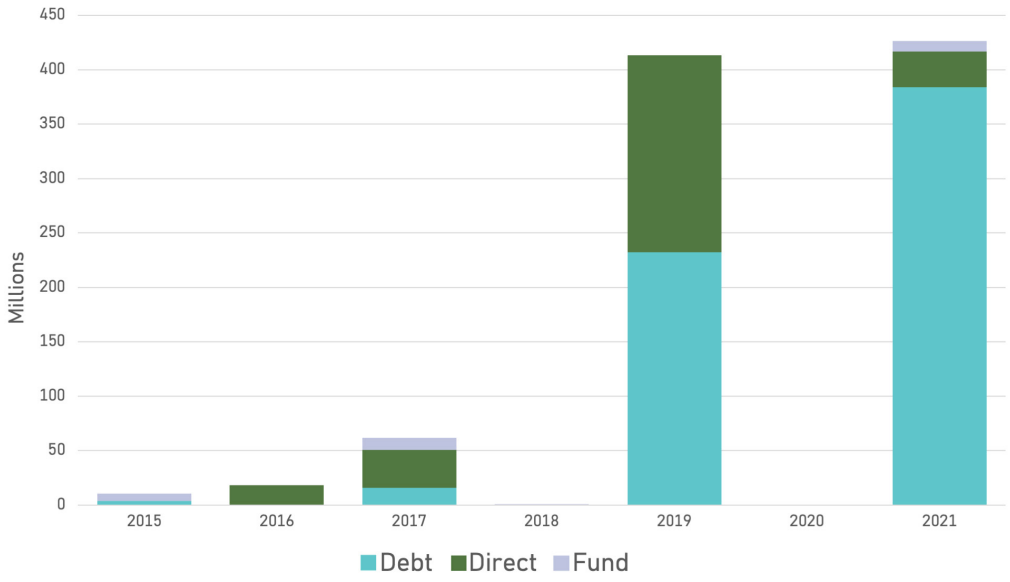


Source: BII 2015–21 investment data.

2.2.2. BII's mobilisation in renewable energy (2015–21)

Figure 6 illustrates BII's mobilisation over time in renewables. It indicates an increase during this period, in an opposite trend to the OECD figures for overall mobilisation in the renewables sector, which peaked in 2018 and then tailed off.

Figure 6. Mobilisation per year ($, OECD methodology)



Source: BII 2015–21 investment data.

2.2.3 BII focus on sustainability in 2022–26 strategy

BII's focus on the renewable energy sector has further increased in its current strategy period. BII's 2022–26 Technical Strategy[23] sets out three strategic objectives:

- "Productivity: to raise the productivity of an economy to support higher incomes and a decent standard of living for all."
- "Sustainability: to address the climate emergency by helping to transform economies to reduce greenhouse gas emissions, protect the environment, increase climate resilience, and contribute to a greener, cleaner planet."
- "Inclusivity: to ensure the benefits of higher productivity and greater sustainability are shared with the poorer and more-marginalised sections of society."[24]

BII intends for its investments to contribute to its Sustainability objective by mitigating climate change, increasing resilience and adaptive capacity, and supporting the circular economy.[25]

3. Methodology

Previous LMS work has focused on direct mobilisation – that is, co-investment. This synthesis examines BII's role in direct mobilisation in three deals, focusing on the equity raises and mobilisation of debt this enabled. However, these cases expand the lens to also examine wider market impacts. The case studies developed and tested hypotheses on the relationship between BII's activities, direct mobilisation and demonstration effects.

3.1 Case study selection

The three case studies were chosen in consultation with BII. Itad proposed a long list of potential cases from BII's portfolio of investments, using the following criteria:

- excluding deals from 2018 onwards (to allow enough time for demonstration effects to emerge);
- excluding funds (because of the need to trace the demonstration effect); and
- including investments in the renewable energy sector.

The final selection was decided upon in discussion with FCDO and BII, based on relevance and feasibility in terms of data collection from investment managers and investees. This process resulted in the selection of three investments for case studies: an investment in Ayana Renewable Power, an independent solar and wind generation company in India ('Ayana'); an investment in a solar power park in Egypt ('Benban'); and an investment in the Redstone Concentrated Solar Power (CSP) project in South Africa ('Redstone'). These investments are described in section 4.

[23] BII (2022) *Productive, Sustainable and Inclusive Investment: 2022–26 Technical Strategy*. https://assets.bii.co.uk/wp-content/uploads/2022/01/06170001/2022-2026-technical-strategy-2.pdf

[24] Ibid., p.4.

[25] Ibid., p.13.

3.2 Conceptual framework

The first set of case studies conducted as part of the LMS used direct mobilisation logic models, based on a review of the evidence (these logic models were developed during the LMS inception and are included in Annex 1). The synthesis of the initial case studies led to insights about the importance of influencing factors at three levels (deal, ecosystem[26] and investment climate[27]) when mobilising private capital into funds.[28]

For this current set of LMS case studies, the purpose was to assess direct mobilisation and then extend the assessment to encompass demonstration effects. Given the limited literature regarding demonstration effects, the theoretical framework used for the current set of case studies was based on lessons from the first set of studies about direct mobilisation.

The theoretical framework used (see Figure 7) reframes the logic models for direct mobilisation (for the three levels) as a series of performance drivers (presented in the green boxes in the diagram). Performance drivers can enable or disable (i) direct mobilisation, (ii) firm performance and (iii) positive demonstration effects. Here, 'performance' refers to a firm's financial and BI / environmental and social (E&S) performance, as shown in the salmon boxes on the far right of the diagram.

On the far left of the diagram are 'deal level' performance drivers pertaining to the deal and the actions of BII, co-investors and the investee. 'Mobilisation activities' are a subset of firm-level performance drivers; they are additional actions BII or its co-investors might take to encourage others to invest in the same deal. To the right of these are performance drivers at the 'ecosystem' and 'investment climate' levels, on which BII may still exert some influence, but less so when compared to the deal level. Performance drivers at all three levels can enable direct mobilisation into the deal in question and firm performance, as the diagram shows.

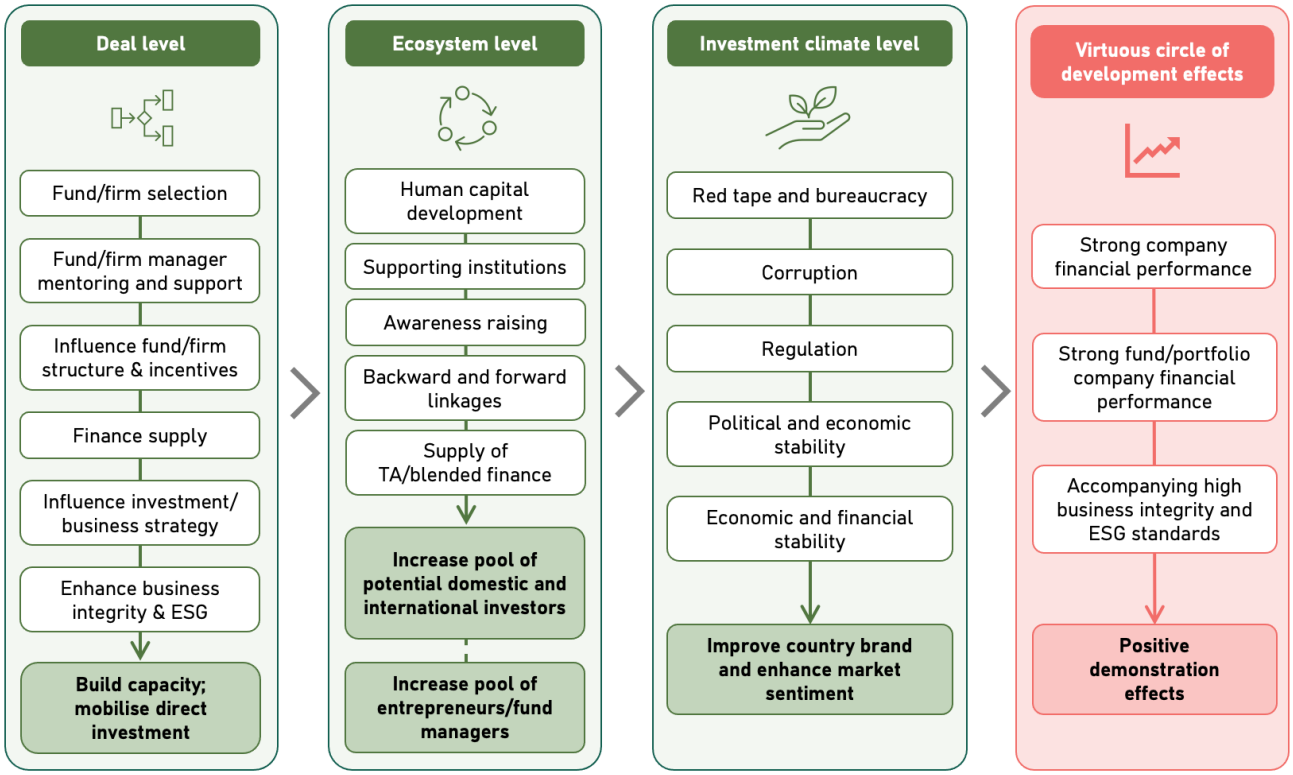
Enabling performance drivers are prerequisites for any demonstration effects that might result, based on the logic that an investment needs to first perform well financially or show a direct impact before being taken up by other investees and investors in new deals. These may then lead to potential demonstration effects, as the diagram shows.

[26] 'Ecosystem' refers to the network of fund managers, entrepreneurs and returning diaspora, plus domestic and international investors.

[27] 'Investment climate' refers to the broader enabling environment such as regulations, political/economic stability and market sentiment.

[28] Itad (September 2022) Briefing Paper: *Lessons on Mobilising Private Investment Through Development Finance: a historical analysis of four BII-backed equity funds.*

Figure 7. Logic model for demonstration effects[29]



3.3 Data collection activities

Data collection activities included:

- initial conversations with BII deal teams and a review of Investment Committee papers and other BII deal documents, e.g. quarterly monitoring reports;
- interviews with representatives from:
  - BII, including E&S and BI team members;
  - debt and equity co-investors from other DFIs, financial institutions and sovereign investment funds – interviewees included those responsible for investor relations and policy and E&S in their respective organisations;
  - investees (including CEOs); and
  - other actors in the ecosystem, such as consultants in renewable energy investing.

Most interviews took place between August and December 2021; a few interviews were carried out in the first half of 2022. Interviews were conducted using semi-structured interview guides, tailored to the role of each interviewee (e.g. BII, investee, debt or equity investor). These interview guides contained questions to collect evidence against specific hypotheses, which are explained in more detail below.

[29] 'Awareness raising' refers to making potential investors aware of investing opportunities, e.g. in a particular country and sector.

3.4 Analytical approach

For the Ayana and Benban case studies, 'Bayesian updating' was used to assess the strength of the evidence related to direct mobilisation and potential demonstration effects collected through data collection activities. The Bayesian updating technique is used to establish how likely it is that a given research hypothesis is true or false, based on the strength of the evidence collected against that hypothesis. Its approach to weighing evidence resembles that used in a court of law – the evaluator focuses on the probability of a piece of evidence proving or disproving a hypothesis (its 'probative value'). Bayesian updating provides a quantitative assessment of the level of confidence in each hypothesis. Itad has published a brief[30] and a blog[31] explaining Bayesian updating in more detail. Box 2 describes how this technique was implemented in these case studies.

The third case study instead focused on assessing the potential for future demonstration effects, as it was conducted at an earlier stage of the project. As a result, the Bayesian updating approach was not relevant to this case study. Instead, this case study, based on a series of semi-structured interviews and a document review, was designed to establish context, details of the project structure, perspectives of key private and public actors, and to identify potential demonstration effects.

[30] Itad (2018) *Contribution Analysis and Bayesian Confidence Updating: A brief introduction*. https://www.itad.com/wp-content/uploads/2020/02/CDC-Brief-contribution-analysis-and-Bayesian-Updating-1.pdf

[31] Itad (2022) *Bayesian Confidence Updating: 3 lessons from applying this technique*. https://www.itad.com/article/bayesian-confidence-updating-3-lessons-from-applying-this-technique

Box 2. Implementing the Bayesian updating technique

Step 1: Develop hypotheses

As a first step, we developed hypotheses based on the logic model about the potential effects of BII's direct and indirect influence (through demonstration effects) on other investors' investment decisions. These hypotheses were informed by initial conversations with BII investment teams and a review of investment documents. They described how the specific actions taken by BII's investment team may have led to other investors deciding to make an investment. These activities were aligned with performance drivers in the logic model (which could take place at deal, ecosystem or investment climate level). 'Alternative hypotheses' were crafted when it was thought a non-BII influence was salient, e.g. the influence of a co-investor. Some findings not directly related to a pre-identified hypothesis emerged from the analysis and are also presented in section 4.

Many dozens of hypotheses were drafted. Table 1 includes example hypotheses from the Ayana case study.

Table 1. Example hypotheses

Level	Performance driver	Contribution	Hypothesis
Direct mobilisation hypothesis (example)			
Deal level	Investment strategy	BII influence	"BII created Ayana's investment strategy (with a focus on greenfield renewable energy investments) which was critical in equity co-investors' decision to invest in Ayana."
Demonstration effect hypothesis (example)			
Deal level	BI	BII influence	"Ayana's BII-influenced approach to BI has influenced BI processes of other investors in the sector in India."

Step 2: Determine evidence required to assess the hypotheses

For each hypothesis about the effects of the actions taken by BII or non-BII actors, we identified evidence that we intended to look for to establish whether the hypothesis was true or false. To establish the expected strength of each piece of evidence sought, the likelihood of finding the evidence (before data collection) was considered by asking (1) "If the causal claim is true, how likely is it that you would find this evidence?" and (2) "If the causal claim is false, how likely is it that you would find this evidence?"

In this way, the team determined the expected likelihood of finding the evidence, and hence the strength of the evidence (or 'probative value') if it were to be found. The focus on the probative value of each piece of evidence sought allowed the case study teams to (i) prioritise data collection on the strongest evidence, and (ii) interpret the importance of a piece of evidence for a particular hypothesis, once they had established whether it had been observed or not.

Step 3: Assess the weight of the evidence for each hypothesis

The team mapped each piece of evidence collected through data collection activities against the initial hypotheses. We then reviewed the probative values assigned to each piece of evidence for a given hypothesis to calculate the probability that a hypothesis is true or false. The higher the resulting value, the higher the level of confidence that a hypothesis is true. Conversely, the lower the resulting value, the higher the level of confidence that a hypothesis is false. The middle of the range indicates no confidence in whether the hypothesis is true or false. The full results of this exercise are included in Annex 2. The findings from all three case studies have been synthesised in section 4, and the lessons generated on success factors in mobilisation and demonstration effects in renewable energy deals are described in section 5.

3.5 Limitations

There are a few methodological limitations to the case studies to note:

- Given the low number of case studies relative to the number of investments in BII's renewable energy portfolio, the lessons drawn from these three case studies will not be representative of the full renewable energy portfolio. In particular, as these deals are among the largest in this portfolio, the case studies provide less insight into the mobilisation effect of smaller BII deals in this sector.
- Due to the early stage of the Redstone project, Bayesian updating was not applied to this case study. As a result, the Redstone case study provided less detailed findings than the Ayana and Benban cases studies, and findings were less comparable across case studies.
- Relevant findings emerged that were not directly related to a pre-specified hypothesis; as a result, Bayesian updating results were not available for every finding. These findings were therefore not the result of the same level of qualitative analytical rigour.
- Despite the researchers' intentions, it proved difficult to interview relevant actors in the ecosystem beyond those described in section 3.3, such as representatives of other platforms and investors not directly involved in the BII deal. This meant it was more difficult to test hypotheses about demonstration effects than ones concerning direct mobilisation. In addition, there is a larger range of less easily identifiable actors relevant for demonstration effects, hence it is more difficult to collect evidence related to this logic model than for direct mobilisation.
- For the Redstone case study, and to a lesser extent for the Ayana case study, we found that insufficient time had passed since the investments in these investments to ascertain that the demonstration effects of BII's investments had influenced similar investments in the market.

These factors limited the case studies' ability to capture full demonstration effects. Instead, the researchers sought to establish the potential demonstration effects of the selected investments by assessing the likelihood of future demonstration effects (in other words, through the performance and direct impacts of these investments, it is likely that others will replicate similar approaches and mobilise more capital).

4. Case study context and findings

4.1 Case study investments in the context of BII's renewable energy portfolio

All three renewable power case studies were chosen to examine BII's role in direct mobilisation and in creating demonstration effects, through direct equity and debt investments by BII.[32] The studies examine whether and how BII mobilised capital in the Ayana, Benban and Redstone projects (in India, Egypt and South Africa respectively) and aim to identify both the successful characteristics of each deal and the dynamics that led to these, including (among others) BII's role.

The case studies of Ayana and Benban – which are already operational – sought to understand the direct mobilisation resulting from and the demonstration effects created by these two deals. Unlike these investments, Redstone is still under construction and is not yet operational. As a result, the Redstone study examined the process that led to financial close – including BII's role in this and associated direct mobilisation – and set out indicators for the demonstration effects that Redstone might generate in the future. Further studies may be conducted to examine the demonstration effects generated by Redstone after the facility is constructed and operational. All three case studies contextualised findings with respect to Egypt, India and South Africa's renewable energy goals and the challenges and opportunities associated with meeting these goals.

The three case study deals (Ayana, Benban and Redstone) are among the largest deals in BII's renewable energy portfolio (for 20 out of 36 investments, BII's commitment was $0–$25 million, whereas for all three case study deals it was $50 million or above). The portfolio is also largely made up of debt investments, although the two largest deals have been through equity investments. Ayana, Redstone and Benban are the first, fourth and sixth-largest deals respectively by commitment amount in the BII renewables portfolio.

Table 2 shows a comparison of the details of the three case study deals (in terms of size of investment, BII's investment size compared with the investment size of other DFIs and private investors, and direct mobilisation) and a qualitative summary of indirect mobilisation.

Table 2. BII investment and mobilisation in case study deals (all currency values in $; all %s are % of total size of investment)

Deal	Total size of investment (all investors)	BII's investment	Other DFIs and private investors	Direct mobilisation by BII
Ayana	667 million	233 million (35%) (equity and debt)	GGEF and NIIF: 450 million (67%)	GGEF: 85 million
Benban IFC consortium	653 million[33]	92 million[34] (debt)	557 million (86%)	IFC consortium members: 24 million (pro rata share of mobilised equity)
Redstone	639 million	50 million (8%) (debt)	589 million (92%)	Co-mobilisation of DFIs (unquantified)

Source: Data available as at March 2023, from the three case studies and BII 2015–21 investment data.

[32] Previous case studies focused on direct mobilisation through BII investments in funds.

[33] BII (n.d.) 'Alcazar Energy Egypt Solar 1 SAE'. https://www.bii.co.uk/en/our-impact/direct-header/alcazar-energy-egypt-solar-1-sae/

[34] BII (n.d.) 'Alcazar Energy Egypt Solar 1 SAE'. https://www.bii.co.uk/en/our-impact/direct-header/alcazar-energy-egypt-solar-1-sae/

Table 3 shows the timeline of BII's investment activity in each of the three case study deals from 2017 to 2021, by instrument (equity or debt). Ayana is the only case study deal in which BII made equity investments.

Table 3. Timeline of BII's investments

Year	BII's investment activity	Amount
2017	Ayana first equity investment	$100 million
	Benban debt investment	$92 million
2019	Ayana second equity investment	$64 million
	Redstone debt investment	$50 million
2021	Ayana debt investment	$69 million

Source: BII 2015–21 investment data.

4.2 Case study investments in the country context

The following sections present the state of the sector in each country relevant to the three case studies. Boxes 3, 4 and 5 give an overview of each of the three projects, from deal stage (for all three) to construction and operation (for Ayana and Benban but not for Redstone), tracing BII's involvement in each project. The detailed case studies were used as the basis for this synthesis report.

4.2.1. Renewable energy in India

India's electricity generation is dominated by fossil fuels, which comprised 76% of total capacity as of 2019, with coal accounting for 71%. Wind and solar capacity contributed only about 7% of the total. The share of renewable generation in India has increased dramatically since around 2005 in absolute terms, although only since 2015 has there been an increase in terms of its share of the overall generation mix.[35]

COP26 saw India commit to net zero by 2070 and 50% renewables by 2030: [36] meeting the target will require 500GW capacity, relative to 100GW today, and total investment needs are in the order of $200 billion (25% equity).

Since 2015 there has been an increased prevalence of IPPs bidding for capacity in reverse auctions[37] and creating 'platforms' to develop, acquire and operate these assets. The prices agreed in auctions have fallen very sharply and are internationally low. IPPs then sell power at this agreed fixed price to distribution companies (DISCOMs).

[35] IEA (2020) *Renewables 2020: Analysis and forecast to 2025*. Paris: International Energy Agency. https://iea.blob.core.windows.net/assets/1a24f1fe-c971-4c25-964a-57d0f31eb97b/Renewables_2020-PDF.pdf (accessed 11 August 2021).

[36] BBC (2021) 'COP26: India PM Narendra Modi pledges net zero by 2070'. https://www.bbc.co.uk/news/world-asia-india-59125143

[37] "In a reverse auction, a buyer puts out a request for a specific good or service, inviting businesses to compete on price against each other to deliver what is being requested. In the end, the contract goes to the seller willing to accept the lowest amount. A reverse auction is the opposite of a regular auction, where the auction is initiated by the seller and the buyers bid the price up." Source: Investopedia (n.d.) 'What is a reverse auction? How it works, example, and risks'. https://www.investopedia.com/terms/r/reverse-auction.asp#:~:text=A%20reverse%20auction%20is%20a,goes%20to%20the%20highest%20bidder (accessed 08 June 2023).

The sector faces demand-side challenges due to the poor financial health of state DISCOMs, which experienced revenue shortfalls in 2021 and have large outstanding debt.[38] This results in state DISCOMs being slow to pay for missing payments to generators, delaying auctions to try to capture lower tariffs, and retroactively changing tariffs. Supply-side challenges include: falling energy prices, as a result of reverse auctions;[39] an import tariff on solar technology that has increased costs of photovoltaic (PV) components;[40] and the barriers faced by renewable energy developers and generators in India in accessing debt and capital markets as a result of significant levels of debt distress in energy sector debt in India.[41]

Types of solutions that have been introduced to address these challenges include improving DISCOM finances, guaranteeing DISCOM payments and/or bypassing state DISCOMs in favour of central auctions. Amid the COVID-19 pandemic in May 2020, the government injected around INR ₹900 billion of liquidity for DISCOMs;[42] in the 2021–22 budget, a reform-linked power distribution programme was allocated ₹3.05 trillion for the improvement of DISCOM operations and finances;[43] and in June 2022 the government introduced a late payment surcharge to encourage DISCOMs to pay down their dues to generation companies.[44] Relatedly, efforts are being made to address the issue of import costs – and to promote broad economic development – by developing a domestic manufacturing base for renewable energy components. This included the allocation of V195 billion in the budget for financial year 2023 as part of a production-linked incentive scheme[45] and the introduction of import duties on solar PV modules and cells from May 2022.[46]

[38] IEA (2021) *India Energy Outlook 2021*. Paris: International Energy Agency. https://iea.blob.core.windows.net/assets/1de6d91e-e23f-4e02-b1fb-51fdd6283b22/India_Energy_Outlook_2021.pdf

[39] IEA (2020).

[40] Bose, A.S. & Sarkar, S. (2019) 'India's e-reverse auctions (2017–2018) for allocating renewable energy capacity: an evaluation'. *Renewable and Sustainable Energy Reviews* 112: 762–74. https://doi.org/10.1016/j.rser.2019.06.025

[41] Kala, V., & Garg, V. (2015) *Green Bonds in India*. USAID Issue Paper, Washington DC: USAID. https://www.greengrowthknowledge.org/sites/default/files/downloads/resource/Green%20Bonds%20in%20India.pdf

[42] IEA (June 2021) 'Self Reliant India Scheme - Liquidity Injection for Discoms'. https://www.iea.org/policies/12943-self-reliant-india-scheme-liquidity-injection-for-discoms

[43] Mercom (2021). https://mercomindia.com/finance-minister-announces-%e2%82%b93-03-trillion-upgrading-discoms/

[44] Times of India (2022). https://timesofindia.indiatimes.com/business/india-business/discoms-outstanding-late-payment-surcharge-dues-dips-to-rs-713-cr-from-rs-5058-cr/articleshow/94278575.cms

[45] Saur Energy (2022) 'Indigenizing Solar Manufacturing: Charting the Course to a Solar Self-Sufficient India'. https://www.saurenergy.com/solar-energy-articles/indigenizing-solar-manufacturing-charting-the-course-to-a-solar-self-sufficient-india#:~:text=India%20now%20has%20a%203GW,for%20high%2Defficiency%20solar%20modules

[46] PV Magazine (2022) 'The long read: India's solar manufacturing wave.' https://www.pv-magazine-india.com/2022/03/26/the-long-read-indias-solar-manufacturing-wave/

Box 3. The Ayana deal timeline[47]

- **January 2018:** BII establishes/invests $100 million in Ayana Renewable Power Ltd. BII is the 100% owner, with the goal of creating 300MW of greenfield capacity by the end of 2020.
- **2019:** 500MW of capacity secured – BII brings in new equity investors: India's National Infrastructure Investment Fund (NIIF)48 and the Green Growth Equity Fund (GGEF).49 NIIF and GGEF acquire 51% of Ayana with $170 million, and BII adds $64 million, taking Ayana's total capital to $334 million.
- Ayana commits $274 million equity for 600MW greenfield and acquires 340MW assets.

Ayana investment locations

- **End 2021:** NIIF takes a 50.1% majority stake in Ayana with $280 million, and BII adds $69 million. BII's share has reduced from 100% at Ayana's creation to 49% after the first equity sale, to 32%–34%; GGEF's share fell from 25.5% at the time of the equity sale to 12%–14%.
- **December 2021:** Ayana buys ACME Power to bring assets (including those under development) to 2.9GW.
- **January 2022:** Ayana passes 1GW operational assets.
- **June 2022:** Ayana signs an Expression of Interest with the government of Karnataka to develop 2GW of wind and solar power projects.50
- **From 2018 to 2022,** BII increased its equity in Ayana by 2.27 times compared to its original investment; Ayana's greenfield capacity is 5.3 times BII's original goal.
- Today Ayana's goal is to reach 4GW in generating capacity, of which 1.6GW will be greenfield. Reaching this goal will require approximately $2 billion of debt to be mobilised.
- NIIF has indicated its ambition to increase Ayana investment up to $1 billion or more and sees Ayana as its primary vehicle for influencing the renewables sector in India.

[47] The facts and figures contained in this box are sourced from BII documents and interviews with Ayana stakeholders conducted as part of the Ayana case study.

[48] NIIF is India's first sovereign investment fund, seeking to create long-term value for both domestic and international investors. The fund deploys capital into energy, transportation, housing, water, waste management and other infrastructure-related sectors in India. A joint venture by the Indian government and external investors, the NIIF works closely with policymakers and central and state government agencies, and the commercial investors promote a professional, principles-led approach to all investments. (EverSource website https://eversourcecapital.com/)

[49] EverSource is the fund manager of the Green Growth Equity Fund (GGEF or the Fund), established with anchor investment from India's National Investment and Infrastructure Fund (NIIF) and Foreign, Commonwealth & Development Office (FCDO), Government of UK. The Fund is based in Mumbai (India) and shall invest in scalable operating companies and platforms across renewable energy, energy efficiency, energy storage, e-mobility, resource conservation and associated value chains. EverSource Capital provides global investors with an opportunity to invest in the Indian green infrastructure, alongside a global industrial leader and established regional fund manager. (EverSource website https://eversourcecapital.com/)

[50] NIIF (2022) 'Ayana to advance Karnataka's clean energy capacity'. Press release, 8 June. https://www.niifindia.in/uploads/media_releases/Press%20Release%20-%20Ayana%20to%20advance%20Karnataka%20clean%20energy%20capacity.pdf

4.2.2. Renewable energy in Egypt

Since 2007 Egypt has had an energy deficit and has been a net importer of fossil fuels. The worst year for energy supplies was 2014, with numerous blackouts. Subsequently, the Egyptian government initiated reforms to expand renewable energy, improve the sector's performance and mobilise private investment – historically energy in Egypt has been state-owned/controlled and subsidised.

As part of these reforms, a feed-in-tariff (FiT) programme was introduced in 2014. The first round of FiTs was designed to facilitate c.2,500MW of solar PV across three sites: Benban, Zaafarana and Minya. The tariff was set relatively high at $14.3c/kWh for a 25-year period; however, international funders were unwilling to accept local arbitration and local currency rules, and only one project was agreed under the first phase of FiT. The second FiT round was launched in 2017, with all solar PV sites moved to Benban. The price was lowered to $8.4c/kWh and introduced international arbitration, along with liberalising economic reforms in 2016:[51] this resulted in much greater investor interest.

Since the success of this second round of FiTs, Egypt has shifted its policy towards competitive auctions instead of FiTs, recently awarding a solar concession to ACWA of Saudi Arabia at a highly competitive price of $2.45c/kWh.

Egypt hosted COP27 in November 2022, during which it signed a number of renewable energy deals, including a $10 billion investment from EBRD, ADB, HSBC and others to replace inefficient thermal power plants with wind or solar energy, and a deal with the Norwegian government to develop a 100MW-capacity green hydrogen plant. A significant number of greenfield wind energy projects are under construction or in financing, with further feasibility studies for new wind projects also under way.[52] In addition, the government has recently made state-owned land available to investors to develop renewable energy projects.[53] This is in a context in which the Egyptian government aims to generate 42% of the country's electricity from renewable sources by 2035.[54]

However, Egypt is experiencing an economic crisis. The COVID-19 pandemic has affected Egypt's tourism industry, and the war in Ukraine has damaged wheat imports. Longer-term factors impacting the economy include Egypt's devaluation of its currency, which has led to increased inflation and reduced investor confidence, as well as the perceived crowding-out of the private sector by military-owned enterprises. This has led to soaring debt levels and has made Egypt the second-largest debtor to the IMF as of January 2023, with government spending now focused largely on debt repayments rather than infrastructure, investment and social spending.[55]

[51] These reforms included floating the Egyptian pound, previously pegged to the US dollar, which resulted in a devaluation of the currency, and a reduction in overall debt. This resulted in the agreement of a $12 billion lending package from the International Monetary Fund (IMF). These reforms have been hailed by businesses and investors as positive, although have also raised concerns that they reduce purchasing power of many Egyptians. Gaballa, A. (2018) 'Citing stability, reforms, big businesses in Egypt cheer for Sisi'. https://www.reuters.com/article/us-egypt-election-business/citing-stability-reforms-big-businesses-in-egypt-cheer-for-sisi-idUSKBN1H52BB (accessed 08 November 2021).

[52] US International Trade Administration (2022) 'Egypt – Country Commercial Guide: Electricity and Renewable Energy'. https://www.trade.gov/country-commercial-guides/egypt-electricity-and-renewable-energy

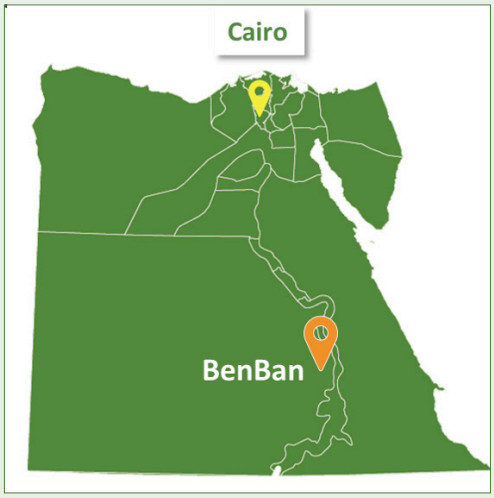
[53] Energy Capital & Power (2023) 'Egypt Opens State-Owned Land for Renewable, Green Hydrogen Development'. https://energycapitalpower.com/egypt-opens-state-owned-land-for-renewable-green-hydrogen-development

[54] PBS (2022) 'COP27 host Egypt negotiates energy and transport deals'. https://www.pbs.org/newshour/world/cop27-host-egypt-negotiates-energy-and-transport-deals

[55] Middle Eastern Eye (2023) 'How IMF loans keep Sisi afloat as Egypt sinks deeper into debt'. https://www.middleeasteye.net/news/egypt-imf-loans-keep-sisi-afloat-sinks-deeper-debt

Box 4. The Benban deal timeline[56]

Benban Solar Park is located near the village of Benban in the Aswan region of southern Egypt and is one of the largest solar energy facilities in the world. Benban comprises 41 plants with a capacity of 1.8GW. The estimated total investment in Benban is $4 billion, of which $1.8 billion is from international financial institutions (IFIs). Benban is the primary product of the Egyptian FiT programmes.



BenBan facility locations

- **October 2014:** Egyptian government introduces FiT with a high tariff.
- **October 2016:** FiT Round 1 closes, with only three developers.
- **October 2017:** FiT Round 2 opens with a lower tariff, and is closed successfully a year later.
- Benban financing is split into two large consortia, led by the EBRD and IFC.
- The IFC group provides $653 million[57] of debt to 13 projects.
- BII invests $92 million in the IFC consortium,[58] directed towards nine out of 13 plants. This is through four sponsors – Alcazar Energy, the Solar Energy Corporation of India Ltd (SECI), SP Energy and Phoenix Power – resulting in 400MW of capacity. As well as BII, the IFC consortium comprises IFC, AfDB, the Asian Infrastructure Investment Bank (AIIB), Arab Bank (Bahrain), Europe Arab Bank, Finance in Motion, FinnFund, Industrial and Commercial Bank of China (ICBC) and Oesterreichische Entwicklungsbank (the Development Bank of Austria, OeEB).[59]
- **2019:** Benban comes online and is Africa's largest solar park and the fourth-largest solar park in the world.[60]

4.2.3. Renewable energy in South Africa

South Africa has abundant coal reserves and is one of the most carbon-intensive economies in the world, with around 85% of its electricity needs being met by coal-fired power stations.[61] In 2011 an integrated resource plan (IRP) was published, with a commitment to expand the use of renewables.[62] Progress was limited, and a new IRP was published in 2019 with clearer targets for 2030. Under the IRP, the share of coal in the energy mix is scheduled to fall to 59% by 2030, with solar rising to 18% and wind 6%.[63]

[56] The facts and figures contained in this box are sourced from BII documents and interviews with Benban stakeholders conducted as part of the Benban case study.

[57] BII (n.d.) 'Alcazar Energy Egypt Solar 1 SAE'. https://www.bii.co.uk/en/our-impact/direct-header/alcazar-energy-egypt-solar-1-sae/

[58] Ibid.

[59] https://pressroom.ifc.org/all/pages/PressDetail.aspx?ID=17490

[60] https://www.ysgsolar.com/blog/15-largest-solar-farms-world-2021-ysg-solar

[61] Energy Transition (2023) 'South Africa secures international aid at COP27 to champion the coal to renewables shift'. https://energytransition.org/2023/02/south-africa-secures-international-aid-at-cop27-to-champion-the-coal-to-renewables-shift/#:~:text=Currently%20South%20Africa%20relies%20upon,with%20new%20solar%20and%20renewables

[62] Polity (21 Oct 2019) 'Key takeaways of the Integrated Resource Plan 2019 – unpacking the corrected version'. https://www.polity.org.za/article/a-snap-shot-of-the-integrated-resource-plan-2019-2019-10-21

[63] Ibid.

South Africa's energy sector is dominated by Eskom, the state utility. As of 2019, Eskom generated ~90% of the supply in the country, with the remainder coming from IPPs, imports and generators supplying directly to municipalities.[64] Eskom has experienced difficulties in meeting demand in recent years, resulting in a policy of progressive load reduction and 'load shedding' since 2008.[65] As well as changing the energy mix, in 2019 the government confirmed its intention to restructure the industry, separating out Eskom's functions, with a new regulatory regime to oversee the new structure.[66] However, Eskom continues to be unable to supply the demand for power in South Africa: in February 2023 the South African government declared a 'state of disaster' regarding the country's energy supply, with Eskom's debt levels becoming unsustainable and the capacity of its aging fleet of coal power stations dropping.[67]

The addition of renewable energy capacity from IPPs has been organised under the government's Renewable Energy Independent Power Producer Procurement Programme (REIPPPP).[68] The REIPPPP was established in 2011 to channel private finance and expertise into the renewable energy sector, engaging private sector actors as project sponsors, debt financiers and engineering, procurement and construction (EPC) contractors.[69] The programme runs competitive tenders whereby sponsors bid to provide generation capacity on price and other criteria. In line with global trends, the South African government favours such reverse auctions over FiTs as a way of building renewable energy capacity at the lowest cost. The programme is on its fifth bid window and has allocated more than 6GW of capacity.[70]

Box 5. The Redstone deal timeline[71]

Redstone CSP Plant is a 100MW renewable energy project located in the Northern Cape province of South Africa. Redstone CSP uses central receiver system technology, whereby solar panels concentrate sunlight onto a central receiver to generate heat energy, which in turn creates steam. In addition, molten salt technology stores energy, allowing for 12 hours of full-load energy storage, which gives the ability to provide baseload power.

- **2014:** IFC withdraws from the first iteration of the Redstone project.
- **2015:** The Overseas Private Investment Corporation (OPIC) commits $400 million in debt to the project.
- **2017:** Redstone has a 20-year power purchase agreement (PPA) with Eskom, with a tariff of $124/MWh. After a period of uncertainty over Eskom's ability to commit to the PPA, this is signed at the end of 2017. The tariff is awarded as part of South Africa's REIPPPP (described above).
- **2018:** AfDB commits $221 million in debt to the project.

[64] Department of Energy, Government of South Africa (2019) *The South African Energy Sector Report 2019*. https://www.energy.gov.za/files/media/explained/2019-South-African-Energy-Sector-Report.pdf

[65] Kessides, I.N. (2020) *The Decline and Fall of Eskom: A South African Tragedy*. The Global Warming Policy Foundation: Report 45. https://www.thegwpf.org/content/uploads/2020/06/Decline-Fall-Eskom.pdf

[66] Ibid.

[67] Reuters (2023) 'South Africa invokes disaster law to tackle energy crisis'. https://www.reuters.com/world/africa/south-african-president-declares-state-disaster-over-power-crisis-2023-02-09/

[68] World Bank (2014) *Review of the South Africa Renewable Energy IPP process*. Washington DC: The World Bank Group.

[69] Ibid.

[70] South African Government (2022) 'Minister Gwede Mantashe announces 5th Bid Window of Renewable Energy IPP Procurement Programme (REIPPPP Bid Window 5)'. https://www.gov.za/speeches/minister-gwede-mantashe-announces-5th-bid-window-renewable-energy-ipp-procurement-programme#:~:text=The%20Minister%20of%20Mineral%20Resources,new%20generation%20capacity%20to%20come

[71] The facts and figures contained in this box are sourced from BII documents and interviews with Redstone stakeholders conducted as part of the Redstone case study.

- **2021:** BII commits $50 million of debt. Investment in the project totals approximately $800 million[72] (11.6 billion rand). The project is sponsored by a consortium, of which ACWA Power is the largest shareholder with a 35% stake. Other equity investors include Solar Reserve, the Old Mutual Life Assurance Company (South Africa) Limited (OMLACSA), the Phakwe Group, Pele Green Energy, the Central Energy Fund, the Government Employees Pension Fund and a community trust. Debt was provided by the AfDB, BII, the Dutch Entrepreneurial Development Bank (FMO), Deutsche Investitions- und Entwicklungsgesellschaft (DEG), the Development Bank of South Africa (DBSA) and OPIC. Commercial lenders are Absa, Investec, Nedbank and Sanlam.
- **Q4 2023:** The project is scheduled to become operational, to create approximately 100 permanent jobs, in addition to creating 2,000 jobs during construction, 400 of which are local.

4.3 Findings: Direct mobilisation

The findings for direct mobilisation map to the blue boxes of the logic model for demonstration effects in section 3.2, and logic models for direct mobilisation are included in Annex 1.

4.3.1. BII's role in mobilising public financing

With Ayana, BII created a platform that would otherwise not exist, and initially it was a 100% shareholder. The results of Bayesian updating analysis (examples shown in Table 4; full list of hypotheses and confidence levels included in Annex 2) give a high level of confidence that BII mobilised equity from NIIF (a sovereign wealth fund) and GGEF (a fund anchored by NIIF and FCDO). The latter was fully mobilised by BII, in that it would not have invested without BII (this mobilisation was enabled by the performance driver Finance supply in the logic model). Both NIIF and GGEF were influenced to invest by: Ayana's governance structure, established by BII (Structure, incentives & terms); the management team BII put in place (Management quality); and BII's adjustment of its investment strategy to include acquisitions as well as greenfield development (Investment strategy). NIIF would have created a similar platform, but later, as it would have taken them several months (Finance supply).[73] BII directly mobilised public finance, which enabled 64MW of capacity. In addition, neither NIIF nor GGEF would have invested as much in greenfield were it not for BII's influence (Investment strategy).[74]

[72] BII (2021) 'CDC Group commits US $50 million to 100MW renewable power project in South Africa'. https://www.bii.co.uk/en/news-insight/news/cdc-group-commits-us-50-million-to-100mw-renewable-power-project-in-south-africa/

[73] The Bayesian updating methodology used found a 'High confidence [the] hypothesis is true' for these statements (initially hypotheses) about BII's influence on equity investors.

[74] The Bayesian updating methodology found 'Very high confidence' that this hypothesis about BII's influence is true.

Table 4. Ayana deal level: Direct mobilisation hypotheses (examples of Bayesian updating results)

Level	Performance drivers	Hypothesis	Confidence level (0–1)	Qualitative descriptor of confidence
Deal level	**Finance supply**	BII created Ayana as an anchor investor (as initial 100% equity investor), and this created an investment opportunity that was critical in mobilising equity investor GGEF to invest in Ayana.	0.76	High level of confidence that the hypothesis is true
Deal level	**Investment strategy**	BII's adjustment of its investment strategy (from 100% greenfield to allow for brownfield acquisitions as well) was critical to mobilise equity investors (NIIF and GGEF).	0.76	High level of confidence that the hypothesis is true
Deal level	**Structure, incentives & terms**	BII established Ayana's governance structure, and this influenced equity co-investors NIIF and GGEF's decision to invest.	0.84	High level of confidence that the hypothesis is true

In Benban, BII was a member of a consortium of IFIs (including DFIs) without which the project would not have been possible, but within a structure designed by IFC, EBRD and the government. IFC and EBRD played key roles as IFIs: dealing with the government – there was a centralised negotiating process with the government and IFC/EBRD – to arrive at a tariff that all parties agreed was sustainable; managing their respective consortia; and bringing the deal to a financial close (Structure, incentives & terms). BII was seen as the most important bilateral DFI in the group in the IFC-led consortium. Benban would have happened without BII but would have been considerably smaller (Finance supply). For example, IFC consortium member and Austrian DFI OeEB was unable to obtain board approval before the deadline date for the close of the second FiT. BII provided bridge financing of $10 million, without which OeEB would not have been able to make the investment – there were no alternative lenders at this time (Finance supply).

IFC withdrew from the first iteration of the Redstone project, reportedly due to an internal strategic shift away from CSP. Consequently, most of the consortium of lenders also walked away. In the second iteration, Redstone's technical partner, ACWA Power, brought in AfDB as the lead arranger. BII engaged very early on in the second iteration, and for AfDB, BII's presence was important, as it provided comfort to other DFIs in re-entering the deal. As well as European DFIs, this included the DBSA, who - like AfDB - in 2014 had concluded that Redstone was not bankable.

4.3.2. BII's role in mobilising commercial finance

Prior to Ayana's equity sale, BII mobilised significant debt co-investment. Commercial debt investors were given confidence first by BII's and then by NIIF's presence in Ayana, as both committed to remain invested for the duration of the debt tenure (Market signalling performance driver in the logic model). This BII/NIIF backing was reflected in the Reserve Bank of India's (RBI's) positive rating and the low cost of capital: ICRA Limited rates all of Ayana's different financing instruments between AA− and A1+.[75] In India the debt market for infrastructure is highly challenging, but NIIF has major debt providers as limited partners

[75] ICRA (2022) 'Ayana Renewable Power Private Limited: Rating reaffirmed for existing limits and assigned for enhanced limits'. https://www.icra.in/Rationale/ShowRationaleReport/?Id=111729

(LPs), which mitigates current and future risks (Co-investor introductions). The case study authors estimate that BII and NIIF have mobilised $500 million in debt to date.[76]

In Benban and Redstone, BII attracted commercial investors as part of consortia of DFIs and IFIs. In Benban, BII was a lender in the IFC consortium, which attracted equity investment of $170 million, most of which was from commercial investors (Finance supply). BII provided 14% of debt, leading to a pro rata share of mobilised equity of $24 million.

Generally speaking, in South Africa commercial banks can supply long-tenor loans of up 20 years. Redstone, however, carried significant technology risks and was too large for commercial banks to absorb alone. In 2014 Solar Reserve, the technical partner for Redstone at that time, came to prominence with the Crescent Dunes facility in Nevada, which used similar technology to Redstone. Crescent Dunes, however, had experienced significant technical issues, which made it a poor reference case. A number of commercial banks saw the technology risk as too high for that reason.

In the second iteration of Redstone, with a new technical partner, ACWA Power, AfDB saw it could have high additionality on a commercial basis. The enhanced bankability of Redstone, with backing from AfDB, BII and other DFIs, then attracted commercial lenders Absa, Investec, Nedbank and Sanlam to the project. BII reportedly played an important bridging role between these public and private actors, whereby it was seen as more commercially minded than other DFIs.

4.4. Findings: Demonstration effects

As explained in section 3, the findings discussed below are 'potential' demonstration effects based on the best available evidence that there is likely to be a demonstration effect. .

4.4.1. Project scale and construction

Ayana and Benban are comparable in scale, with similar levels of new capacity built or intended (1.5GW–2GW), whereas Redstone is on a much smaller scale (100MW). Both projects have a potential demonstration effect.

Benban was the largest solar facility in the world at the time of construction, resulting in a potential demonstration effect that a facility on this scale can be constructed on time and to budget in a country that had never completed a major renewable energy project before (this potential demonstration effect was enabled by the performance driver Political stability in the logic model). As noted above, Egypt's autocratic government[77] made it possible to push through a large-scale project.

The Ayana example demonstrated that it is possible to successfully operate an open-ended business model (a platform), comprising both greenfield and mergers and acquisitions (M&A), although it should be noted that these mixed investment strategies (greenfield and M&A) were present in relation to renewable energy platforms in India prior to Ayana's existence/ influence (Investment strategy). BII created Ayana by seeking to maximise greenfield projects – this remained BII's intention, but the equity sale to NIIF and GGEF led to a change in strategy that also allowed for M&A. NIIF took a commercial view and was agnostic on greenfield as opposed to acquisitions, but it saw the latter as essential to enable rapid growth.

[76] The case study authors based this estimate on the amount of equity invested and the debt–equity ratios of the project.

[77] Britannica (undated) 'Return to authoritarianism'. https://www.britannica.com/place/Egypt/Return-to-authoritarianism (accessed 29 June 2023)

4.4.2. Tariffs and offtakers

In important ways, Egypt represents the transition that other developing countries would like to see, beginning with a FiT with relatively high tariffs to encourage investment in renewables, before moving to successful auctions and lower tariffs. Beginning with a FiT is necessary in the absence of a track record that would support credibility and hence the investor demand needed for an auction to work. Once a FiT is proven to work, a country can transition to reverse auctions / competitive tenders, resulting in relatively lower tariffs, set at a rate that is both profitable for investors and affordable for the offtaker.

Table 5. Effects of different tariff structures

Tariff structure	Effect on renewable energy market
FiT	FiTs are a government method to mobilise investment in renewable energy production by guaranteeing an above-market price to IPPs, usually in nascent renewable energy markets.
Reverse auctions	Reverse auctions are a government method to secure the lowest competitive price for renewable energy; this assumes that a renewable energy market is more mature and that a certain amount of mobilisation of private sector investment has already occurred.

In order to establish credibility in a context where there is no track record (which can apply to government agencies or the use of a new technology), a generous tariff might be needed to attract first-time investors. The Benban project, which was novel not only in Egypt but globally because of its unprecedented size, required two FiT rounds to get right. Although the second round had lower tariffs than the unsuccessful first ($8.4c/kWh as opposed to $14.3c/kWh in the first FiT round), this was still quite generous at the time. Importantly, it was also more sustainable for the government to maintain than the extremely high price offered in the first round. This second-round tariff (combined with other important changes, particularly the switch from domestic to international arbitration) was enough to entice international investors to the project.

The success of the project was due, in large part, to finding a tariff and a set of supporting arrangements that both the government and investors found acceptable. The timely payments from the offtaker (government) de-risked the investment, which attracted subsequent investors into Benban, because this proved the Egyptian government would follow through on commitments. Since the success of Benban, Egypt has shifted its policy towards competitive auctions instead of FiTs, with tariffs falling sharply. The timeliness of Benban payments may have motivated subsequent investors into Benban, and created a potential demonstration effect that could encourage other investors to make renewable sector investments in Egypt (Structure, incentives & terms; Backwards/forwards linkages).

India, unlike Egypt, does have a track record in solar power, and uses reverse auctions rather than FiTs; however, at state level there have been numerous payment issues with insolvent DISCOMs. In addition, at state level there have been various attempts to renegotiate agreed tariffs, often under political pressure to do so: states postponed planned auctions when global prices were falling, so as to benefit from these lower prices in the future. In Ayana's case, the solution has been to bypass state DISCOMs through central rather than state auctions and central PPA contracts. A resulting potential demonstration effect is that a renewable energy project in India can avoid offtaker payment issues through central auctions (Backwards/forwards linkages).

For more than a decade in South Africa, renewable energy capacity has been procured at increasingly low rates through bid windows (competitive auctions). Reverse auctions are a way of building renewable energy capacity at the lowest cost, and the South African example

has therefore been very influential, with auctions now commonly used across the world. Redstone is different from other renewable projects in the country, however, with CSP technology (rather than the government's creditworthiness) being unproven in the country. This heightened risk has resulted in a high tariff for Redstone. Negotiations between ACWA Power and Eskom to agree a tariff proved difficult, not least because of high generation costs at Redstone relative to other forms of renewable energy generation, as well as technology risk. ACWA and Eskom resolved negotiations when ACWA agreed to lower the tariff to $124/MWh. This new price was still high enough to offset risk for ACWA, and although it is still high compared to alternatives, it has been lowered enough for Eskom to consider the price sustainable. This is a potential demonstration effect that it is possible to reach financial close with a higher tariff when investing in a new technology in South Africa (Structure, incentives & terms).

4.4.3. ESG and BI

Both Ayana and Benban have potential demonstration effects in their approaches to BI and Health & Safety respectively.

BII designed and implemented Ayana's ESG framework. One of the rationales for establishing a BII-owned platform is that robust ESG and BI systems could be built in from the outset. BII trained the whole Ayana team on these issues and designed key systems. Ayana has notably strong policies on (i) land acquisition (for example all payments are direct to farmers) and (ii) community engagement (for example focusing on sustainable livelihoods rather than grants). Poor BI practices are common in the Indian renewables sector, but Ayana has upheld high standards. After the equity sale, BII retained the position as chair of ESG/BI and impact-related committees for Ayana. BII/Ayana's approach to BI is unusually robust, particularly for a vehicle of this scale.

Ayana's case proved it is possible to succeed commercially in India with high BI standards. This potential demonstration effect may lead to changes in other platforms' approaches (designed with a similar deal structure) to BI in India (ESG and BI). NIIF is key to future influence/demonstration effects: it is commercially focused but states that it is committed to an ESG/BI agenda and greenfield where good returns can be made.

In Egypt, health, safety, environmental and social (HSES) standards were very low before Benban, but this has since changed. EBRD undertook and funded an initial strategic Environmental and Social Impact Assessment (ESIA) for the whole park, and BII worked with IFC/EBRD to develop a common E&S monitoring system. BII took the lead with IFC on E&S issues in their consortia: BII helped resolve worker health and safety issues; and BII also saw the need for, and funded, more project E&S monitoring. BII identified the need to work with local regulators and embed IFC Performance Standards (PS) and then funded the training of local regulators on PS auditing and monitoring. BII used technical assistance funding to support these activities and those mentioned previously, and was seen as having a major impact on E&S standards in Benban. This case suggests that high HSES standards are compatible with efficient construction and profitable operations in Aswan, creating a potential demonstration effect for other investors (ESG and BI).

In Redstone, BII co-designed Redstone's E&S approach and reportedly was able to influence the commercial actors in areas such as E&S. ACWA Power agreed that it adopted a stronger approach to E&S than it had in the past, and that BII was at the forefront of those that influenced it in this regard. This resulted in a potential demonstration effect that a project can reach financial close with strong E&S (ESG and BI).

4.4.4. Financial success

Ayana and Benban have the potential for demonstration effects arising from their commercial success to attract more renewable energy investment to Egypt and India.

In both Ayana and Benban the level and certainty of revenues are the main drivers of performance, and these are determined by factors at the investment climate level. For Benban, these create uniform risks for the whole park – that is, all the projects succeed or fail. For Ayana, risks vary from deal to deal, depending on whether they are greenfield or M&A, whether they are state or centrally contracted, and which state is involved if the contract is at this level.

Ayana's commercial success has a potential demonstration effect for potential investors in Indian renewables, showing the profitability of greenfield developers – but only where projects are carefully selected, and where risks are mitigated. In this case, this was done through (i) BII's role in Ayana governance, which influenced equity and debt investors' decisions to invest by de-risking investments, and (ii) the involvement of a well-connected shareholder - NIIF (Market signalling).

Benban demonstrated that it can be run profitably, enhancing Egypt's reputation and increasing appetite for greenfield investments in the country (Awareness raising). Benban also demonstrated that a domestic/international currency split is possible with a volatile domestic economy (Capital market development). The risk-adjusted returns – as a result of the combination of profitability and returns because of the currency split – generated at Benban led to more solar investment in Egypt,[78] with the tariffs needed to attract this investment far lower than in the Benban deal.

Redstone is the only one of the three projects promoting a 'new' technology (CSP) – that is, new in the South African context. CSP remains the most expensive renewable technology by some distance. There have been significant cost reductions, but not as large as those seen with wind and solar PV. For some – such as ACWA Power – this is because CSP has not been as widely deployed as these other technologies, and so has not benefited to the same extent from economies of scale and cost-reducing technical improvements.

Although technology is a key component of cost, financing is as important. In this regard, Redstone has faced high financing costs due to the relatively unproven nature of the technology, at least in a South African setting. If the facility performs as hoped, perceptions of risk will change and there will be an opportunity to refinance at lower costs, enabling tariff reductions. Redstone will need to demonstrate that its CSP technology can perform well relative to other technologies (for example compared to solar PV with battery) and can generate the anticipated returns for debt and equity investors. Facilities of this kind generally take three years to ramp up to full production, so we would expect to see the potential for refinancing arise after this point.

Table 6 (next page) summarises the findings on potential demonstration effects above.

[78] The case study found a 'Very high' level of confidence that the hypothesis 'Profitability of Benban led to more and cheaper investment in solar in Egypt' is true.

Table 6. Potential demonstration effects found in each case study

Investment feature	Performance drivers	Ayana	Benban	Redstone
Project scale and construction	Political stability; Investment strategy	It is possible to successfully operate an open-ended business model comprising greenfield and M&A.	Financial close can be reached and construction can be completed on time and to budget for a solar park of this scale.	Less applicable given Redstone's smaller size and the fact that its construction phase is not complete
Tariffs and offtakers	Structure, incentives & terms; Backwards/ forwards linkages	A renewable energy project in India can avoid offtaker payment issues through central auctions.	Return on investment is possible because government will honour FiT price in contracts through timely payments.	It is possible to reach financial close with a higher tariff when investing in a new technology in South Africa.
ESG and BI	ESG and BI	It is possible to succeed commercially in India with high BI.	High HSES standards are compatible with efficient construction and profitable operations in Aswan.	Renewable energy projects in South Africa can reach financial close with strong E&S.
Financial success	Awareness raising; Capital market development	Greenfield developers can make money when risks are mitigated through deal governance and market signalling.	Greenfield developers can make money and a domestic/ international currency split is possible – both enhance Egypt's reputation and increase appetite for greenfield investments in the country.	Redstone will need to demonstrate that its CSP technology is performing well relative to other technologies and can generate the returns anticipated.

5. Lessons for mobilising investment in renewable energy

The lessons described below are based on the case study findings and seek to capture the success factors involved in mobilisation and creating demonstration effects in renewable energy investments. Recommendations are provided to draw out the usefulness of each lesson for BII. These lessons could also be useful for governments, donors, developers and investors in the renewable energy sector.

The first five lessons – covering in-country partners, project scale, tariffs, reaching financial close (which contains lessons for direct mobilisation), ESG and BI – draw on findings from all three case studies, whereas the final lesson – on longer-term financial performance – is based on findings from Ayana and Benban only and discusses the potential for demonstration effects from Redstone. This sixth lesson centres on strong financial performance flows from lessons 1 to 5 and is the most important factor for successful demonstration effects.

LESSON 1:
Credible, public sector country partners are essential to renewable energy project success and subsequent demonstration effects.

Project success, and thus the potential for demonstration effects, is dependent on the involvement of a public sector country partner with the credibility and political influence to drive the project forward: in the renewable energy sector, they can exert their influence in the regulatory environment on tariff-setting, access to land and potential obstacles during construction, and timely payments to IPPs.

In each of the three case studies, the projects benefited from an in-country partner that had the credibility and/or authority to keep the project moving and remove obstacles as they arose. In the absence of such a partner, a DFI such as BII would likely struggle to reach financial close with any similar project, although such partners come with potential reputational risks, given the countries in which BII operates.

In India, Ayana benefited both from auctions and contracts with the federal government rather than with individual states, and from co-investor NIIF's connections to the Government of India (GoI) as a sovereign wealth fund. The GoI has enabled Ayana to circumvent state-level challenges with central contracts delivered through reverse auctions. NIIF influenced the government in terms of removing obstacles to particular deals, although the details were unspecified. NIIF's valuable connections to GoI have also enabled Ayana's access to debt on favourable terms in a highly challenging debt market for infrastructure in India.

The Egyptian central government was integral to getting the Benban project agreed and built, making it a financial success story. The government was the key driver of Benban through the evolving FiT programme, including the selection of the project location. The government ensured the successful delivery of Benban, removing obstacles as needed. Upon Benban's completion, the government also followed through on its commitment to pay the agreed tariff, demonstrating its credibility to potential investors (a potential demonstration effect).

In the Redstone project, there has been presidential influence from the South African president and direct intervention by the government of Saudi Arabia, both of which helped Redstone to reach financial close. In April 2018 Eskom finally signed the PPA for Redstone, along with 27 other PPAs and Investment Agreements. High-level interventions from the government of Saudi Arabia, supported by AfDB, including at presidential level, emphasised

the importance of Redstone as a symbol of strategic cooperation and were important factors in the PPA being agreed and the project being approved.[79]

Recommendation for BII: Make sure credible public sector country partners are on board whenever possible. Identify the public agency (such as NIIF in the case of Ayana) which has the strongest influence over government agencies. For example, in India, support efforts to improve credibility and creditworthiness of DISCOMs.

LESSON 2:
The scale of project that can be delivered successfully, and that can therefore generate positive demonstration effects and future mobilisation, is dependent on market context and political economy in a country.

Rather than taking a 'one size fits all' approach, therefore, BII should tailor project sizes and structures to local conditions.

Benban and Ayana projects have built (or aim to build) similar levels of new capacity – 1.5GW–2GW. This has been done in very different ways, however. Benban delivered in a 'big bang' with one large-scale project; Ayana has grown over time through building or acquiring smaller facilities.

The complexities and challenges of the Indian market – when compared to the extent to which central government in Egypt was able and willing to override these challenges – make a project on the scale of Benban, or the construction of equivalent generating capacity through smaller greenfield projects in a reasonable time frame, impossible.

Benban provided a model for MDBs, IFIs and DFIs for how to deliver GWs of electricity in a single facility. However, many of those involved in Benban highlight the extreme difficulty of delivering a project on this scale and think that smaller projects are more feasible in many cases. A project of this scale only makes sense in populous countries and requires a minimum level of grid quality to be able to incorporate intermittent energy at this level.

Recommendation for BII: Structure projects to match local market and political economy conditions. In developing markets, the ideal approach would be to undertake a 'green growth diagnostics' analysis to assess this and design projects accordingly.

LESSON 3:
At country level, tariffs need to change over time to build renewable energy markets, and at the project level they need to be sustainable for all parties over the life of a project. This will increase the likelihood that the project is deemed to be a success by investors, and therefore the likelihood that a positive demonstration effect will be created, mobilising further investment in the country.

Tariffs may need to be kept high initially to establish a country's track record for investors, including the credibility of its offtakers. The case of Benban has proven that this will have a demonstration effect resulting in indirect mobilisation. Once this is established, tariffs can

[79] Based on a series of semi-structured interviews with: BII, ACWA Power Ltd, AfDB, the DBSA, and Investec SA. Itad (September 2022) *Baseline Report: Redstone Concentrated Solar Power: Baseline study*. Author: Stephen Spratt.

be lowered over the long term but must continue to deliver attractive returns. At the same time, tariffs need to be low enough to be sustainable for the public agency to fund over the long term and to avoid the emergence of political pressure to renegotiate. There is a risk that overly high tariffs are offered to attract investors, but they cannot be sustained (as in the first round of the Egyptian FiT). A mechanism is needed to arrive at this sustainable rate, as it will not simply arise naturally. Without this mechanism, both parties will attempt to push the tariff up or down, with the result representing the balance of power between them rather than a sustainable rate. In Benban, this mechanism was the centralised negotiating process with the government and IFC/EBRD.

Recommendation for BII: Ensure there is or develop a mechanism to arrive at an acceptable, sustainable tariff. For example, in Egypt, collaborate with MDBs, particularly EBRD, on implementing transition, with a focus on addressing key gaps where BII has a comparative advantage, particularly with respect to grid enhancement and market structure (tariffs in particular). This increases the chances that successful projects will be created and will thus have demonstration effects.

LESSON 4:
IFIs and DFIs are essential in mobilising both public and commercial finance and thus reaching financial close when perceived risks are high.

In cases where investors see potential risk (whether an investment is in a new technology or in a new country context), having IFIs/DFIs invested provides essential finance, credibility and confidence in the project's bankability to other IFIs and commercial investors.

In all three cases, the deals would not have been possible without heavy involvement and leadership from IFIs and/or DFIs, whose early presence in a deal gave credibility to the project's design and feasibility. This is especially true in the case of the Ayana platform: BII established Ayana, putting in place its governance structure, management team and strategy, thereby mobilising investment from GGEF and NIIF.

The central role of IFIs in these projects appeals to commercial investors who are principally concerned with mitigating risk (debt providers) and generating good returns (equity investors). In all three case studies, BII co-mobilised commercial debt alongside other public finance agencies/IFIs (NIIF in Ayana, IFC in Benban and AfDB in Redstone).

Recommendations for BII: Identify the IFI/DFI and or public finance agency which can provide most reassurance to public and private investors in a particular country, bringing them into a consortium/deal to enable mobilisation. Continue to replicate the approach whereby BII establishes platforms with commercially viable but developmentally impactful objectives[80] – and then attract strategic local partners to drive the platform forwards.

[80] Note BII has already created other platforms (e.g. Gridworks, MedAccess).

LESSON 5:
IFI involvement improves ESG and BI practices, which can produce valuable demonstration effects if such practices prove to be a benefit and not a cost.

IFIs, and BII in particular, are influential in establishing good ESG and BI practices on projects, which can also influence the practice of private actors on the projects and have a demonstration effect on actors in the wider ecosystem, where they can be shown not to adversely affect a project's commercial success. This is the demonstration effect that is most important for investors, who may be concerned that too much emphasis on ESG or BI could have a negative effect on performance. Showing this is not the case, therefore, creates a demonstration effect that investors should not be resistant to incorporating high standards in their projects.

In all three cases, BII played a central role in the design of ESG processes – either in collaboration with other DFIs (with AfDB in Redstone and with IFC/EBRD in Benban) or as the sole implementer (in Ayana). BII's work in ESG has had a positive demonstration effect, influencing other project stakeholders, both public (for example NIIF in Ayana) and commercial (for example ACWA Power in Redstone). In Benban there has also been a positive local spillover effect from BII's ESG work (see findings in section 4.4.3). The Ayana and Benban cases indicate a potential demonstration effect that good ESG is compatible with project delivery, but Redstone is yet to do this.

Recommendation for BII: Keep investing in good ESG and BI practices, and point to past success stories (e.g. Benban) to illustrate the value of this to other investors.

LESSON 6:
Strong financial performance is essential to the creation of good demonstration effects and subsequent mobilisation of private investment, but this focus needs to be carefully balanced with other development objectives.

Strong financial performance is essential, and DFIs should take that as a starting point and then try to maximise the development objectives they can achieve that remain compatible with this.

The financial performance of a renewable investment is dependent on: (i) the facility generating power as predicted; (ii) the technology performing well relative to other technology; and (iii) offtakers honouring revenue commitments. This strong financial performance is crucial to leveraging additional investment, and can create powerful demonstration effects – as evidenced by Benban – if it can be achieved with high ESG and BI standards and strong development impacts.

Recommendation for BII: Continue to prioritise development impact and high ESG and BI standards alongside commercial performance to mobilise finance from impact investors in addition to those only interested in commercial returns.

Table 7 summarises lessons from the case studies and the recommendations for BII drawn from these lessons.

Table 7. Summary table of case study lessons and recommendations

Lessons from case study findings	Recommendations for BII
LESSON 1: Credible, public sector country partners are essential to renewable energy project success and subsequent demonstration effects.	Make sure credible public sector country partners are on board whenever possible. Identify the public agency which has the strongest influence over government agencies.
LESSON 2: The scale of project that can be delivered successfully, and that can therefore generate positive demonstration effects and future mobilisation, is dependent on market context and political economy in a country.	Structure projects to match local market and political economy conditions. In developing markets, the ideal approach would be to undertake a 'green growth diagnostics' analysis to assess this and design projects accordingly.
LESSON 3: At country level, tariffs need to change over time to build renewable energy markets, and at project level they need to be sustainable for all parties over the life of a project. This will increase the likelihood that the project is deemed to be a success by investors, and therefore the likelihood that a positive demonstration effect will be created, mobilising further investment in the country.	Ensure there is or develop a mechanism to arrive at an acceptable, sustainable tariff.
LESSON 4: IFIs and DFIs are essential in mobilising both public and commercial finance and thus reaching financial close when perceived risks are high.	Identify the IFI/DFI and/or public finance agency which can provide most reassurance to public and private investors in a particular country, bringing them into a consortium/deal to enable mobilisation.
LESSON 5: IFI involvement improves ESG and BI practices, which can produce valuable demonstration effects if such practices prove to be a benefit and not a cost.	Keep investing in good ESG and BI practices, and point to past success stories (e.g. Benban) to illustrate the value of this to other investors.
LESSON 6: Strong financial performance is essential to the creation of good demonstration effects and subsequent mobilisation of private investment, but this focus needs to be carefully balanced with other development objectives.	Continue to prioritise development impact and high ESG and BI standards alongside commercial performance to mobilise finance from impact investors in addition to those interested only in commercial returns.

6. Conclusions

The resources of MDBs and IFIs alone are only a fraction of funds needed to fill the funding gap of $1.35 trillion per year in investment for the renewable energy sector in emerging and developing economies. This synthesis report has shown that IFIs and DFIs such as BII need to create positive demonstration effects as well as commercial returns and development impact, in order to leverage the additional funding needed.

The transition to sustainable energy systems tends to follow a pattern. Given the need to attract long-term investment and the dependency of revenues on payments from public bodies (offtakers), establishing confidence in the offtaker is perhaps the most important first step. Often this is achieved through a premium, long-term FiT, often supported by some kind of guarantee from an international agency. From the findings, Benban had this potential demonstration effect for mobilisation. Having established confidence, countries can auction energy concessions to private actors, securing energy supplies at much lower levels. In higher-income countries there can then be a transition to a public–private partnership model, where greater state involvement can significantly lower the cost of capital and can reduce logistical risks.

The cases in India, Egypt and South Africa followed different routes but, as this paper has shown, there are some common lessons behind the positive demonstration effects they created. Most crucial is the demonstration effect from strong financial performance, which is a cumulative result of having credible country partners, successful project delivery, sustainable tariffs, and the involvement of DFIs and IFIs to reach financial close and ensure high ESG and BI standards.

Positive demonstration effects have the potential to mobilise sufficient funds into projects with development impact that adhere to good ESG and BI standards while also generating returns for investors.

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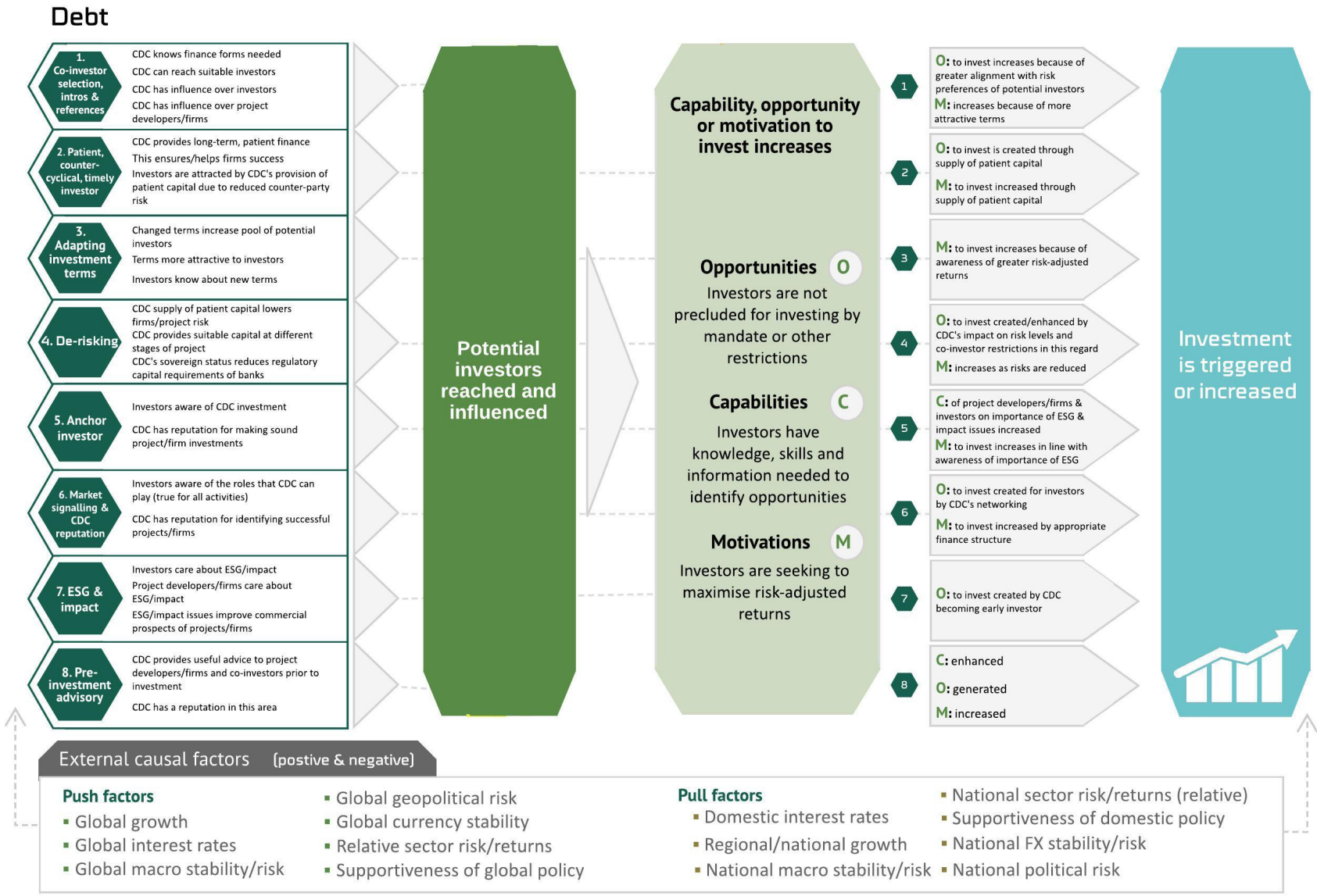
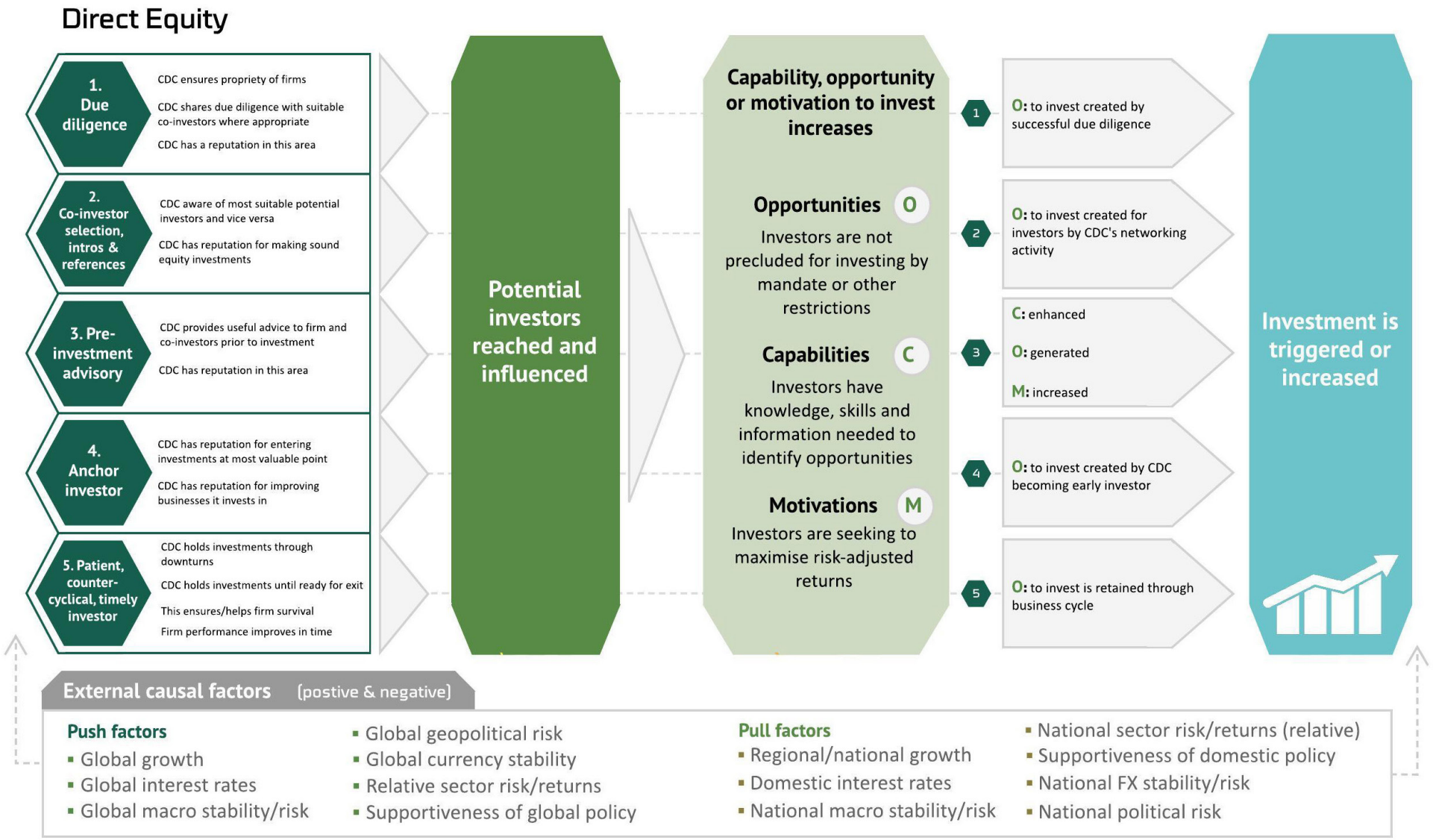
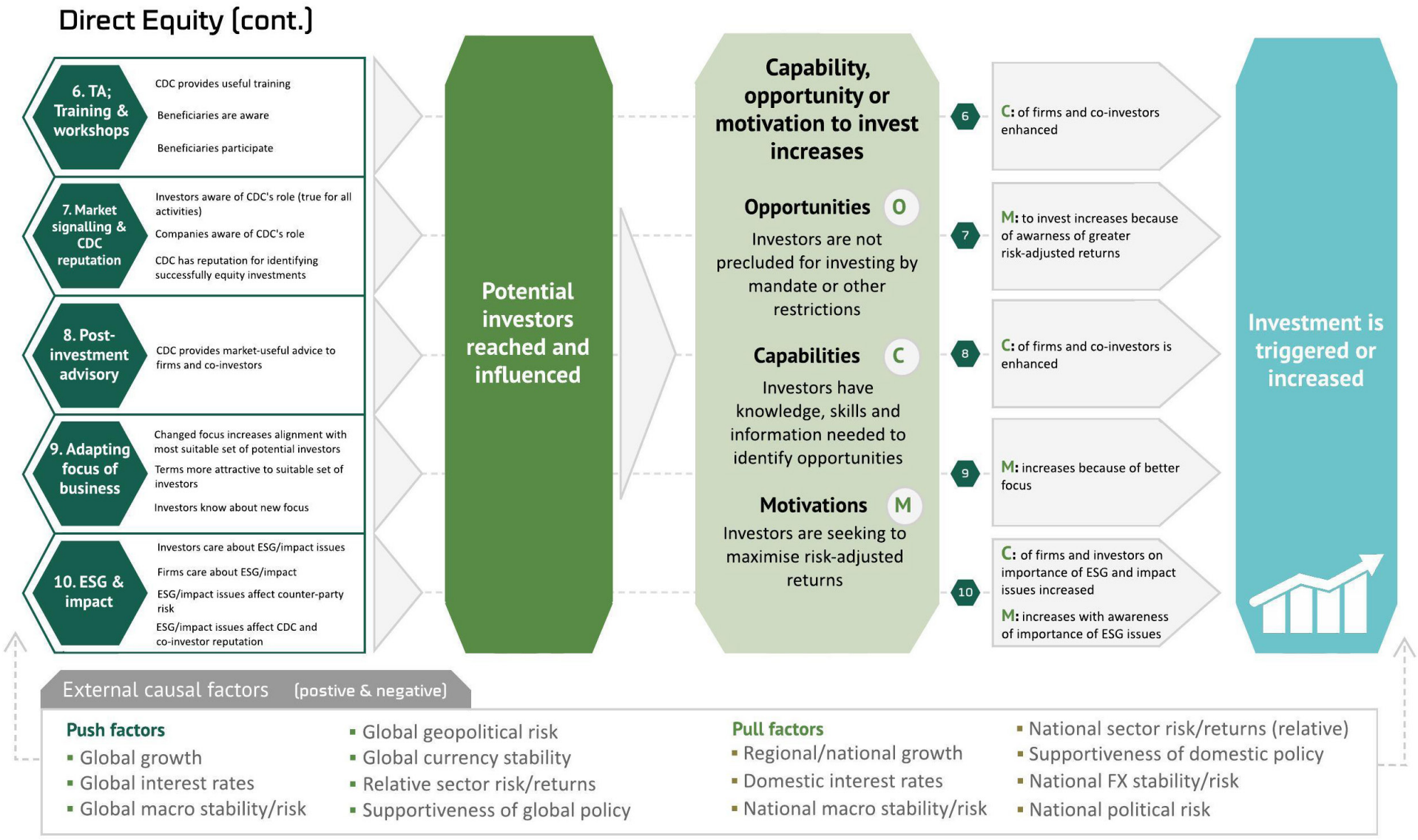
Annexes

Annex 1: Direct mobilisation logic models from LMS




Direct Equity
1. Due diligence
CDC ensures propriety of firms
CDC shares due diligence with suitable co-investors where appropriate
CDC has a reputation in this area
2. Co-investor selection, intros & references
CDC aware of most suitable potential investors and vice versa
CDC has reputation for making sound equity investments
3. Pre-investment advisory
CDC provides useful advice to firm and co-investors prior to investment
CDC has reputation in this area
4. Anchor investor
CDC has reputation for entering investments at most valuable point
CDC has reputation for improving businesses it invests in
5. Patient, counter-cyclical, timely investor
CDC holds investments through downturns
CDC holds investments until ready for exit
This ensures/helps firm survival
Firm performance improves in time
Potential investors reached and influenced
Capability, opportunity or motivation to invest increases
Opportunities O
Investors are not precluded for investing by mandate or other restrictions
Capabilities C
Investors have knowledge, skills and information needed to identify opportunities
Motivations M
Investors are seeking to maximise risk-adjusted returns
1
O: to invest created by successful due diligence
2
O: to invest created for investors by CDC's networking activity
3
C: enhanced
O: generated
M: increased
4
O: to invest created by CDC becoming early investor
5
O: to invest is retained through business cycle
Investment is triggered or increased
External causal factors (postive & negative)
Push factors
Global growth
Global interest rates
Global macro stability/risk
Global geopolitical risk
Global currency stability
Relative sector risk/returns
Supportiveness of global policy
Pull factors
Regional/national growth
Domestic interest rates
National macro stability/risk
National sector risk/returns (relative)
Supportiveness of domestic policy
National FX stability/risk
National political risk


Direct Equity (cont.)
6. TA; Training & workshops
CDC provides useful training
Beneficiaries are aware
Beneficiaries participate
7. Market signalling & CDC reputation
Investors aware of CDC's role (true for all activities)
Companies aware of CDC's role
CDC has reputation for identifying successfully equity investments
8. Post-investment advisory
CDC provides market-useful advice to firms and co-investors
9. Adapting focus of business
Changed focus increases alignment with most suitable set of potential investors
Terms more attractive to suitable set of investors
Investors know about new focus
10. ESG & impact
Investors care about ESG/impact issues
Firms care about ESG/impact
ESG/impact issues affect counter-party risk
ESG/impact issues affect CDC and co-investor reputation
Potential investors reached and influenced
Capability, opportunity or motivation to invest increases
Opportunities O
Investors are not precluded for investing by mandate or other restrictions
Capabilities C
Investors have knowledge, skills and information needed to identify opportunities
Motivations M
Investors are seeking to maximise risk-adjusted returns
6
C: of firms and co-investors enhanced
7
M: to invest increases because of awarness of greater risk-adjusted returns
8
C: of firms and co-investors is enhanced
9
M: increases because of better focus
10
C: of firms and investors on importance of ESG and impact issues increased
M: increases with awareness of importance of ESG issues
Investment is triggered or increased
External causal factors (postive & negative)
Push factors
Global growth
Global interest rates
Global macro stability/risk
Global geopolitical risk
Global currency stability
Relative sector risk/returns
Supportiveness of global policy
Pull factors
Regional/national growth
Domestic interest rates
National macro stability/risk
National sector risk/returns (relative)
Supportiveness of domestic policy
National FX stability/risk
National political risk

Annex 2: Bayesian updating results for Ayana and Benban case studies

Ayana: hypotheses for BII influence at the deal level (that is, on Ayana's characteristics)

Drivers	Hypothesis	Confidence level (0–1)	Qualitative descriptor
Investment strategy	BII created Ayana's investment strategy (with a focus on greenfield renewable energy investments), which was influential in the decision of equity co-investors NIIF and GGEF to invest in Ayana.	**0.1**	Very high confidence that the hypothesis is false
	BII's adjustment of its investment strategy was critical to mobilising equity investors (NIIF and GGEF).	**0.76**	High confidence that the hypothesis is true
	BII maintained an investment focus on greenfield, which was critical to equity co-investor NIIF investing more in greenfield.	**1.0**	Very high confidence that the hypothesis is true
	BII maintained an investment focus on greenfield, which was critical to equity co-investors GGEF investing more in greenfield.	**0.96**	Very high confidence that the hypothesis is true
Structure and terms	BII established Ayana's governance structure, and this influenced equity co-investors NIIF and GGEF's decision to invest.	**0.84**	High confidence that the hypothesis is true
Management quality	BII recruited its preferred CEO, CFO candidates: the reputation of the members of this management team influenced equity co-investors NIIF and GGEF to invest.	**0.84**	High confidence that the hypothesis is true
	The strength of the BII-recruited Ayana management team influenced debt co-investors to invest because the management team was of high quality, with a CEO with credibility.	**0.76**	High confidence that the hypothesis is true
Finance supply	BII has enough liquidity to back Ayana, and this influenced debt co-investors' investment decisions.	**0.82**	High confidence that the hypothesis is true
	BII created Ayana as an anchor investor (as initial 100% equity investor), and this created an investment opportunity that was critical in enabling equity investment earlier than would otherwise have occurred from NIIF.	**0.76**	High confidence that the hypothesis is true

Due diligence	BII's role in Ayana governance influenced debt investors' decisions to invest by de-risking investments.	**0.95**	Very high confidence that the hypothesis is true
	BII's role in Ayana governance influenced equity investors' decisions to invest by de-risking investments.	**0.89**	High confidence that the hypothesis is true
ESG/BI	Ayana's BII-influenced approach to ESG/BI has influenced equity co-investors' decisions to invest in Ayana.	**0.84**	High confidence that the hypothesis is true

Hypotheses on Ayana's market influence (demonstration effects)

	Influence areas	Hypothesis	Confidence level (0–1)	Qualitative descriptor
Deal level	**Investment strategy**	Renewable energy platforms in India had greenfield and acquisitions (mixed) investment strategies prior to Ayana's existence/influence.	**1.0**	Very high confidence that the hypothesis is true
	Finance supply	Ayana's establishment influenced other investors to invest in similar platforms.	**0.5**	No confidence in whether hypothesis is true or false
	ESG	Ayana's BII-influenced approach to ESG has influenced the ESG processes of NIIF and its debt co-investors: in turn, NIIF and its debt co-investors have influenced the ESG processes of other investors in the sector in India.	**0.51**	Low confidence that the hypothesis is true
		Ayana's approach to ESG has led to changes in other platforms' approaches to ESG.	**0.64**	Low confidence that the hypothesis is true
	Business integrity	Ayana's BII-influenced approach to BI has influenced BI processes of other investors in the sector in India.	**0.69**	Low confidence that the hypothesis is true
		Ayana's approach to BI has led to changes in other platforms' approaches to BI.	**0.76**	High level of confidence that the hypothesis is true
Mobilising activities	**Market signalling**	Ayana's successful commercial performance has increased (influenced) the confidence of other equity investors in the sector.	**0.24**	High confidence that the hypothesis is false
		Ayana's successful commercial performance has increased the confidence of other debt investors in the sector.	**0.24**	High confidence that the hypothesis is false

Ayana: hypotheses for BII influence at sector and investment climate level, and for direct mobilisation

	Drivers	Hypotheses	Confidence level (0–1)	Qualitative descriptor
Sector level	**Human capital development**	Ayana, in partnership with BII and others, has implemented a solar power skills development programme, which has resulted in an improvement in human capital in the renewable energy sector in the target area.	**1.0**	Very high confidence that the hypothesis is true
	Backwards/ forwards linkages	Backwards linkages pose a risk because of the unpredictability of the prices of solar modules, which are sourced from China.	**1.0**	Very high confidence that the hypothesis is true
		Forward linkages pose a risk because most DISCOMs (power offtakers) are insolvent and there is a risk they will not pay for energy.	**1.0**	Very high confidence that the hypothesis is true
Investment climate	**Regulation**	NIIF's access to government and strategic influence in the sector played a role in enabling Ayana to overcome regulatory barriers, including land acquisition and contract sanctity.	**0.89**	High confidence that the hypothesis is true
Mobilising activities	**Market signalling**	BII played a market signalling role that influenced debt investors' decisions to invest in Ayana.	**0.76**	High confidence that the hypothesis is true
		Debt co-investors were influenced by NIIF's reputation in their decision to invest in Ayana.	**0.76**	High confidence that the hypothesis is true
	Co-investor introductions	BII's role in introducing equity investors influenced their decision to invest in Ayana.	**0.14**	High confidence that the hypothesis is false
		BII staff are part of a network of professionals in the Indian renewables sector, and this influenced equity investors to invest.	**0.77**	High confidence that the hypothesis is true
		After the equity sale, NIIF introduced debt investors to Ayana, which was critical in their decision to invest.	**0.73**	High confidence that the hypothesis is true

Hypotheses on direct influences over Benban's characteristics

Influence area	Hypotheses	Confidence level (0–1)	Qualitative descriptor
Structure and strategy	IFC and EBRD negotiated agreeable terms and structures resulting in projects reaching financial close.	**0.76**	High confidence that the hypothesis is true
	Negotiated terms and structures resulted in strong political will to reduce barriers to projects.	**0.69**	Low confidence that the hypothesis is true
	There was strong political will to complete Benban.	**0.77**	High confidence that the hypothesis is true
Finance supply	BII invested £93 million in nine projects in Benban, without which not all projects would have achieved financial close.	**0.8**	High confidence that the hypothesis is true
	BII underwrote financial commitment of other DFIs, without which projects would not have been financed.	**0.8**	High confidence that the hypothesis is true
ESG	Without BII involvement, ESG on Benban would have been less advanced.	**0.81**	High confidence that the hypothesis is true
	BII led on ESG aspects, which provided comfort for co-investors to invest.	**0.73**	High confidence that the hypothesis is true
Ecosystem & investment climate	BII finance increased the scale of Benban; scale of Benban led to a reduction of costs of solar assets.	**0.23**	High level of confidence that the hypothesis is false
	BII finance supply increased the scale of Benban; scale of Benban led to a reduction of costs.	**0.9**	Very high confidence that the hypothesis is true
	Investors in Benban were planning to invest in Egypt regardless of DFI efforts in Benban.	**0.3**	High level of confidence that the hypothesis is false

Benban: Demonstration effects (1): financial close could be reached on a project of this scale in Egypt

Demonstration area	Hypothesis	Confidence level (0–1)	Qualitative descriptor
Structure	Benban's structures have been replicated internationally.	**0.6**	Low confidence that the hypothesis is true
	Benban's structures have been replicated in Egypt.	**0.5**	No confidence in whether hypothesis is true or false
Capital market development	Demonstrated local currency component in PPA is bankable, leading to replication in Egypt.	**0.6**	Low level of confidence that the hypothesis is true

Demonstration effects (2): project on this scale could be built to time and budget

Demonstration area	Hypothesis	Confidence level (0–1)	Qualitative descriptor
Ecosystem	Benban had good HSES standards, and this influenced HSES in the region.	**0.6**	Low confidence that the hypothesis is true
	Benban had good HSES standards, and this influenced HSES in similar projects.	**0.31**	Low confidence that the hypothesis is false
Investment climate	Completion of Benban on time and to budget made investors more motivated to invest in Egypt.	**0.4**	Low confidence that the hypothesis is false

Demonstration effects (3): Benban proved project of this scale could be run profitably

Demonstration area	Hypothesis	Confidence level (0–1)	Qualitative descriptor
Structure	Tariff set at a rate that was both profitable for investors and affordable for the offtaker.	**0.85**	High confidence that the hypothesis is true
	Follow-on investors motivated to invest because Benban tariff made it attractive and profitable for acquisitions.	**0.89**	High confidence that the hypothesis is true
ESG	Follow-on investors motivated to invest in Benban as good ESG reduces risks.	**0.4**	Low confidence that the hypothesis is false

Demonstration area	Hypothesis	Confidence level (0–1)	Qualitative descriptor
Investment climate	Low confidence in offtakers is a barrier to investment.	**0.85**	High confidence that the hypothesis is true
	Timely payments from offtaker de-risked the investment, which attracted subsequent investors into Benban.	**0.84**	High confidence that the hypothesis is true
	Benban payments were timely, and this motivated investors to invest in Egypt.	**0.78**	High level of confidence that the hypothesis is true
Ecosystem	Profitability of Benban led to more and cheaper investment in solar in Egypt.	**0.99**	Very high level of confidence that the hypothesis is true

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