



BGFA Review of Financial Mobilization and Financing Trends

Final Report

May 2024

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Executive Summary

List of abbreviations and definition of terms

List of abbreviations

CAPEX: Capital expenditure
ESP: Energy service provider
FIs: Financial institution
FX: Foreign exchange

OGTF: Off grid task force
OPEX: Operating expenditure
PUE: Productive use of energy
SHS: Solar home system

SSA: Sub-Saharan Africa

Definition of terms

- **Capital under negotiation:** Funding that is currently under discussion between the ESP and the investor, but is yet to be formally finalized
- **Contracted company:** An ESP that has signed a funding contract with BGFA
- **Contracted leverage ratio:** The unrealized overall leverage ratio based on contracts with BGFA
- **Commercial financing:** Capital provided at market rates and on typical market terms¹
- **Concessional financing:** Capital provided on below-market terms by public or philanthropic investors to lower the overall cost of capital or to provide an additional layer of protection to private investors¹
- **Direct to scale:** Larger, better capitalized ESPs²
- **Launch to scale:** Smaller, typically locally owned ESPs²
- **Mobilized capital:** Refers to the aggregate co-financing consisting of total funding raised and/or committed
- **Overall leverage ratio:** Total public + private capital mobilized (both commercial and concessional) - follow on funding from BGFA / Total committed capital from BGFA
- **Planned capital:** Funding that an ESP intends to raise but has not yet initiated formal engagement with relevant investors
- **Portfolio:** Refers to the 29 ESPs that have been contracted into the BGFA program
- **Private financing leverage ratio:** Total private capital mobilized (both commercial and concessional) / Total committed capital from BGFA
- **Realized leverage ratio:** The actual overall leverage ratio based on actual co-financing mobilized by ESPs from financial institutions
- **Un-contracted company:** An ESP that is yet to sign a funding contract with BGFA but whose funding has been presented to the program's investment committee for approval

The purpose of this study is to assess barriers and opportunities to catalyzing private capital under the BGFA program

Purpose of study

This research seeks to assess the financial mobilization enabled by the BGFA program, with a specific emphasis on evaluating program effectiveness in leveraging private capital.

Key objectives include:



Evaluate BGFA's financial requirements and their appropriateness in relation to peer RBF programs



Understand fundraising experience and mobilization by energy service providers (ESPs) and identify opportunities for additional support from BGFA



Understand financing landscape from financial institutions (FIs), identifying key trends for financial institutions, and evaluate BGFA's additionality in reducing risk within the renewable energy sector



Assess effectiveness of BGFA's funding in catalyzing additional capital, and provide recommendations on data quality and methodology

Sector focus



6 Mini-grid ESPs



16 Solar Home System ESPs

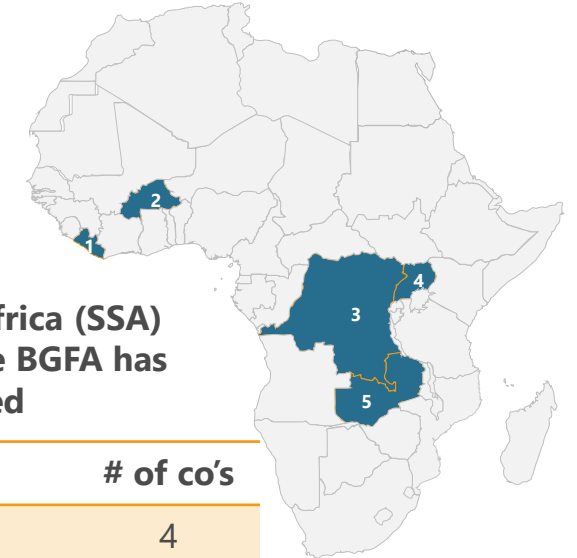


4 Productive Use of Energy ESPs



3 Battery Rental ESPs

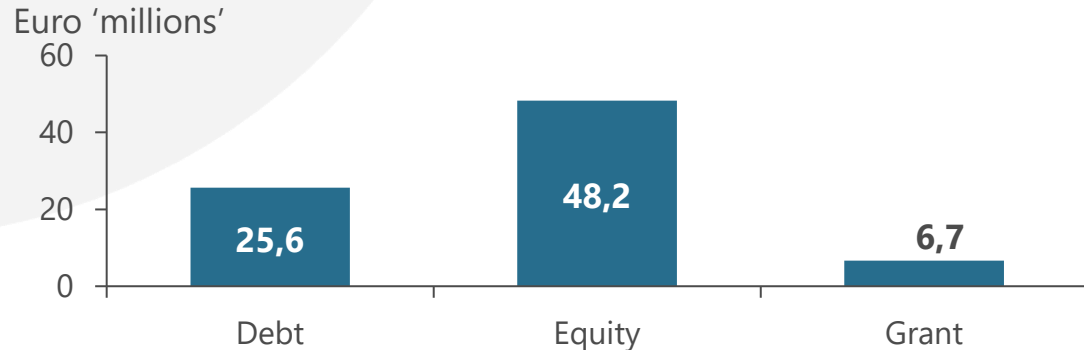
Geographical focus



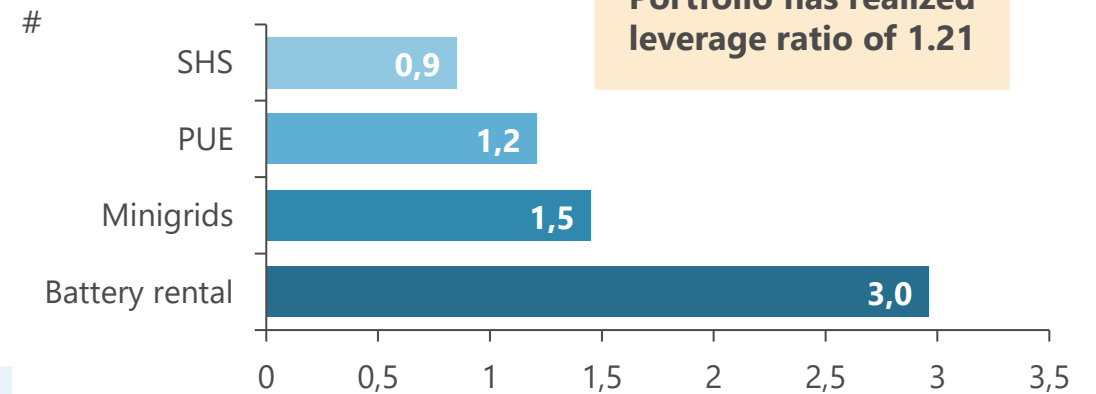
	Country	# of co's
1	Liberia	4
2	Burkina Faso	4
3	DRC	3
4	Uganda	8
5	Zambia	10
Total portfolio ESPs		29

Of BGFA's total portfolio, 20 have so far mobilized EUR 80.6M in co-financing, resulting in a portfolio leverage ratio of 1.21

Mobilized co-financing instruments^{1*}



Realized leverage ratio^{2*}



Realized leverage ratio

- Of BGFA's portfolio, 20 ESPs have secured funding commitments as of April 2024. This results in a realized leverage ratio of 1.65 when considering only the 20 companies, and 1.21 when including the entire portfolio
- Given that most companies only joined the portfolio in late 2022, many of these are still in the process of securing financing

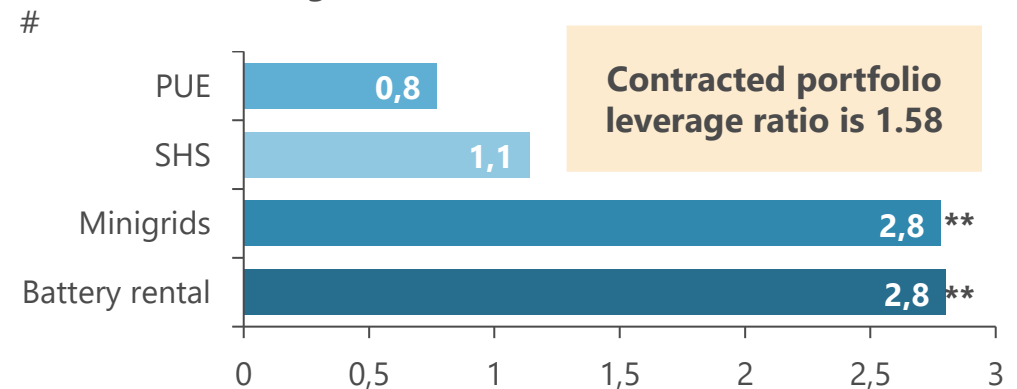
Contracted leverage ratio

- The portfolio has EUR 66.8M in funding committed from BGFA, resulting in 1.58 contracted leverage ratio across the portfolio

Funding landscape

- While many of the newer portfolio companies are expected to raise external financing, they face a challenging funding landscape characterized by limited equity and high cost of debt financing

Contracted leverage ratio*



We assessed the impact of BGFA funding on portfolio companies & in catalyzing follow-on investments from financial institutions

Portfolio companies acknowledge the positive signalling effect of the BGFA program¹

Enhances revenue potential

BGFA funding subsidizes project OPEX and CAPEX, resulting in cost savings to ESPs which are passed on to customers through reduced product costs. This enables ESPs to reach a wider customer base and enhance revenue potential

Enables scale

Advance payments provided to LS companies allows them to enter new markets, procure products, and initiate project construction. This accelerates their journey towards scale and achievement of set milestones, and enables them to leverage this traction during ongoing fundraising discussions

Boosts credibility

BGFA's financing provided many ESPs added credibility as achievement of set milestones is viewed positively as prudent use of funds and demonstrates the management's ability to deliver on projects, thereby attracting interest of financiers

Enables investment

TA refines understanding of crucial topics such as e-waste disposal, gender issues, and meeting BGFA reporting requirements;² also, TA facilitates refinement of company policies and processes, fostering continuous adherence to best practices that enable follow-on investments

Financial institutions echoed these sentiments...



Provides positive signaling to other investors: Positive signals attract investments, bolstering growth opportunities for companies



Demonstrates ESPs capacity to deliver on objectives: RBF funding boosts investor confidence by emphasizing measurable milestones, reducing perceived risk

...and acknowledged focus on additional factors in decision making

1

Operational factors and dynamics such as the availability of equity capitalization, management's capacity and competency, demonstrated traction, and unit economics

2

Long-term commercial viability and ability to sustain and scale operations without heavy reliance on grants

3

The quality **of the company's receivable portfolio** which determines its ability to make required debt repayments³

Notes: 1. Given the scope of our research, we did not delve into measuring the extent of affordability or scalability highlighted by the ESPs; 2. Many ESPs will strive to tailor their e-waste policies to fit local contexts, particularly in markets where e-waste policies are still in nascent stages of development; 3. The quality of the receivable portfolio is a key factor when assessing investments in SHS and PUE ESPs

We also identified broader market interventions that other stakeholders can adopt to solve various sector challenges

Sector challenge	Proposed recommendations
<p>Lack of fit for purpose capital to scale early-stage companies</p>	<ul style="list-style-type: none"> • Set up dedicated early-stage investment platforms focused on early-stage ESPs. • Deepening PUE financing facilities to help scale PUE ESPs through more intentional and dedicated financing allowing the growth of a sub-sector with the potential of improving customers' incomes
<p>High risk perception of ESPs</p>	<ul style="list-style-type: none"> • Establishment of partnerships with and provision of credit guarantees to local financial institutions • Establishment of lower cost hedging options/platforms that would effectively serve LS ESPs • Undertake targeted awareness campaigns aimed at mobilizing new capital providers to nascent sub-sectors such as PUE
<p>Lack of nuanced support provided to ESPs</p>	<ul style="list-style-type: none"> • Structuring TA support to provide long term support and enable long term sustainability for ESPs • Facilitation of networking opportunities between off-grid energy companies, investors and other key market players, and especially for nascent segments like PUE & battery rental
<p>Lack of a conducive regulatory environment</p>	<ul style="list-style-type: none"> • Supporting policy makers in drafting and implementing favorable policies • Increase engagement of ESPs with government and policy makers to enable a better understanding of business challenges and opportunities faced by ESPs
<p>Limited market liquidity</p>	<ul style="list-style-type: none"> • Supporting small and medium sized ESPs to leverage carbon markets to diversify their revenue streams • Supporting small and medium sized ESPs in leveraging OBS facilities to unlock much needed working capital • Increase public funding for mini-grids to reduce the funding burden and tariff rates in these projects • Promote opportunities for value chain partnership building lowering funding requirements

Introduction & Methodology

We combined market consultations and surveys with desktop research to inform our findings

Key activities



Phase 1: Inception

- **Reviewed BGFA program documents** including contract agreements and reports to gain a deeper understanding of the program operations, methodology, challenges and additionality
- **Held consultations with program donors and partners** to supplement knowledge from document reviews and align on key research objectives



Phase 2: Research and Analysis

- **Developed key research questions** around key finance themes in the off-grid energy sector to help guide stakeholder consultations and analysis of gathered data
- **Held consultations with key stakeholders**, including 30 investees, 6 financial institutions, 1 peer RBF program and, 3 industry-supporting organizations
- **Conducted a survey with investees** to gain better perspectives and data on mobilizing capital
- **Conducted desk research of peer RBF programs** to understand general trends and learnings



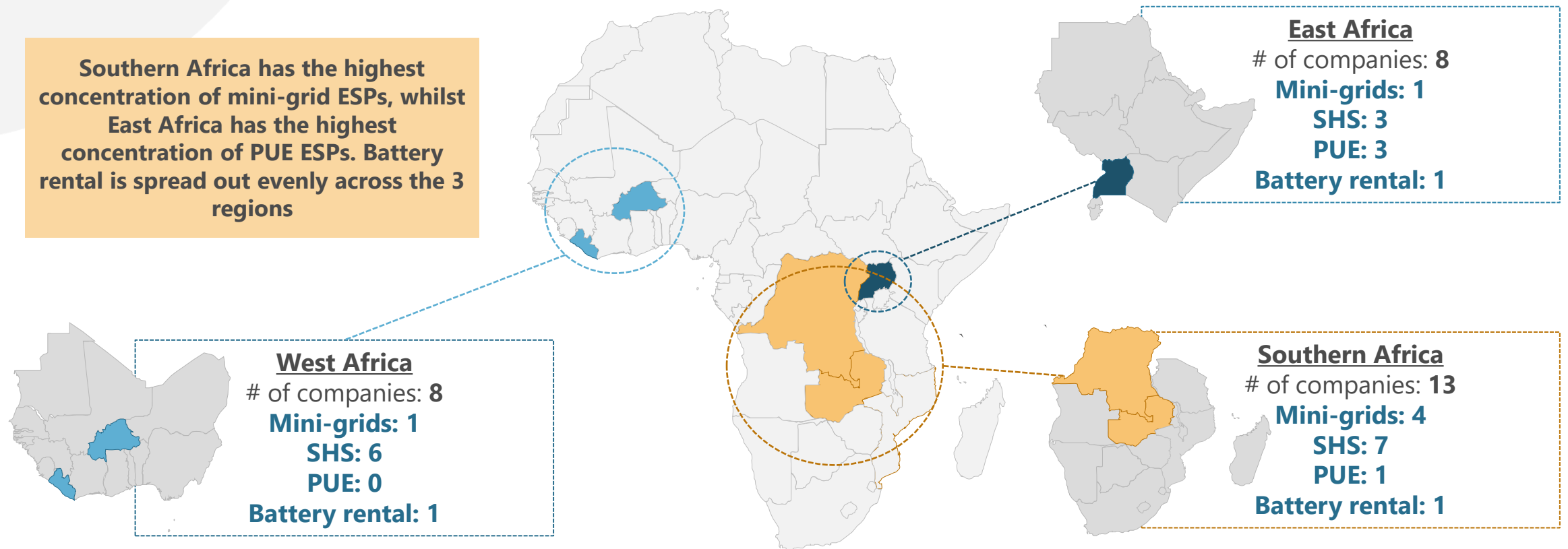
Phase 3: Findings and rec's

- **Synthesized key insights and findings** into an initial draft report and collect feedback
- **Shared findings and recommendations in a final report**

Financial Mobilization Trends and Analysis

SHS ESPs make up 55% of BGFA's portfolio, with most portfolio ESPs operating mainly in West and Southern Africa

BGFA geographical coverage and technology spread



BGFA has funded 29 companies across 5 African countries¹

Over the past 2 years, BGFA has committed EUR 66.8M in funding, with majority directed towards Southern Africa

BGFA funding distribution



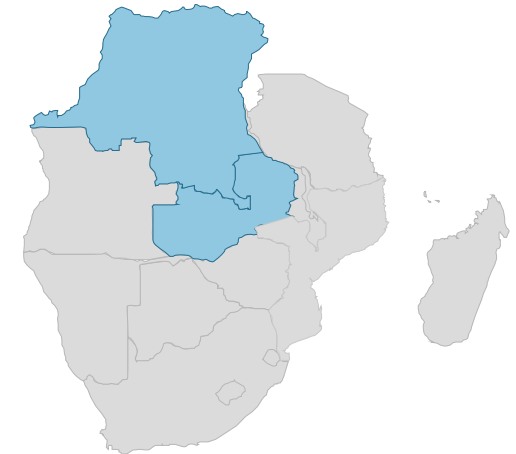
East Africa

Committed funding: **€ 18.3 million**



West Africa

Committed funding: **€ 12.6 million**

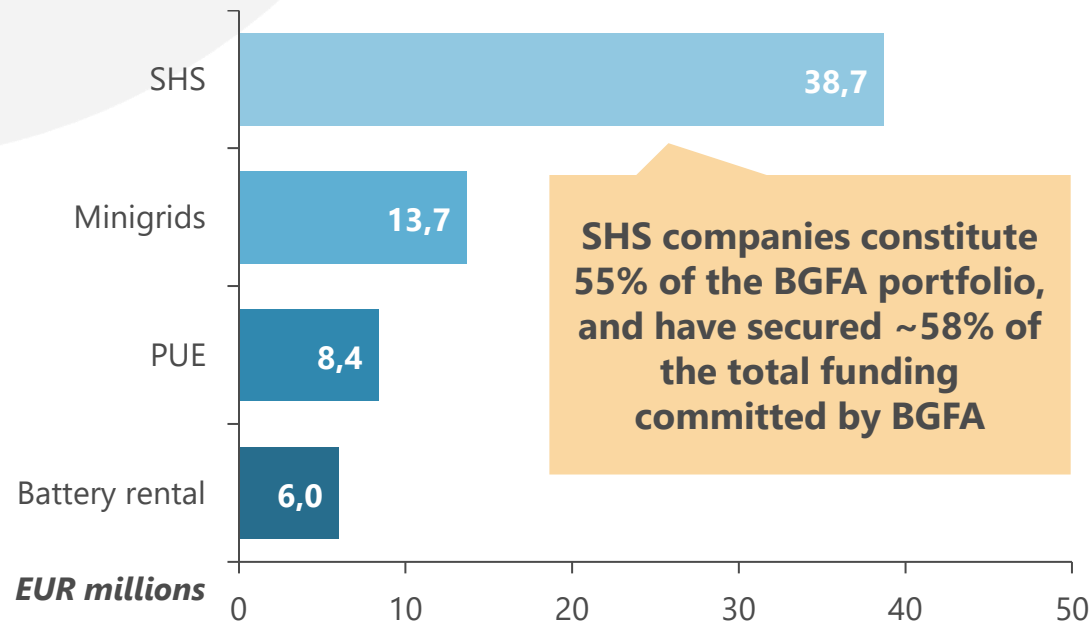


Southern Africa

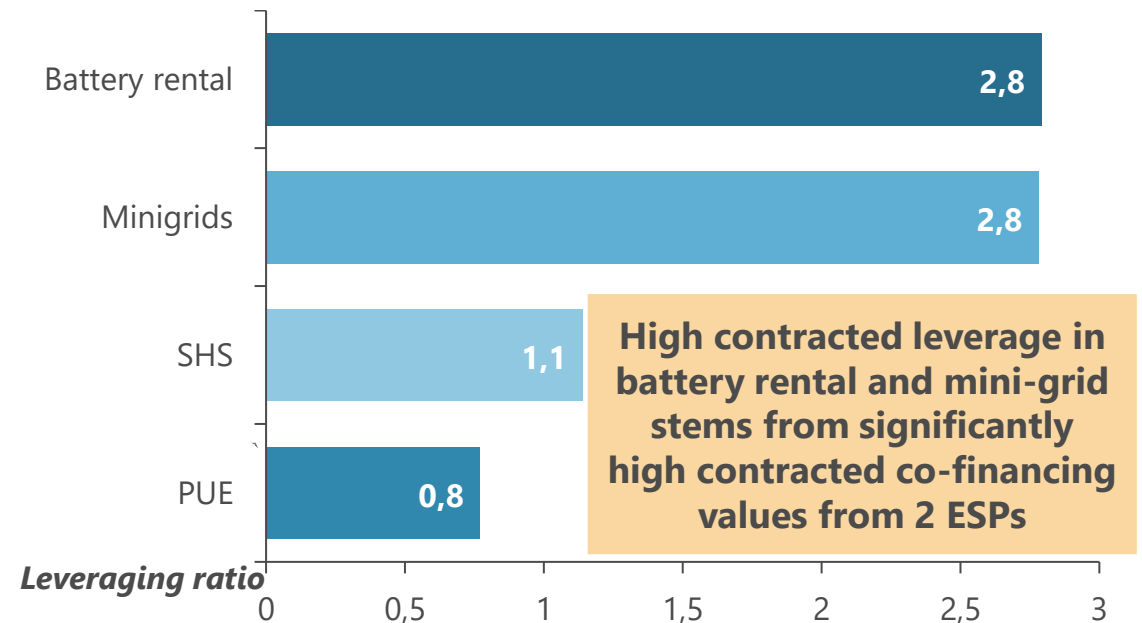
Committed funding: **€ 35.9 million**

SHS ESPs have secured the highest funding from BGFA, though battery rental & mini-grids had highest contracted leverage ratio

As of April 2024, SHS had the most BGFA funding allocation



Battery rental and mini-grids had highest contracted leverage ratio¹



Portfolio contracted leverage ratio*

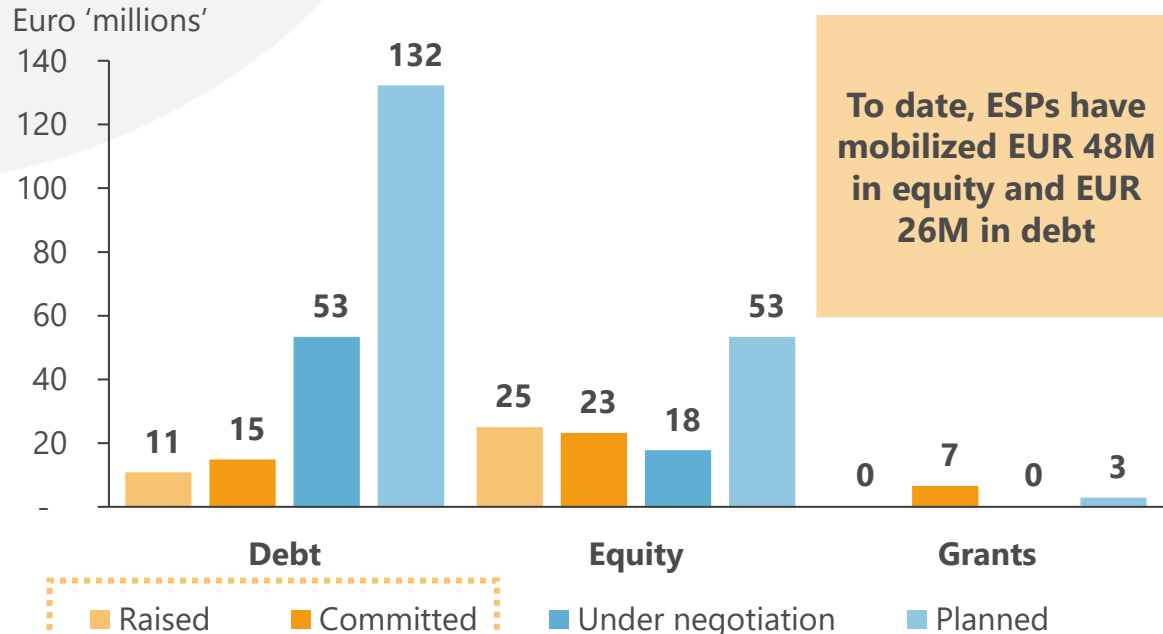


1.58

Survey data shows that by April 2024, portfolio ESPs had mobilized EUR 80.6M, primarily a mix of debt and equity

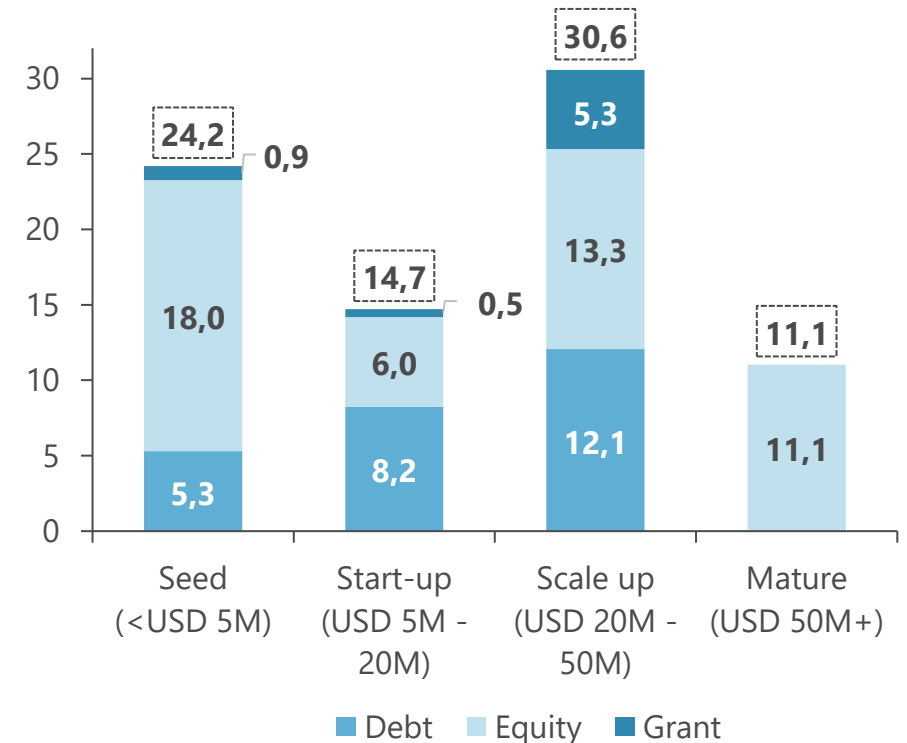
BGFA portfolio companies have mobilized* EUR 80.6M to date

Co-financing instruments by fundraising stage



To date, ESPs have mobilized EUR 48M in equity and EUR 26M in debt

Mobilized co-financing instruments by growth stage
Euro 'millions'

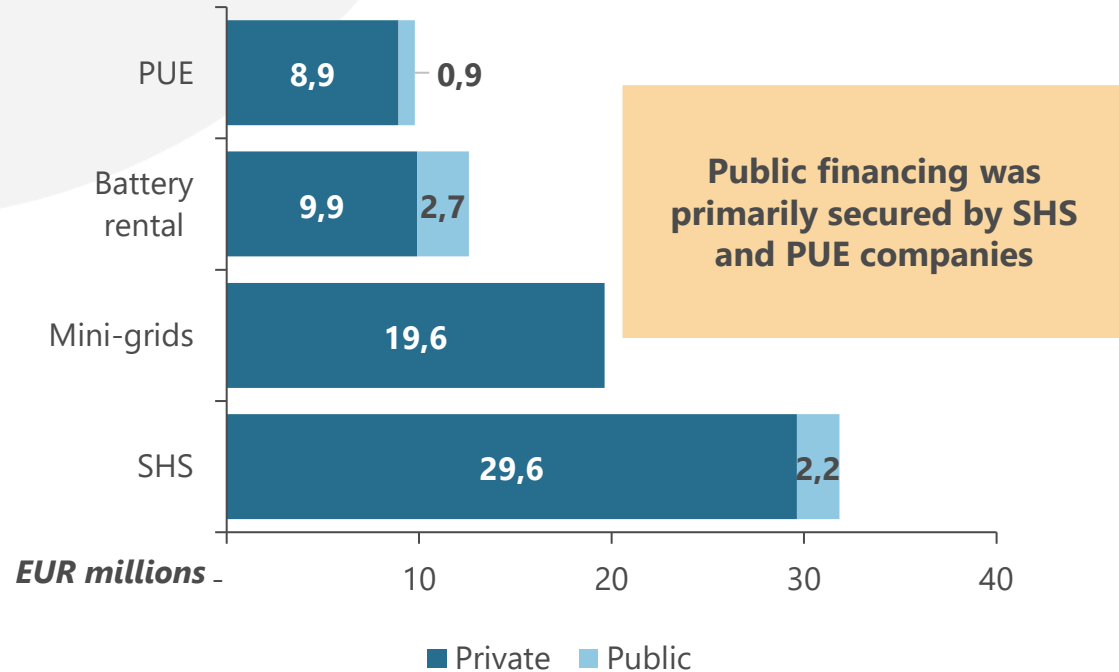


Discussion on fundraising experiences specific to the value chains can be found in slides 21-25

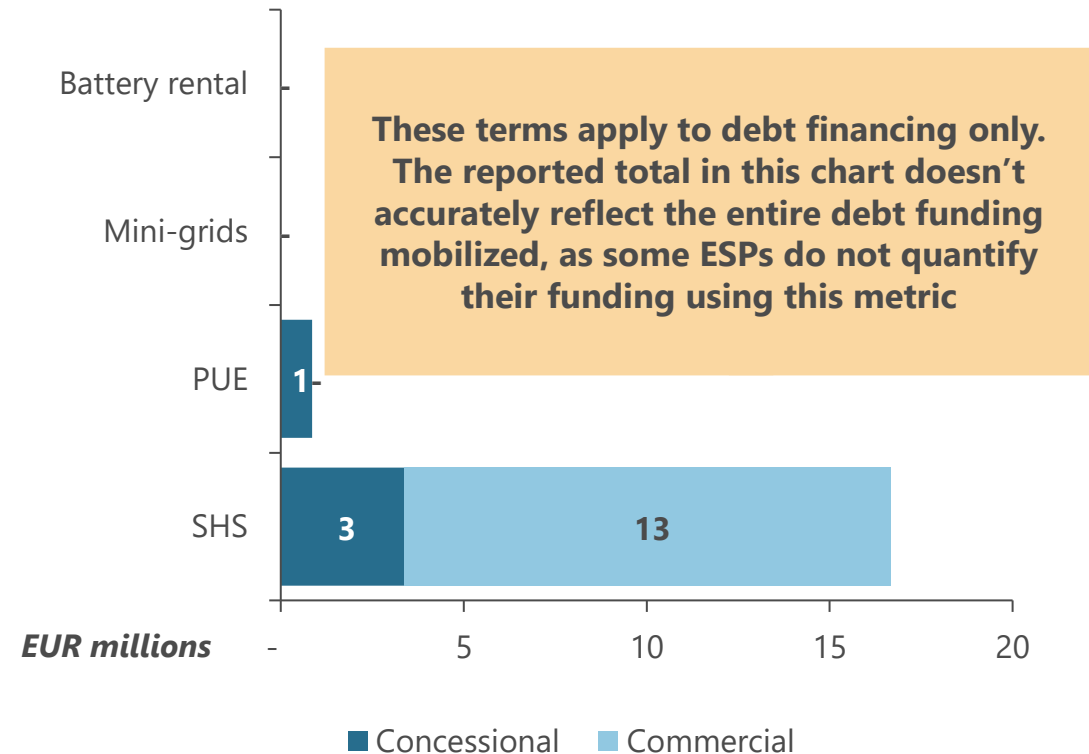
Notes: *Refer to the Definition of Terms section at the start of this document for a breakdown of the components included in the calculation of mobilized capital

Survey data shows that SHS secured most co-financing among ESPs, 93% of which was primarily sourced from private entities

Sources of co-financing mobilized¹



Terms of co-financing mobilized¹



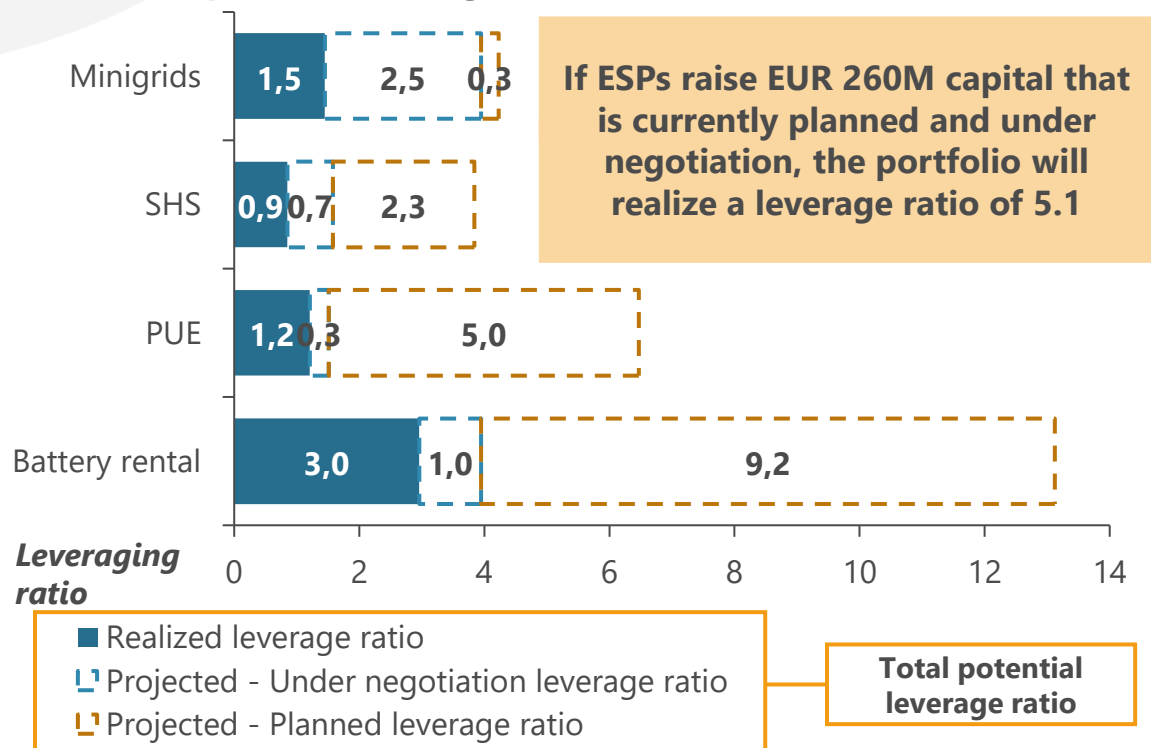
The combined private and public capital amounts to EUR 73.8M, excluding EUR 6.7M in grant funding

69% of all co-financing mobilized by ESPs has been raised from international sources

As of April 2024, realized portfolio leverage ratio is 1.21, with 5 companies mobilizing 52% of the total co-financing

We calculated two leverage ratios: the realized leverage ratio, based solely on mobilized funding, and the projected leverage ratio, which factors in planned and capital under negotiation. This dual approach reveals the potential impact of timing on BGFA's reported leverage ratio, and reflects the unlocked potential once planned and under negotiation funding materializes

Realized vs potential leverage ratio¹



- Among the portfolio ESPs that have shared survey responses, **20 have completed 1 funding round**
- Most ESPs joined the program between late 2022 and 2023, hence currently in the process of securing financing or still awaiting it. To date, most ESPs have mobilized equity funding, but majority of the capital that is planned and/or under negotiation is expected to be in form of debt
- **ESPs so far have realized a leverage ratio of 1.21** with 5 ESPs mobilizing EUR 42M (52% of the total co-financing mobilized)
- Of the 20 companies that have closed a funding round, **11 are SHS companies, which have raised EUR 32.8M** total (41% of total mobilized co-financing)
- ESPs reported that they are currently negotiating EUR 71M (in discussions, not yet formalized) and planning to raise EUR 189M (intended, but no formal investor engagement yet) while within the BGFA program

Insights indicate that mini-grids and SHS require continued support to achieve scale and healthy portfolios for capital access



Mini-grids

- **Sector requires subsidies for commercial viability:** Mini-grids serving rural and hard-to-reach customers require subsidies to rationalize their project costs and be economically sustainable
- **Equity investment is crucial for long-term growth:** Traditional debt financing terms, typically offering shorter-term financing (up to 7 years) fail to support sustained community development and demand growth crucial for success of mini-grids, areas which equity can address
- **Growing use case for PUE integration:** Mini-grid developers are increasingly incorporating PUE into their business model. PUE serves as an anchor load, improving customer's payment capacity hence improving the financial sustainability of projects¹
- **Scale is required for profitability:** Mini-grid companies typically require multiple projects running concurrently to attain economies of scale and profitability. However, slow government approval processes and limited investor funding (as low as 10 projects funded) hinder progress*
- **Lack of regulatory harmonization:** Limited regulatory standardization and foresight hinders operators' ability to plan, and project returns for investors, impeding regional-scale efforts crucial for commercial viability



Solar Home Systems

- **Financial viability dependent on portfolio quality:** Sustainable profitability of SHS companies is dependent on managing credit risks & maintaining a high-quality customer repayments portfolio
- **Lack of equity has led to highly leveraged companies:** Limited equity and nature of consumer financing model have led to overreliance on debt, resulting in highly leveraged companies that are currently grappling with high interest rates in developing markets.
- **Subsidies are required to cater to more underserved customers:** While SHS companies have begun to include higher income clients and diversify their product mix to provide more revenue opportunities, subsidies remain crucial to serve underserved communities and new markets
- **Inadequate funding for distribution firms:** While hardware and software companies receive the bulk of investment, distribution firms crucial for delivering products to end customers encounter substantial financing hurdles, highlighting a critical gap
- **Majority of the financing has been deployed to few large companies:** Most funding is being deployed to few mature companies, with little funding made available to early-stage ESPs

PUE and battery rentals experience low product adoption due to limited customer awareness, attributed to sector nascency



Productive Use of Energy

- **Marketing investments and reduced product prices essential to improve adoption rates:** ESPs grapple with limited customer understanding of PUE technologies, and low willingness to pay, necessitating marketing campaigns and subsidies to enhance awareness and affordability, respectively
- **Increasing product diversification:** New companies are expanding beyond traditional solar-powered irrigation pumps, now offering solutions like solar-powered cooling systems to clients in the food and healthcare sectors to further rationalize earnings and balance sheets
- **Growing interest in carbon markets for revenue diversification:** PUE companies with extensive client portfolios, are exploring opportunities beyond core operations by issuing carbon credits to supplement product costs and generate additional revenue streams¹
- **Improved innovation in PUE products:** Investment in R&D is leading to the creation of more energy-efficient products with versatile functionalities, for example, freezers integrating lighting and phone charging terminals



Battery Rental

- **Growing need for sustainable battery use and disposal:** Given the potential environmental impact inherent in the production processes of lithium-ion batteries, there is growing imperative for sustainable battery handling practices throughout the lifecycle²
- **Increased battery capacity driving new applications:** Battery rental companies are increasingly investing in R&D to produce higher capacity battery packs, allowing them to serve new customer segments and diversify their revenues streams, such as the e-mobility space currently being served by Mobile Power³
- **Sector nascency and the scarcity of well-documented success stories has led investors to adopt a cautious stance:** The nascency of the battery rental model has attracted less investment from equity investors to date (as compared to the SHS sub-sector), who are adopting a "wait and see" approach as they seek more proven and sustainable models⁴

The emerging PUE and battery rental sectors have attracted less capital investment compared to the more established SHS and mini-grid sectors. This can be mainly attributed to the relatively early-stage development of these sectors

Research indicates the need to revisit business fundamentals and provide suitable financing for the success of the off-grid sector

There are limited sector success stories

While the off-grid sector boasts undeniable impact, investors want successful investment stories too - companies proving to be commercially sustainable, without grant reliance. Very few companies, such as SunKing and d.light have showcased profitability.^{1,2} Sustainable expansion and effective cost control are key to profitability

Subsidies are needed to kick-start growth

Subsidies play a critical in scaling businesses in the off-grid sector. Demand-side subsidies are particularly important as they ensure product affordability and extended market reach, enabling companies to achieve the scale required for financial sustainability. However, subsidies shouldn't be viewed as a permanent solution to prevent market distortions

Scale is crucial to achieve profitability

Many companies in the sector, more so mini-grids grapple with attaining the critical mass needed to achieve profitability. At scale, renewable energy companies can more effectively capitalize on alternative financing options, such as receivables securitization or carbon financing, thereby improving their funding opportunities

Scale and portfolio quality are key for accessing off-balance sheet financing

Most off-grid energy companies face challenges in accessing off-balance sheet financing due to their receivable portfolios' limited scale and low credit repayment performance. However, established ESPs like d.Light and SunKing have successfully securitized their receivables, enabling them to secure essential capital for expansion^{3,4}

Shifting investor sentiments towards SHS and high debt costs

Investor sentiment, particularly towards SHS, has gone out of favor due to limited scale, complicating new investments, and hindering access to both equity and debt. Further, recent macroeconomic events have adversely affected forex & interest rates, increasing debt costs, exacerbating the challenge of accessing / repaying capital

Carbon financing holds potential for unlocking affordability potential

PUE and mini grid companies have the opportunity to leverage voluntary carbon markets to diversify their revenues. The additional financing can be used to subsidize tariff rates and product costs, thereby increasing affordability of their offerings.

Mini-grids: 4 of the 6 companies in the portfolio have successfully mobilized EUR 19.8M in co-financing, primarily through equity

Value chain snapshot¹

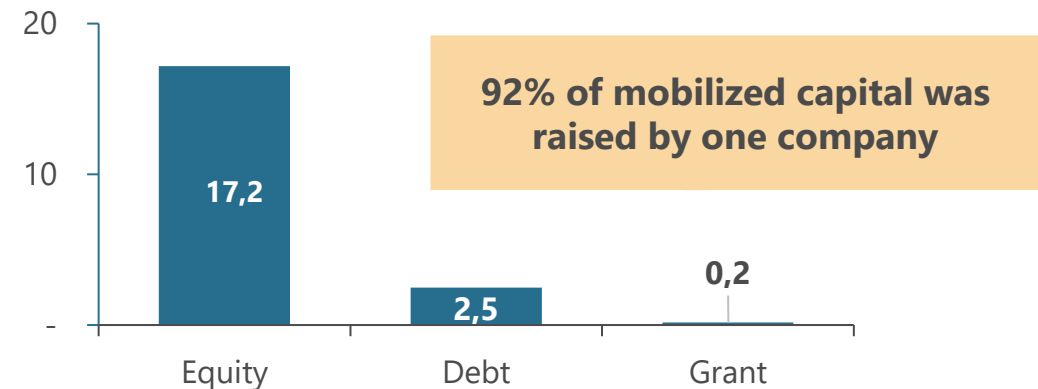
Mini-grids	#
Companies in BGFA portfolio	6
No. in seed stage	5
No. in start-up stage	1
Launch to Scale	6
Total co-financing mobilized to date (EUR) ²	19.8M
Total co-financing under negotiation (EUR)	34.5M
Total co-financing planned (EUR)	3.8M

None of the mini-grid ESPs fall in the scale – up to mature stages of business, as many are still yet to reach profitability. All mini-grids in the BGFA portfolio are Launch to Scale

Key findings and implications

Mobilized co-financing²

Euro 'million'



- Mini grid companies in the portfolio have so far mobilized EUR 19.8M in co-financing
- Of the 6 mini-grid ESPs in BGFA's portfolio, 2 are yet to close a funding round
- Limited debt raised by mini grid developers could stem from cashflows being realized after the project's completion, which extend beyond tenors typically offered by debt investors

SHS companies have so far mobilized EUR 33M, recording the highest debt and equity raises in the portfolio

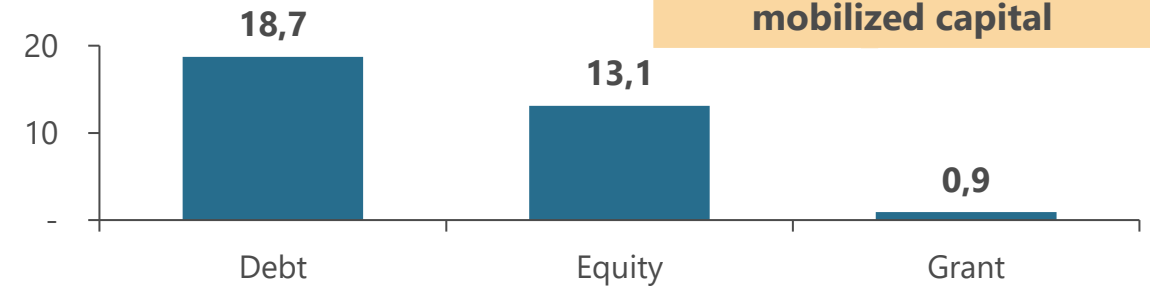
Value chain snapshot¹

Solar Home Systems	#
Companies in BGFA portfolio	16
No. in seed stage	4
No. in start-up stage	7
No. in scale-up stage	3
No. in mature stage	2
Launch to Scale	11
Direct to Scale	5
Total co-financing mobilized to date (EUR) ²	32.8M
Total co-financing under negotiation (EUR)	28.3M
Total co-financing planned (EUR)	88M

Key findings and implications

Mobilized co-financing²

Euro 'million'



- 45% of SHS companies successfully mobilized debt. The highest recorded raise is EUR 3.4M, while the highest recorded committed debt is EUR 8.5M
- Four SHS companies successfully secured equity funding, with the total equity mobilized coming to EUR 13.1M (40% of the total funds raised), compared to the EUR 18.7M debt mobilized (57% of mobilized funding)
- Despite local currency cash flows, all debt funding raised is in Euro or USD, leading to escalated financing costs amid local currency depreciation

PUE: Only 2 of the 4 portfolio ESPs have mobilized the required co-financing, amounting to EUR 10M, mostly in form of equity

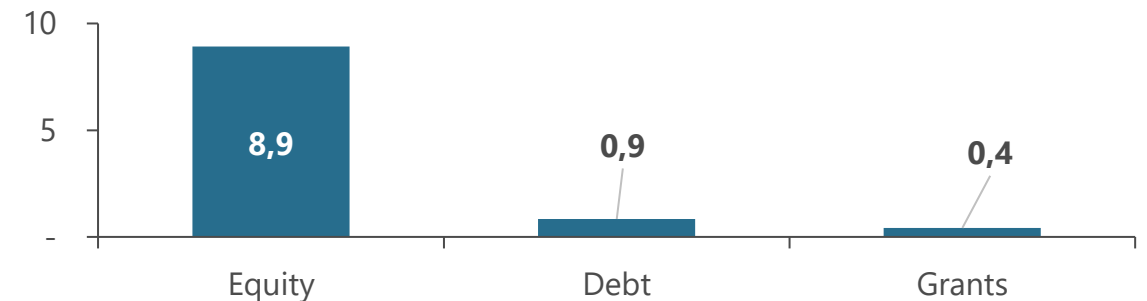
Value chain snapshot¹

Productive Use of Energy	#
PUE companies in BGFA portfolio	4
PUE in seed stage	2
PUE in start-up stage	1
PUE in scale-up stage	1
PUE in mature stage	0
Launch to Scale PUE	4
Direct to Scale PUE	0
Total co-financing mobilized to date (EUR) ²	10.2M
Total co-financing under negotiation (EUR)	2.6M
Total co-financing planned (EUR)	41.7M

Key findings and implications

Mobilized co-financing²

Euro 'million'



- PUE ESPs in the portfolio have mobilized EUR 10.2M in co-financing, which represents 12.7% of the entire co-financing mobilized by ESPs in the program
- 50% of PUE companies in the portfolio have successfully mobilized co-financing, ~88% of which is committed equity funding.
- PUE companies have raised and look to raise all co-financing at both operating and holding company level
- Given the nascency of the sector, it is probable that the majority of mobilized and planned capital will be obtained from impact-focused investors

Battery Rental: All battery rental ESPs have successfully secured funding, 51% of which is equity and 20% debt

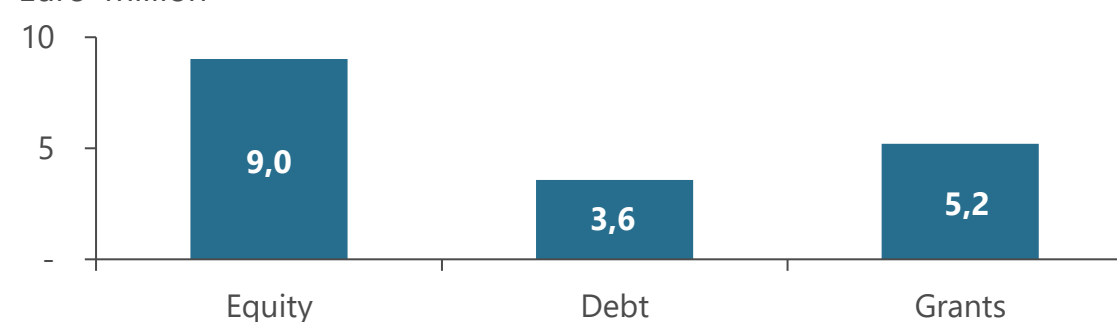
Value chain snapshot¹

Battery Rental	#
Companies in BGFA portfolio	3
No. in seed stage	0
No. in start-up stage	1
No. in scale-up stage	2
No. in mature stage	0
Launch to Scale	3
Direct to Scale	0
Total co-financing mobilized to date (EUR) ²	17.8M
Total co-financing under negotiation (EUR)	6M
Total co-financing planned (EUR)	55M

Key findings and implications

Mobilized co-financing²

Euro 'million'



- All 3 battery rental ESPs in the portfolio have successfully mobilized co-financing for their projects, raising a total of EUR 17.8M to-date
- ~50% of the co-financing mobilized is in the form of equity investments in the business while ~20% is through debt financing
- EUR 5.2M has been mobilized through grant funding, which represents ~74% of the total grant funding mobilized by ESPs in the program
- The high proportion of equity and grant funding is indicative of the 'wait and see' approach that debt investors are adopting due to the nascent nature of the battery rental business model

ESPs have EUR 71M under negotiation and plan on raising an additional EUR 189M whilst under the BGFA program

Total capital under negotiation and planned

	Co-financing under negotiation (EUR)	Planned co-financing (EUR)
Mini-grids	34.5M	3.8M
SHS	28.3M	88M
PUE	2.6M	41.7M
Battery Rental	6M	55M

Mini-grid

- **Mini-grid** capital under negotiation has a ~75:25 split between debt and equity
- All Mini-grid ESPs aim to raise the entire planned capital amount through equity investments into their businesses, primary from private sources at the holding level

SHS

- **SHS** capital under negotiation and planned has a ~60:40 split between equity and debt.
- 2 SHS companies plan to raise EUR 21.3M through debt only, which makes up 18% of debt funding yet to be mobilized
- 54% of all funding under negotiation and planned will be sourced from private investors domiciled primarily outside of ESPs home countries

PUE

- All **PUE** capital under negotiation is entirely in the form of debt
- Planned capital is split mostly between debt and equity, accounting for 67% and 33% respectively
- PUE equity at the holding company level is exclusively sourced from private investors

Battery rental

- All **battery rental** capital under negotiation is entirely in the form of debt primarily at the holding level
- 92% of the planned co-financing will be raised through debt financing and only EUR 1.7M will be mobilized through planned grant applications

Barriers to Financial Mobilization

Consultations consistently show that ESPs face several demand and supply side challenges that hinder their fundraising efforts



Demand side barriers

- Information asymmetry and low opportunity awareness of existing financing facilities
- Limited observed traction resulting in limited investor interest and stringent credit requirements by commercial lenders
- High collateral requirements by local banks, due to high real and 'perceived' risk of ESPs
- Commercial sustainability affected by to end user's limited ability and willingness to pay
- Over-leverage due to limited equity investments

Sector-wide limitations

- Vulnerability to external macroeconomic shocks, e.g., COVID-19 delayed effects, political risks, forex risks, customer default, inflationary pressure, rising bond yields in external markets, etc.
- High-profile business failures and distressed sales
- Limited data availability for informed decision-making
- Limited local expertise and infrastructural challenges
- Lack of standardized impact and reporting metrics for assessing success



Supply side barriers

- Mismatch in risk-return expectations where companies take longer to break even than was initially projected
- Limited sector knowledge and experience among banks especially, and the lack of success stories diminish interest and increase sector risk, constraining focus on larger players
- Limited technical capacity to deploy 'non-traditional' and tailored capital to the sector
- Lack of risk mitigation instruments, e.g., guarantees to bolster confidence
- Uncertain regulatory environment due to inconsistent off-grid policies
- Limited exit opportunities

In this section, we explore the key supply, demand and sector-wide challenges identified by ESPs. While several challenges were cross-cutting, we aimed to streamline the themes to avoid redundancy and cover a broader range of topics within the slides

Mini grid: Limited project availability, regulatory gaps and limited observed traction are among the reasons limiting capital access

Key barriers for accessing financing

- **Commercial sustainability issues for rural grids**, stemming from subdued customer demand have restricted project funding, leading to a pause or standstill in pipeline projects
- **Limited observed traction** in revenues, cash flows, balance sheet, and customers hinders company sustainability and increases the risk of borrowers
- **Depreciation of local currencies against hard currencies** has led to increase in CAPEX cost that has necessitated increased ticket sizes that are hard to close in the current macro-economic climate
- **High upfront investment required** to setup mini-grids necessitates the availability of project financing which takes time to acquire
- **Limited understanding of mini-grid structures by FIs**, primarily by banks, undermines risk assessments and product tailoring, leading to unrealistic project deployment expectations
- **Limited availability of investment funds and concessions with extended mandates** suitable for the prolonged development timelines of mini-grids, given that many funds operate on a 10-year mandate¹
- **Politicized tariffs** in countries like Zambia hinder cost recovery for investors, disincentivizing their participation
- **Inadequate regulations** for mini-grid development complicate licensing, hampering access to long-term financing. Additionally, the lack of prior regulatory foresight, e.g., around government electrification plans, increases ambiguity and impacts the ability of developers to forecast returns
- Challenges arising from **disruptions in the global supply chain** have led to delays in achieving project milestones

SHS: Limited profitability and high profile SHS business failures are among the contributors to SHS's fundraising challenges

Key barriers for accessing financing

- **Limited cases of profitable entities** deters participation of later-stage commercial investors
 - **Focus on PAYGo to improve customer affordability** leads to larger cash flow needs from companies and longer cash flow cycles
 - **Limited scale** constrains the use of alternative funding models like securitization of receivables, particularly for seed and start-up companies with lower revenues
 - **Customer credit risk** is exacerbated by the high-risk profiles of target customers and worsening macro-economic conditions, leading to impact on portfolio quality, reducing appeal to investors
- **High-profile business failures and distressed sales** have created negative reputational consequences, making it challenging to secure equity financing, which is key to enabling scale
 - Apart from impact investors, **commercial banks and DFIs have limited comprehension of SHS business models** which limits the amount of funding they are willing to deploy, even in cases where guarantees and other risk-sharing instruments are made available
 - **Overleveraged companies** stemming from a lack of equity further exacerbate investor fears
 - **Shift by investors to more commercially viable value chains**, like the commercial & industrial (C&I) sector due to perceived lower risk and the improved customers' willingness and ability to pay
- **Low mobile money penetration rates** in markets such as Zambia limits effectiveness of PAYGO models, thereby hampering collection efforts and impeding scale²
 - **Political instability** in markets such as Burkina Faso increases investment risk among investors
 - **Insufficient subsidies** hinder initiatives targeting hard-to-reach areas

PUE: Low consumer awareness and limited concessional capital to scale the sector are among the key barriers for PUE companies

Key barriers for accessing financing

- **Nascency of sector leads to low product adoption rates**, limiting business model traction and thereby reducing investment interest from broad range of investors
- **Seasonal fluctuations in demand** for PUE products leads to sales variations which increases their risk perception by potential investors
- **Absence of viable collateral or security**, upon which financial institutions, primarily commercial banks, heavily depend, presents challenges in obtaining loans
- **Majority of companies are early-stage growth companies** that do not have the scale to attract larger ticket sizes to the sector
- **Ticket sizes sought by PUE companies are too small**, typically ranging from USD 50K to USD 5M for debt, and even lower for equity. As a result, they are unappealing to potential investors like DFIs, thereby limiting the pool of available investors
- **Banks offer commercial capital using metrics unsuitable for the industry**, such as requiring a 95% customer credit repayment rates despite expected industry average default rates of 10-15%
- **Specific PUE assets**, like water pumps, **pose challenges for recovery or repurposing**, reducing their attractiveness as collateral
- **Nascent nature of the sector** which complicates the accurate assessment of investment risks and returns limiting deployment of financing to PUE companies
- **Scarcity of active equity investors knowledgeable about lending to PUE** companies constrains available investor options for these companies
- **Unavailability of local currency debt** that introduces FX challenges in aligning cashflows for PUE companies whose majority cash inflows are in local currency





Battery rental: The infancy of the battery rental sector has posed various obstacles to financial mobilization

Key barriers for accessing financing

- **Significant upfront CAPEX requirements** hinder the company's ability to scale operations, particularly during periods of low market liquidity
- **Absence of viable collateral poses challenges for lenders**, as commercial lenders consider batteries difficult to resell in the event of default due to their limited use cases.
- **The novelty of business models** makes it challenging for investors to accurately assess associated risks and potential returns, resulting in investor apathy
- **Lack of specialized financial products for battery rentals**, stemming from investor unfamiliarity and the innovative nature of the sector, hinders access to capital for businesses operating in the sector
- **Limited sector knowledge lengthens investment turnarounds**, making battery rental projects unviable as investors do not fully understand regulatory, technological and market dynamics of battery rental units
- **Sustainability concerns regarding battery production and disposal** have prompted investors to question the environmental aspects of battery rentals, resulting in slow uptake in financing for battery rental companies
- **Underdeveloped or ambiguous regulations** in numerous Sub-Saharan African countries pose operational challenges, contributing to investor skepticism surrounding the battery rental sector

Key Lessons and Recommendations

BGFA funding has helped derisk ESPs by improving affordability and enabling scale, allowing them to crowd in private capital

Impact	Implications
 <p>Improves revenue opportunity</p>	<p>By subsidizing the cost of hardware products and/or project implementation, BGFA funding allows ESPs to realize some cost savings, which are passed on to end consumers through lowered product costs and tariff rates. This allows ESPs to reach a wider customer base and unlock revenue opportunities¹</p>
 <p>Supports scale efforts, which enables access to additional funding</p>	<p>BGFA's advance payments to LS companies have helped them enter new markets, procure inventory, expand their distribution network, and initiate construction on extensive mini-grids. This has allowed them to scale, achieve set milestones sooner, demonstrate success of their projects and use these to facilitate ongoing discussions with BGFA and external providers for additional financial support</p>
 <p>Boosts ESPs' credibility in the market</p>	<p>The program's long-term structure serves to enhance credibility of ESPs, as acquiring BGFA funding and successfully achieving the set milestones in project delivery signal prudent use of funds to investors, thereby attracting their interest</p>
 <p>TA improves ESPs' fundraising effectiveness</p>	<p>TA is well structured and very useful, serving as a guiding resource for ESPs to refine their understanding of crucial topics such as e-waste disposal, gender issues, and meeting BGFA reporting requirements.² Furthermore, TA also facilitates the refinement of company policies and processes, fostering continuous adherence to best practices</p>

33 Source: Consultations with BGFA portfolio companies

Notes: 1. Given the scope of our research, we did not delve into measuring the extent of affordability or scalability highlighted by the ESPs; 2. Many ESPs will strive to tailor their e-waste policies to fit local contexts, particularly in markets where e-waste policies are still in nascent stages of development; 3. The quality of the receivable portfolio is a key factor when assessing investments in SHS and PUE ESPs

Investors also acknowledge positive signal of BGFA funding, though are keen to assess long term sustainability of ESPs

Financial institutions echoed the sentiments expressed by ESPs regarding the positive signaling effect of BGFA funding...



Provides positive signaling to other investors: Positive signals helps boost investments, potentially attracting capital for growth to these companies. Increased investment enables companies to scale, build a track record, and demonstrate success required to unlock additional capital at larger ticket sizes and/or favorable terms



Demonstrates ESPs capacity to deliver on objectives: RBF funding strengthens investor confidence in a company's ability to deliver. It focuses on achieving measurable milestones. Independent verification of these milestones and associated performance-based payments ensure results and reduce the perceived risk of the company.

...also acknowledging their focus on additional factors when assessing investment decisions

What we heard from FIs

*BGFA funding provides some exposure to the fundraising market, which is great when assessing businesses, though it's not an isolated metric as companies might have bad financials – **Investor 1***



*RBF funding acts as a level of assurance and reduces perceived risks, and offers performance-based returns, but it's important that businesses prove at a certain point that they can operate without grants – **Investor 2***

*RBF funding has been useful in de-risking companies in the off-grid sector, though it's short-term and we want to know that businesses can be profitable without grants – **Investor 3***

*RBF funding ties financing to results, assessing a company's capability to execute, but it is not a standalone metric as execution may be done well, whilst the team has a poor understanding of unit economics – **Investor 4***

Consensus among financial institutions is that RBF funding provides a level of assurance and reduces perceived investment risks but **it's important that businesses prove at a certain point that they can operate without grants by ensuring consistent profitability**

Broader market interventions opportunities exist that other stakeholders can adopt to solve various sector challenges (1/3)

Sector challenge	Proposed recommendations
 <p data-bbox="224 482 514 639">Lack of fit-for-purpose capital to scale early-stage companies</p>	<ul data-bbox="563 382 2415 739" style="list-style-type: none"> • There is a need for more early-stage investors that can provide concessional and patient capital specifically focused on early-stage ESPs, providing the risk capital they need to launch activities, and especially in underserved markets • Donor-funded programs should explore deepening PUE financing facilities to help scale PUE ESPs through more intentional and dedicated financing, allowing for the growth of a sector with the potential of improving customer's income potential, currently facing limited funding availability due to its nascency. Programs should explore partnerships with local micro-finance institutions, which have connections to last mile users through aggregated models, e.g., cooperatives for farmers, to provide asset financing to customers at affordable repayment terms. Additionally, donors should explore financing PUE initiatives integrated across various technological value chains, such as the provision of PUE appliance financing to mini-grid customers
 <p data-bbox="224 996 514 1068">High risk perception of ESPs</p>	<ul data-bbox="563 811 2415 1253" style="list-style-type: none"> • Multi-and bilateral donors should form partnerships with local financial institutions, in addition to providing them with credit guarantees. Local financial institutions need more than just credit guarantees; they also need sector specific knowledge and capacity to enable their involvement. Therefore, a partnership whereby an investor with sector experience leads the investment, allowing the local financial institution to "follow" combined with the availability of the credit guarantee will potentially lead to more mobilization from new investors and local financial institutions. The crowding in of local financial institutions will also lead to availability of local currency funds for ESPs and create a better currency match between their assets and liabilities and reduce inherent FX risks in investments. • Donor programs should help create cheaper and more easily accessible FX hedging options/platforms that would effectively serve LS ESPs • Continued targeted awareness campaigns aimed at mobilizing new capital providers and within nascent sectors like PUE and battery rental, are crucial for bridging existing knowledge gaps and scaling nascent value chains

Broader market interventions opportunities exist that other stakeholders can adopt to solve various sector challenges (2/3)

Sector challenge



Lack of nuanced support provided to ESPs

Proposed recommendations

- **TA in the sector should be structured to provide long-term support, enabling the sustainability of ESPs.** This includes extended or multiple support packages connected to companies' capital needs at various stages of growth, as opposed to one-off support given, for single capital raises for ESPs
- **Stakeholders in the sector should continually convene industry events** facilitating networking opportunities between off-grid energy companies, investors and other key market players for collaborations and knowledge sharing



Lack of a conducive regulatory environment

- **Donor-funded programs should share best practices and industry insights and support governments in the drafting and implementation of conducive regulatory policies,** e.g., cost-reflective tariffs and repayment guarantees to mini-grid developers in the event of utility expansion requiring interconnection, standardization mechanisms for PUE, and duty exemption for a wide variety of SHS products
- **ESPs should continually engage with Off Grid Task Forces (OGTFs) in respective countries** for them to gain deeper insight into the assistance required from the task force relating to government engagement, ensuring the effectiveness of the task force

Broader market interventions opportunities exist that other stakeholders can adopt to solve various sector challenges (3/3)

Sector challenge

Proposed recommendations



Limited market liquidity

- **Multi- and bilateral donors should explore the establishment of an off-balance sheet (OBS) facility** that would buy the receivable portfolios of small and medium-sized ESPs enabling them to unlock much-needed working capital, a strategy that has been adopted by large scale players such as d.Light and Sun King. The OBS facility would aggregate receivables from multiple ESPs achieving the necessary scale required for economic viability of the facility. Donors would cater for the cost incurred in setting up the facility, which is often beyond the financial ability of most ESPs. However, a key hurdle remains in that the facility would need a back-up service provider who can operate in this multi-sourcing facility
- **Donor programs should explore providing carbon market TA support** to companies in the off-grid energy sector that would allow them to diversify and increase their revenue through the sale of carbon credits in voluntary carbon markets. The support should equip ESPs with the capacity to set up verifiable carbon projects while offsetting the cost of setting up the project
- **Donor programs should partner with governments to increase public funding for mini-grid projects**, as seen in Zambia.¹ Additionally, they should support mini-grid developers in establishing public-private partnerships (PPP) that reduce their initial fundraising needs and lower tariffs charges to customers, thereby improving financial viability of mini-grid projects.²
- **Promoting value chain partnerships among ESPs to lower their funding need**, for instance, through supply chain partnerships, ESPs can focus on their core competencies eliminating the need for vertical integration³ thereby reducing their funding needs. For instance, mini grid developers can partner with battery rental companies to act as anchor loads in their projects eliminating the need for the developer to source for appliance financing while improving the financial viability of the mini grid project.⁴