



United Nations Development Programme

White Paper

Mainstreaming Financial Aggregation for Distributed Renewable Energy

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White Paper: Mainstreaming Financial Aggregation for Distributed Renewable Energy



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Introduction

Last year marked the halfway point towards the 2030 deadline for achieving the Sustainable Development Goals (SDGs). While considerable progress has been made towards the SDG 7 targets on clean and affordable energy, in particular in relation to energy access (7.1), 675 million people remain without access to electricity and a further 2.3 billion have no access to clean cooking solutions.¹ Based on the current pace of progress, efforts must be significantly ramped up to achieve the SDG targets by 2030. What's more, although clean energy is a crucial element of most NDCs, more ambitious targets are needed to keep us below the 1.5 °C threshold.² We need to greatly enhance the level of public and private investment in solutions such as Distributed Renewable Energy, to advance sustainable development and deliver the goals of the Paris Agreement. To achieve this, new approaches are needed to de-risk investments and crowd in new sources of capital.

Financial aggregation, defined in the context of this paper as the aggregation of Distributed Renewable Energy (DRE) receivables, holds great promise in reducing the mismatch between DRE funding needs and investor requirements and in turn increasing capital deployment in the sector. When designed correctly and deployed in suitable markets, these instruments can offer faster and more affordable access to capital.

However, financial aggregation instruments, in particular off-balance sheet ones are complex, expensive to set up (as much as US\$2 million in some instances³) and involve many lengthy processes – It can take up to two years to close a transaction. Their successful implementation depends on a favourable enabling environment and the existence of a sufficiently large pipeline of DRE assets of the right characteristics and quality. At the moment, only a handful of market players can meet such conditions or are able to absorb, on their own, the ticket sizes required by investors to justify such an undertaking. Therefore, until very recently, there were few examples of transactions truly showcasing the potential of financial aggregation in the DRE sector.

Furthermore, a recurrent message throughout the extensive consultations that took place in the context of the Climate Aggregation Platform and the development of its [‘Financial Aggregation for Distributed Renewable Energy’ reports series](#) is the need to elucidate financial aggregation transactions through real-life examples. More specifically, while there has been pioneering work done by leading DRE companies, arrangers, and investors to close such transactions, this work is typically done in siloes. As a result, there is limited knowledge dissemination on how to structure and close such transactions.

This white paper serves as an initial attempt to shed light on the main ingredients involved in closing cost-effective and scalable DRE financial aggregation transactions and share insights and lessons from real-life examples. The paper seeks to equip investors, DRE companies and transaction arrangers interested in financial aggregation with knowledge that can help them

better understand and navigate this process. The intention is that this can pave the way for further mainstreaming of financial aggregation in the DRE sector and point to opportunities to streamline and reduce the cost and time required for such transactions (e.g., through the sharing of best practices and the development of standardized agreements).

The paper was developed in the context of the Climate Aggregation Platform (CAP), a Global Environment Facility (GEF)-funded project implemented by UNDP, which seeks to promote the scale-up of financial aggregation for small-scale, low-carbon energy assets in emerging markets. It brings together insights from detailed interviews with DRE companies and arrangers that were involved in past transactions.

The paper opens with a brief explanation of DRE financial aggregation and its different manifestations. Chapter 2 follows with a detailed description of DRE financial aggregation term sheets and a concrete case outlining key considerations affecting their design. Chapter 3 discusses the key lessons emanating from three pioneering DRE financial aggregation transactions, two of which were done in the Kenyan market and one in Uganda and Sierra Leone. Lastly, Chapter 4 touches on the role of concessional funds in enabling financial aggregation in the DRE sector.



Photo: UNDP/Louis Fourmentin

1 Tracking SDG7: The Energy Progress Report. 2023 ([Link](#))
 2 International Renewable Energy Agency (IRENA). 2023. ([Link](#))
 3 Based on interviews undertaken in the context of this paper.

1. Defining DRE financial aggregation

Small-scale energy assets can be aggregated into portfolios to achieve scale and attract larger investment ticket sizes⁴ in a process defined as financial aggregation. It can take the form of securitization of future cash flows (accounts receivables) and the aggregation of these into pooling structures, typically Special Purpose Vehicles (SPVs). It can also take the form of aggregation of projects into portfolios for project finance purposes. Securitization of receivables is more commonly performed in product-based sectors, for example Solar Home Systems (SHSs), while project aggregation is more commonly deployed in project-based sectors, mainly mini-grids and captive power. Financial aggregation in its purest form involves complete transfer of the securitized assets into an off-balance sheet structure, such as an SPV, as Figure 2 indicates. This means that the DRE company, the originator of the assets, effectively sells the assets to the SPV.

In theory, this process reduces the risk of the securitized assets for an investor and ultimately the cost of capital for the originator by effectively separating the risks of securitized assets from that of the originator. Separation of risk also means that if the company who initially sold or developed the asset (the originator) fails and is liquidated, it will have no recourse over the assets held by the SPV.

Successful attempts have been made in other markets, notably Kenya, to employ elements of pure off-balance sheet structures in what we term quasi off-balance sheet transactions. In these instances, originators sell their securitized assets to a limited liability partnership, which they co-own with an entity responsible for arranging the facility. The originator, as a result, still has recourse to the assets.

Finally, a more common approach due to the relatively small size of the market, has been to securitize DRE receivables, without aggregating and transferring them to off-balance sheet or quasi off-balance sheet structures⁵. The assets remain fully on the balance sheet of the company. While not aggregation per se, the quantification of future cash flows improves the company's investor pitch and can be used as part of the collateral requirements for a loan or as the only collateral in cases where more progressive investors are involved. Deals can be smaller as transaction costs are significantly lower than off-balance sheet transactions. This paper, however, focuses on transactions that involve some degree of off-balance sheet securitization.

⁵ In the context of the CAP Financial Innovation Challenge, Hypoport Africa has worked on a synthetic securitization structure for solar home systems where the legal ownership of assets is maintained on the originator's side, and no separate legal entity is required.

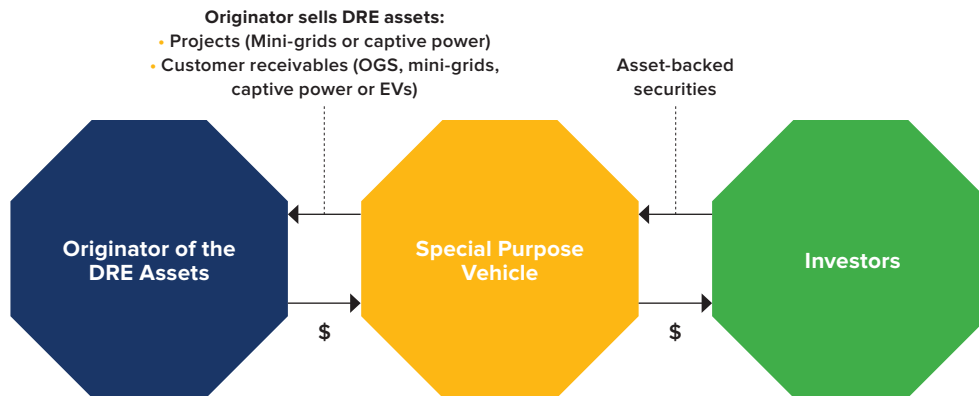


Figure 1: Basic depiction of an off-balance sheet securitization transaction

Source: Author's own diagram.

Until recently, instances of DRE transactions involving such complex mechanisms were rare. In fact, only a handful of pure off-balance sheet transactions have been closed in the DRE sector in sub-Saharan Africa to date and these have mainly been in the Off-grid Solar (OGS) sector (See [Chapter 3](#)). Established players in this sector are relatively mature and are looking to leverage the value of their customer receivables to access debt to fund further growth. In contrast, other DRE sectors are still at a relatively early growth stage. More traditional financing instruments are still most appropriate in these sectors at this stage.

To learn more about financial aggregation please see **UNDP's and the Climate Bonds Initiative report on "Linking Global Finance to Small-Scale Clean Energy"**. [▶](#)

⁴ UNDP - Climate Bonds Initiative (2022). Linking Global Finance to Small-Scale Clean Energy; Financial Aggregation for Distributed Renewable Energy in Developing Countries, New York. [\(Link\)](#)

2. Term Sheets for DRE financial aggregation

2.1 Introduction to term sheets

Although they are typically non-binding, term sheets serve as the template and basis for the more detailed and legally binding documents that specify the terms and conditions of an investment or business transaction. As such, term sheets need to carefully detail the most important structural elements of an investment. Aggregation based transactions have additional complexity in comparison to the more common and straightforward transactions, and associated term sheets need to reflect this. The shape and design of an aggregation mechanism will depend on a myriad of factors including the types of assets to be aggregated and the location of these assets. Figure 2 below shows some of the key considerations of an aggregation mechanism and the elements that are typically covered in the supporting term sheets. Section 2.1.1 below presents an example of how these different considerations can manifest in practice.

2.1.1 Considerations affecting term sheet design

As an illustration, this section dissects the key characteristics of an aggregation facility currently being developed by TFE along the categories outlined in Figure 2.

The new facility seeks to enable DRE developers to convert their most significant asset (their rights to future energy payments/revenues) into cash immediately (instead of slowly over the lifetime of a project) by securitizing these revenues. The fund uses data streams from customer relationship management systems, demographic databases, and GIS layers to categorize and cluster customers based on factors including but not limited to absolute expected revenue, potential upside or downside risk, payment risk, business type or gender. The fund then uses its proprietary algorithms to accurately forecast the expected revenue of each cluster over a given time period. Following the forecasting, the fund seeks to ring fence cash flows, factor the expected receivables and offer low interest

loans to DRE businesses based on the strength of the expected revenue of stable, high value clusters of interest.

The key characteristics of the fund which will have implications for term sheet design are defined by TFE as follows:

Assets

- Mini-grid and Commercial and Industrial (C&I) receivables. These refer to any future cash flows. In the case of mini-grids future cash flows are typically structured as flat fees paid by customers at regular intervals or variable consumption-based payments at a specified tariff stipulated in the customer contract. C&I cash flows are typically structured similarly – customers can also pay flat fees at regular intervals, while consumption-based payments are provided for in power purchase agreements (PPAs). PPAs can either be structured on a “take or pay” basis where all energy generated by the system must be paid for by the customer or, alternatively, on the basis that the customer only pays for what they consume.

DRE sector specific

The fund refinances existing projects from **licensed developers**;

- The fund can become financially profitable at a **minimum size of \$10 million**;
- Early investors are **impact focused with a focus on target sub-Saharan African (SSA) countries** including Nigeria where the facility is launching first;
- The facility has received extensive advice from local counsel in Nigeria to make sure that the mechanism is **compliant with all local regulations** and is tax efficient;
- The facility works with **developers who own the assets**. By refinancing the receivables streams only, **no asset ownership transfer is required**;
- Refinancing existing assets means that the facility is less exposed to the availability of local finance.

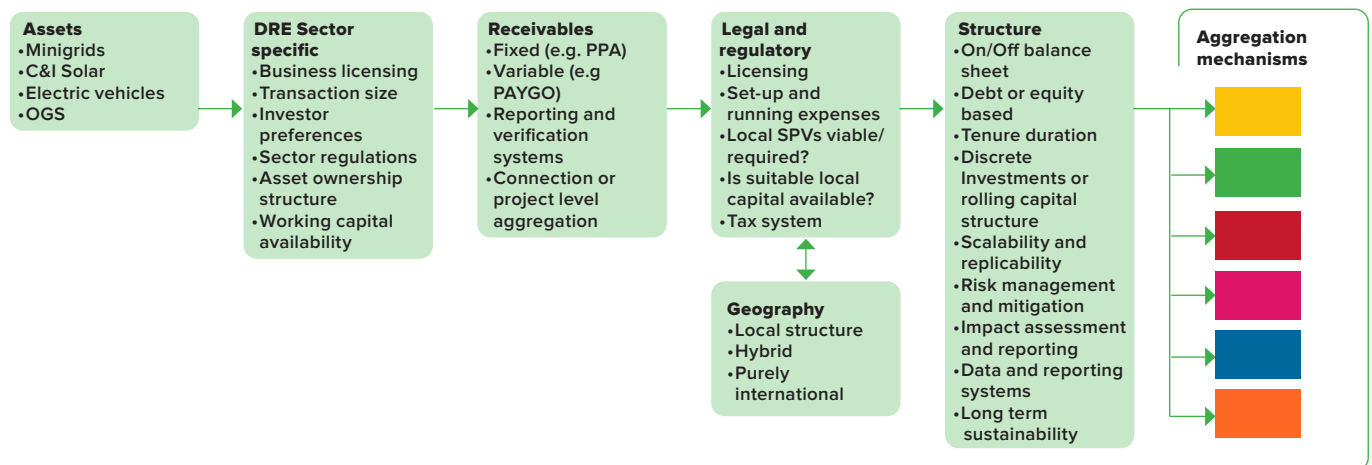


Figure 2: Main considerations with possible permutations to be covered in term sheets

Source: Author's own diagram.

Receivables

- Every ‘asset’ under consideration for the fund must have a **reliable data feed**. These can be the **variable payments** from individual smart meters on a mini-grid or **fixed**, performance-based payments from a C&I PPA;
- The facility uses data streams from individual customer smart meters, demographic databases, and GIS layers to categorize and cluster customers based on factors including but not limited to absolute expected revenue, potential upside or downside risk, payment risk, business type or gender;
- The data provides transparency as well as all reporting and third-party verification functionality;
- Using this data, the facility seeks to aggregate and refinance **individual mini-grid customer connections** as well as **entire C&I projects**.

Legal and regulatory

For the specific context of Nigeria:

- Lending as a foreign entity in Nigeria is possible;
- Taxes on Nigerian investments (loan products) are moderate (e.g., 10 percent withholding tax in Nigeria);
- Foreign entities lending to local corporate entities do not need an SPV or other specific licenses to conduct such activities;
- Foreign currency investments into Nigeria are exposed to high currency risks due to currency depreciation and conversion. Availability of foreign currency is also limited in the country;
- Nigeria applies foreign exchange controls on the transfers of foreign currency and local currency into and out of the country;
- A local bank account can only be opened with a local/resident SPV, but the fund can also use local intermediaries and escrow agents for the purpose of collecting payments in Naira;
- A foreign investor seeking to invest capital in Nigeria by way of debt or equity can bring in the investment capital through an authorized dealer (typically, a licensed Nigerian commercial bank);
- A certificate of capital importation (CCI) must be obtained in relation to the capital importation. The certificate is also used to facilitate the purchase of foreign currency in the Official Market when an investor seeks to export or repatriate their investment;
- CCI does not guarantee that the certificate holder will always have access to foreign currency;
- The Central Bank of Nigeria (CBN) tends to impose, from time to time, capital controls to manage the reserve of hard currencies;
- All typical forms of security or credit enhancement are possible in Nigeria (fixed charges, floating charges, guarantees etc.);
- The cost of registering security at the Corporate Affairs Commission (CAC) is 0.35 percent of the amount secured by the charge;
- Stamp duties will also apply to the loan documentation. The rate of stamp duty is 0.125 percent for secured transactions and 0.375 percent for unsecured loans;

- Key energy and related regulations to be complied with include:
 - (a) Electric Power Sector Reform Act 2005 – This is the principal legislation for the power sector in Nigeria;
 - (b) NERC Regulations for Mini Grids 2016 – This regulation regulates the development and operations of mini-grids in Nigeria;
 - (c) NERC Licensing and Operating Fees Regulations 2010 – This regulation prescribes the licensing fees and operating fees that should be paid by licensees in the power sector;
 - (d) Environmental Impact Assessment Act: This law states the requirement for an environmental impact assessment for power projects.

Geography

- Purely international, which means that all structures pertaining to the deal are offshore. Capital is lent without a local entity or local SPV.

Structure

- Domiciled in the Netherlands;
- A Dutch limited company (“NLBV”) was selected because of:
 - Setup cost and time efficiency;
 - Ease of operation;
 - Regulation;
 - Limited tax leakage (tax efficient economy, yet still fair tax);
 - Reputation and familiarity among investors.
- Mechanics:
 - The NLBV issues debt notes to selected investors;
 - Notes include one type of class or various classes (e.g. senior or junior). This is commonplace in blended finance;
 - NLBV invests into the fund (debt and/or equity);
 - The fund lends to DRE companies – Each borrower has a unique loan agreement under Nigerian law.
- Assets are aggregated in funding ‘windows’ with a limited tenure.

Investments in the fund at large can be discrete (attached to a specific window) or rolling (recycled into subsequent windows).

2.2 Key components of DRE financial aggregation term sheets

DRE financial aggregation term sheets typically have four components:

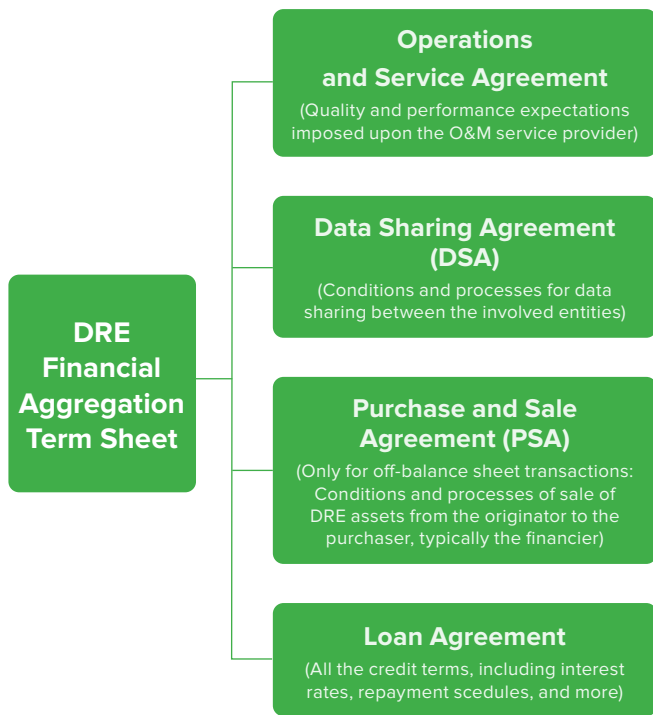


Figure 3: Overview of DRE financial aggregation term sheet components

Source: Author's own diagram.

2.2.1 Operations and service agreement

Operations and Service Agreements are usually required when the party that acquires or owns the DRE assets (typically the SPV set up by the transaction arranger) does not wholly (i) operate and maintain the asset hardware and software service or (ii) service the end-users. In this scenario, the party will contract wholly or partially the operations, maintenance and servicing components to the original asset owner and/or any other capable third party. This entity, “the operator”, is responsible for the daily operation and maintenance of the hardware, software and human resources required to provide the DRE product or service to the end user. This arrangement is common when the operational component is not a core capability of the asset owner and can be done more effectively by another entity.

The operations and service agreement outlines the specific roles and responsibilities of the parties involved, the duration of the agreement, the remuneration structure and level of service required. The level of service required varies from sector to sector. There are widely recognized industry standards of

service for mature DRE sectors on which the service level agreement can be modelled, for example the Mini-grid Quality Assurance Framework (QAF).⁶

Operations and service agreements for DRE financial aggregation will typically require clauses pertaining to the elements presented in Table 1 below.

KEY ELEMENT TO INCLUDE	DESCRIPTION
Detailed scope of Operations and Maintenance (O&M) services	All tasks to be executed by the O&M provider (e.g., ensuring high quality service uptime, uninterrupted operation of customer complaints systems, etc.).
Outlining the performance standards to be achieved	Quality standards pertaining to technical performance (e.g., voltage variations and system average interruption frequency index (SAIFI)).
Detailing all guarantees and warranties	Includes all guarantees pertaining to service levels as well as product warranties where relevant (off-grid solar products in the case of product-based sectors or ancillary products such as smart meters in service-based sectors such as mini-grids).
Detailing the insurance policy (if required)	These include insurance policies that protect either the financier or the provider from events such as employee injury, etc.
Detailing the limitations and liabilities	Refers to the limitation of personal liability on the part of any parties related to the financier or provider. Liabilities refer to claims brought on the financier or provider by third parties (e.g., end customers).
Outlining the remuneration structure	Details how the O&M provider is compensated, for example, monthly, as a percentage of energy sales, or a flat one-off fee, etc.
Outlining incentive and penalty mechanisms	Mechanisms to incentivize the provider to adhere to service level requirements set out in the agreement.
Detailing intellectual property protection	To protect the intellectual property of the respective parties (project owner, financier or O&M provider). For example, the project owner might have proprietary software which will be accessed by the O&M subcontractor to fulfil O&M tasks. This software remains proprietary of the project owner.
Licenses required to offer operational services (if required)	Depends on the licensing requirements of the country in which the DRE asset operates.

Table 1: Description of Elements to Include in Operations and Service Agreements.

The list in Table 1 is indicative and non-exhaustive, and whilst there is value in standardizing the core elements of operation and service agreements, these will vary greatly from industry to industry or on a case-by-case basis. Developing a template or open-sourced version of such an agreement would nonetheless be beneficial for the DRE sector but would require sub-sector specific terms to be incorporated. This is particularly true in cases where there are no widely recognized industry standards.

⁶ The Mini-Grid QAF for Nigeria can be accessed under appendix B of: USAID-NREL Partnership, Performance monitoring of African micro-grids: Good practices and operational data, 2020 ([Link](#))

2.2.2 Data sharing agreement

Robust Data Sharing Agreements (DSAs) are essential for the success and scaling of financial aggregation transactions. These agreements set out the purpose of the data sharing, cover how data will be handled at each stage, set standards, and help provide clarity on the roles and responsibilities of all the parties involved. Typically, when consumer information is involved, DSAs are mandated by law and are imperative to ensure consumer protection.

There is no set format for a data sharing agreement; it can take a variety of forms, depending on the scale and complexity of the data sharing. As the agreement sets common principles that bind multiple organizations together, it is imperative to use language which is easy to understand.

The following considerations are usually taken into account when developing a data sharing agreement in the context of DRE financial aggregation:

- > The data should be clear and easy to comprehend;
- > The format of the data should be consistent and standardized as far as possible;
- > The data should be accurate and complete;
- > Where possible, the data should be independently verifiable;
- > There should be uninterrupted access to the data (hosted on the provider's platform of choice);
- > Sensitive customer data should be protected at all times and adhere to the applicable data protection laws;
- > There should be non-disclosure of sensitive information;
- > There should be intellectual property protection;
- > Anonymized data should be used as far as possible;
- > Data should be housed on secure servers;
- > It should be in line with local laws (where the DRE assets operate as well as other relevant jurisdictions, e.g., where the holding company is domiciled or the jurisdiction from where funds are disbursed);
- > There should be good faith amongst the relevant parties;
- > The tenure of the agreement should be defined.

This list is indicative and non-exhaustive, and whilst some data sharing conditions are transaction specific, DSAs across the DRE sector could be largely standardized. Standardizing data architecture and sharing agreements will contribute to easing the process of DRE financial aggregation.

2.2.3 Purchase and sale agreement

The Purchase and Sale Agreement (PSA) details the asset transfer process of a financial aggregation transaction. The agreement has important information including the asset details, sales price, and payment terms of the sale. The agreement outlines the due diligence periods and conditions that must be met before the sale, and what remediation is available if the asset fails to perform as expected and/or the seller deliberately conceals any information which has a material impact on the performance of said asset. The PSA is applicable to both tangible (e.g., stand-alone solar hardware) and intangible assets (e.g., receivables). In the case of intangible assets this agreement is only applicable to off-balance sheet transactions. In this scenario the PSA would be between the original asset owner and the financial vehicle responsible for the sale i.e., an SPV or a limited liability partnership (LLP).

Purchase and sale agreements for DRE financial aggregation will typically require clauses pertaining to the following elements:

- > Evidence of asset ownership and/or rights to sell assets. This refers to a claim by the asset owner that they are the sole owner of the assets with full rights to sell;
- > Board or shareholder approval to sell assets. This clause lists all the parties that need to provide approval for the assets to be sold;
- > Regulatory approval to sale assets (if required);
- > A detailed description of the asset(s);
- > Outlining the purchase price and method of payment;
- > Prescribing permissible use of sales proceeds (optional);
- > Outlining of the terms of delivery, which describes the process and details of transfer of the assets from the originator to the financier;
- > Defining the closing date for the sale;
- > Defining the terms of sale (if required);
- > Defining the guarantees and warranties pertaining to the DRE receivables. For example, guarantees and warranties should serve as contingencies if the receivables perform below the expected level;
- > Defining the remedies in the event of non-performance (i.e., a returns policy or over-collateralization⁷);
- > Outlining the role of intermediaries such as brokers and escrow agents.

This list is indicative and non-exhaustive, and whilst some elements are transaction specific, the core tenets of a PSA can be largely standardized. Transaction parties will need to pay particular attention to country specific laws and taxes with regards to asset transfers.

⁷ See section 2.2.4 for a definition of Over-collateralization.

2.2.4 Loan agreement

Loan agreements are required for debt-based financial aggregation transactions. A loan agreement is a formal contract between a borrower (the DRE company) and a lender (the financier). The agreement typically includes information on the roles and responsibilities of the parties as well as the credit terms such as the loan amount, the type of loan, the repayment schedule, and the interest rate. Additionally, the contract would include the legal recourse should the borrower not meet the legal obligations. Some loans require collateral (security). This collateral can be both tangible and intangible. In the case of DRE financial aggregation, collateral may come in form of customer receivables. Financial aggregation transactions often employ over-collateralization. This involves additional collateral attached to the loan that is only redeemable in the event that principal and interest payments cannot be met by the borrower. This serves as a credit enhancement mechanism.

Loan agreements for DRE financial aggregation will typically require clauses pertaining to the following elements:

- > Outlining the credit terms, including tenure, interest rate and repayment schedule that must be followed by the borrower;
- > Prescribing permissible use of debt funds paid by the lender to the borrower (optional);
- > Defining the collateral attached (and over-collateralization): Refers to clearly stipulating all items presented as collateral and the details of over-collateralization employment. Over-collateralization is commonly used in off-balance sheet securitization, wherein the facility has the right of ownership for more than 100 percent of the value of the receivables;
- > Detailing the reporting requirements to be adhered to by the borrower, including both the contents and frequency of reporting to the financier;
- > Detailing the covenants which need to be met pertaining to:
 - Minimum liquidity that the borrower must maintain;
 - Maximum debt-to-capitalization ratio;
 - Minimum cash flow interest coverage ratio;
 - Minimum total assets to debt ratio;
 - Minimum total equity to debt ratio;
 - Minimum level of Earnings Before Interest, Tax and Depreciation (EBITD);
 - Minimum level of Earnings Before Interest and Tax (EBIT);
 - Maximum level of Operating Expenses (OPEX);
- > Defining default clauses, which stipulate events in which default is declared and the lender's rights and remedies in such an event. Default events can include:
 - Non-payment;
 - Breach of financial covenants (outlined above);
 - Failure to comply with other obligations;
 - Misrepresentation;
 - Cross default, i.e., defaults on the borrower's other obligations. For example, if the DRE company defaults on

a separate loan from a separate lender, the financier can demand repayment from the borrower;

- > Defining late payment implications, such as penalties including additional interest and debt recovery procedures;
- > Defining early repayment implications such as a penalty to make up for the lost interest income on the part of the financier;
- > Outlining any additional fees;
- > Disclosing credit rating of the receivables (optional and only if available).

This list is indicative and non-exhaustive, and whilst some elements are transaction specific, the core tenets of a loan agreement for a DRE financial aggregation transaction can be largely standardized.

Transaction parties will need to be cognizant of local norms and standards with regards to debt. For example, under Islamic finance, interest on debt is not permissible, in which case, alternative forms of lending would need to be considered.



Photo: UNDP Mauritius/Stephane Bellerose

3. Case studies of past and present DRE financial aggregation facilities and transactions

This chapter presents three case studies of successful first-mover DRE financial aggregation transactions. The information provided is derived from published reports about these deals and interviews with the parties involved in the transactions, namely Bboxx, Persistent Energy, Winch Energy and Solar Frontier Capital Limited (SFC) a wholly owned subsidiary of African Frontier Capital (Mauritius) LLC (AFC).

These three examples were selected as (i) they are among the first transactions involving some form of aggregation that were identified in the DRE sector and (ii) they each showcase a different approach to aggregation. Other relevant transactions have taken place in the sector⁸ or are currently taking shape which could be documented in a similar manner in the near future.

In fact, in mid-2023, two new receivable securitization structures were announced involving market leaders in the off-grid solar sector in East Africa as the sole recipients. The first one, a \$130 million securitization transaction to finance the pooled expected future payments from Sun King customers in Kenya, was arranged by Citi and involves participations from development finance institutions and commercial lenders.⁹ The second involves SFC and expands d.light’s securitization financing facilities¹⁰ beyond Kenya, into Tanzania, bringing the total value of local currency structures financed by AFC to \$490 million.¹¹ These transactions highlight the ever-evolving nature of the DRE sector and its potential for aggregation but also the concentrated nature of investments in the sector.

3.1 Bboxx distributed energy asset receivables: \$500,000 pilot in Kenya (2015)

In December 2015, Bboxx performed the first receivables securitization transaction in the DRE sector in sub-Saharan Africa. Bboxx issued securitized receivables linked to approximately 2,500 Pay-As-You-Go (PAYGO) customer instalments worth KES 52 million (approximately \$500,000 at the time). Oikocredit purchased the securities, making them the only investor in the deal. The transaction was arranged by Persistent Energy Partners.

Considering its ticket size of \$500,000, the transaction was not cost-effective as it was too small to warrant the time and cost involved in setting it up. However, in this particular instance, cost-effectiveness was not the main focus of the transaction.¹² Instead, it was intended to serve as a pilot to test and illustrate how securitization can take place in the DRE sector. Persistent Energy was represented by Hogan Lowells, who did pro-bono work for this transaction. Regular rates would have made the transaction unviable. Bboxx had their own legal counsel supplied by Norton Rose and funded by Power Africa.

From conception to closing, it took the involved parties a year to close this transaction. Persistent notes that future transactions could be closed much quicker given that learnings from this first attempt can be applied. This could take the processing time down to 3-6 months.

8 The CAP has identified and documented such transactions together with the Climate Bonds Initiative in the joint flagship report 'Linking Global Finance to Small-Scale Clean Energy' and more recently in the 'Financial Aggregation for Distributed Renewable Energy' Reports Series.
 9 Sun Connect News, Sun King and Citi Close First \$130 million Securitization to Broaden Access to Finance for Off-Grid Solar in Kenya, 2023 ([Link](#))
 10 Brighter Life Kenya 1 Limited (BLK1) and Brighter Life Kenya 2 Limited (BLK2) which are presented as a case study in Section 3.3.
 11 African Frontier Capital, AFC announces expansion of industry-leading USD 490 million multi-currency social impact receivable securitization structure for d.light, 2023 ([Link](#))

12 Aidun, C. & Muench, D., Securitization: Unnecessary Complexity or Key to Financing the DESCO sector? 2018, ([Link](#))



Photo: UNDP/Karin Scherbrucker

3.1.1 Transaction structure

The transaction did not follow a purely off-balance sheet structure. The facility that housed the receivables was a Limited Liability Partnership (LLP) between Bboxx Kenya and Persistent Energy. Bboxx held a majority share of 99 percent and Persistent Energy 1 percent.^{13,14} The LLP acquired Bboxx KES-denominated receivables by means of capital contribution. This was deemed the most cost-efficient way to undertake the transaction as it meant it was not liable for VAT.

Under this capital contribution model, the originator (in this case Bboxx) assigns the legal rights, title and interest related to the receivables to the LLP. When the receivables are securitized by the LLP and the asset-backed securities sold to the investor (in this case Oikocredit), the LLP can distribute the proceeds to Bboxx as a return of capital without any VAT or withholding taxes.¹⁵ At the time, securitization tax laws in Kenya applied standard taxation on the true sale of receivables, which meant that SPVs were not seen as pass-through structures and consequently transfers of assets were taxed.¹⁶ Persistent noted that the transaction would have been completely unaffordable if the parties had to pay VAT on the transaction. The LLP route does mean, however, that the transaction was not fully bankruptcy remote and as such some originator-specific risk was still applicable. This means that if Bboxx were to be declared bankrupt, the receivables, i.e., the assets that back up the securities housed in the LLP would also go under.

This was a purely local deal. Persistent Energy indicated that Oikocredit was comfortable with taking Kenyan Shillings risk as they already had local operations in Kenya. The facility was close-ended and the average maturity of the PAYGO contracts was three years. Cash sweeps, in other words, the payment of receivables from Bboxx to the LLP, were done weekly instead of daily. The mobile money payment system used to handle receivables was not set up to distinguish between those that were due for the SPV and those that stayed with Bboxx. This meant that the distinction had to be manually accounted for. As a result, this process had a longer lead time than would have been the case with an automated system.

Due to the small size of the deal the parties involved had to keep transaction costs as low as possible for it to be feasible. Consequently, no field testing of the assets was conducted. This is something that would normally take place to ensure, at a minimum, that the assets at play are indeed real.

3.1.2 Looking to the future

Persistent Energy notes that in the future a warehousing facility that acquires receivables on a revolving basis would be of immense value to the sector. This would enable the securitization of both existing and new PAYGO contracts. In effect, such a facility would securitize new PAYGO contracts as they are originated and until they mature and so on.

This becomes especially practical for a company that generates about \$50 million per year in PAYGO revenues. If more and more companies start to reach this scale, a market for DRE securitization could emerge. More companies, however, still need to reach scale for this to become a reality. At present only a handful of companies can absorb these levels of capital.

Enabling environments also need to become more supportive of securitization transactions and a pool of service providers needs to develop to support the market. For example, there is still a lack of established back-up service providers that can continue servicing DRE connections in the case of originator insolvency. In some instances, transaction arrangers must play the role of back up servicer (see for example the case study on Solar Frontier Capital in section 3.3).

Experience gained through this pilot transaction led Persistent to the realization that off-balance sheet securitization deals should be at least \$10 million to account for transaction costs but notes that this is on the lowermost end of the spectrum. To truly spark interest from investors, deal sizes would need to be at least in the \$50 million range or more.

This transaction also showed that DRE companies could, in the future, fill a considerable gap of corporate debt in sub-Saharan Africa. In Kenya, for example, pension- and trust laws have distribution requirements in place, which require pension- and trust funds to hold corporate debt. There is, however, limited corporate debt in Kenya. As such, a credit rated DRE securitization deal would, in the words of Persistent Energy CEO, Christopher Aidun, “be snapped up by investors.”

¹³ Ibid.

¹⁴ The 1% Persistent share serves the purpose of a blocking stake. This is to ensure that the entity is not fully owned by the originator (in this case Bboxx) and to avoid that the entity is not potentially operated in a way that is disadvantageous to holders of the asset-backed securities. For example, if the originator faces financial distress, it might seek to access the receivables held by the entity.

¹⁵ Aidun, C. & Muench, D., *Securitization: Unnecessary Complexity or Key to Financing the DESCO sector?* 2018, ([Link](#))

¹⁶ Consultations with the Capital Markets Authority of Kenya in 2022 have confirmed that tax exemptions for such transfers are now in place, which means that SPVs now enjoy pass-through treatment.



Photo: UNDP/Karin Scherbrucker

3.2 Winch Energy: \$16 million mini-grid portfolio finance (2021)

In 2017, Winch Energy won tenders to develop mini-grids in Uganda and Sierra Leone. When the company went to market to obtain financing, they were told that the ticket size for each project was too small – an all too common problem in the mini-grid sector. In response to this, Winch subsequently adopted a portfolio financing approach, combining projects from the two countries into a Holding Company (HoldCo).

The company secured a limited recourse loan for an aggregated portfolio of mini-grid projects across 25 villages in Uganda (approximately 2,300 customers) and 24 villages in Sierra Leone.¹⁷ The first \$16 million phase is aimed at connecting more than 6,500 customers in the Lamwo district of Uganda and the Tonkolili, Koinadugu and Bombali districts of Sierra Leone. A further 6,000 portable batteries, charged by solar kiosks, will also be installed to provide electricity beyond the mini-grid catchment areas. The deal represents the largest mini-grid financing portfolio to date, globally.

3.2.1 Transaction structure

The Winch Energy corporate company, domiciled in the UK, is the minority shareholder of Winch IPP Holdings Limited, which is the holding company that owns the local Asset Companies (AssetCos) in Uganda and Sierra Leone and is also registered in the UK. The AssetCos own the mini-grid projects.

The majority shareholder of Winch IPP Holdings Limited is NeOT Offgrid Africa, which is owned by EDF, Meridian and Mitsubishi. In addition to this equity investment, Winch IPP Holdings raised debt from FMO and CAMCO to finance this deal. Equity expected IRR is 15 percent while debt came in at 6 percent. A \$2 million short term bridge loan was also raised from SunFunder¹⁸ to partially finance construction of the Ugandan mini-grids while waiting for a results-based \$2.8 million subsidy from the German Development Ministry (BMZ) and the European Union in Uganda. Subsidies were disbursed by FCDO in Sierra Leone.¹⁹ Subsidies such as these are, and will remain, key to enabling rates of return that will attract commercial investors to mini-grid portfolio finance deals.

Winch raised debt and equity at the HoldCo level, which on-lent to the AssetCos in each country. The company was able to overcome the issue of small ticket size through this approach. The UK was selected as a domiciliation destination, not because of any legal or tax reasons but because Winch corporate was already established there. In addition to the two AssetCos, two Operations Companies (OpCos) have also been established, one in Uganda and one in Sierra Leone, to operate the mini-grids.

3.2.2 Looking to the future

As it was one of the first of its kind, this transaction took considerable time to close – approximately two years. Various legal factors led to the long timeline, including the following:

- Lenders into the facility required Winch to submit their approved mini-grid licenses, yet at the time there were no mini-grid regulations in Sierra Leone. Winch first had to work with the regulator to publish regulations in order to apply for a license. At the time mini-grid regulations were not fully developed in Uganda either; it took about a year to obtain licenses in the country.
- Engineering, Procurement and Construction (EPC) contracts that the company had in place with contractors had to comply with the International Federation of Consulting Engineers (FIDIC) Silver Book on Conditions of Contract for EPC Projects,²⁰ which consists of complex standards and liability clauses. This led to extensive contract negotiations with local contractors, which took about a year.
- Contracts signed with government agencies had to comply with strict requirements which further extended the legal due diligence period.
- Each customer contract had to comply with specific requirements determined by the lenders.
- Land agreements were scrutinized, which became a complex process, considering that conventional land agreement templates targeted at privately-owned land are not well suited to the nature of community-owned land in Uganda and Sierra Leone.

Approximately nine law firms were involved in the deal. Two local firms were hired in Uganda and Sierra Leone respectively, while EPC contracts and O&M contracts were drafted by an international firm hired by Winch Energy. NeOT and FMO also hired lawyers to assist with their due diligence processes. This meant that legal fees became very expensive. Going forward, there is an opportunity to build on the experience acquired through these pioneering transactions to reduce legal costs as such processes become more commonplace and increasingly standardized.

High legal costs meant that overall transaction costs increased considerably – to approximately \$2 million. Relatively large deal sizes are required to cover such high transaction costs and as such the total deal size closed for this transaction would ideally have been higher. Looking to the future, Winch is confident that future transactions will be closed faster following this initial learning phase. Transaction costs should also subsequently decrease.

Given the volatility of many local currencies, foreign currency exposure risk could also be mitigated in the future. One way to achieve this is local currency financing, but this is not always available at present.

The company hopes to expand operations into more countries, with ambitions to reach some \$100 million of operating projects in the next 24 months.

¹⁷ Winch Energy, NeOT Offgrid and Winch Energy Limited deploy new solar solutions in Uganda and Sierra Leone, 2021 ([Link](#))

¹⁸ Now Mirova SunFunder following its acquisition by Mirova in June 2022 ([Link](#)).

¹⁹ Takouleu, 2021. 'Africa: Winch Energy obtains \$16 million to finance 49 mini-grids in two countries', Afrik 21, 16 February 2021 ([Link](#))

²⁰ The FIDIC suite of construction contracts is written and published by the International Federation of Consulting Engineers (FIDIC). It includes the Silver Book for EPC/Turnkey projects. More details can be found [here](#).

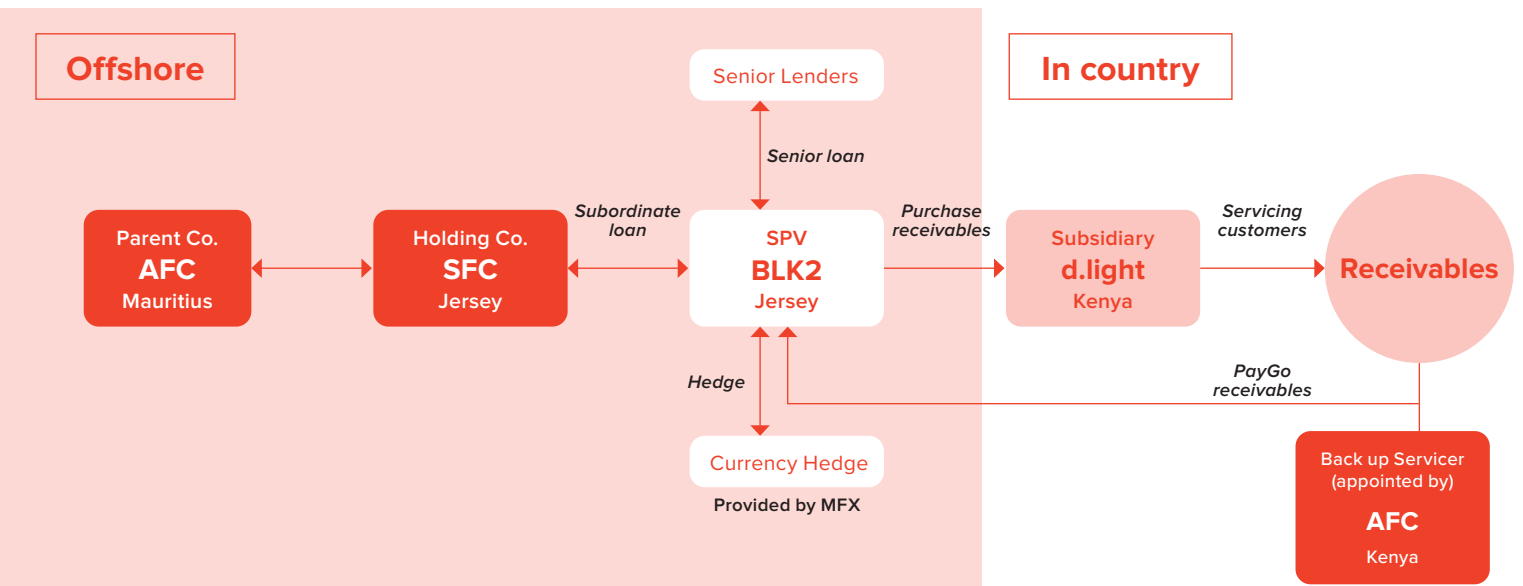


Figure 4: Deal structure of BLK2

Source: Author's own diagram based on information provided during stakeholder interviews.

3.3 Brighter Life Kenya 2: landmark off-balance sheet facility (2022)

Solar Frontier Capital Limited (SFC), a wholly owned subsidiary of African Frontier Capital LLC (AFC), was established in 2018 with the goal of providing working capital to the PAYGO OGS sector. The company is focused on buying pools of receivables through off-balance sheet structures. SFC's parent company, AFC, headquartered in Mauritius, traces its roots back to the infrastructure investment space.

In June 2022, SFC announced the establishment of Brighter Life Kenya 2 Limited (BLK2), the largest off-balance sheet facility in the DRE sector to date. The facility has been structured to provide d.light design Inc. (d.light), a leading OGS company, with multi-currency financing of up to \$238 million over a two year period.²¹ The transaction is backed by equivalent PAYGO receivables from d.light's Kenyan operations. This facility follows a \$127 million Brighter Life Kenya 1 (BLK1) in 2021 which was structured under identical terms. BLK2 will provide d.light quick and flexible working capital to enable the company to continue providing consumer finance for its OGS products.

BLK2 is being partially financed through a \$62 million senior lending facility from the U.S. International Development Finance Corporation (DFC), Norfund, responsAbility's managed funds, and Oikocredit²² all represented by law firm Hogan Lovells. AFC also provided a subordinated loan to the facility.

3.3.1 Transaction structure

The \$238 million represents the face value of the receivables that SFC expects to buy from d.light over a 2-year period in monthly intervals. Consequently, this is not a one-off transaction. The mechanics of the facility follow that of a traditional off-balance-sheet securitization instrument. Under the agreement, SFC alongside its senior lenders capitalized the BLK2 SPV domiciled in Jersey. This SPV will purchase PAYGO receivables up to the value of \$238 million from d.light in Kenya in return for capital upfront.

The structure is supported by a currency hedging facility provided by MFX and a backup servicer in Kenya appointed by AFC. The facility has a service agreement with d.light who will continue servicing the end users. End user payments (PAYGO receivables) are made directly to the SPV. D.light received legal assistance for this and the transaction more broadly from Norton Rose paid for through a Power Africa grant.

The commercial term structures that product based PAYGO securitization facilities follow do not vary widely. Typically, if a product sells for \$110 to the end-user, the end-user pays a down payment of about \$10 to the DRE company. The end-user then owes the DRE company \$100, which is termed Accounts Receivable (AR). The DRE company can then sell the \$100 AR to the financier. The financier will, however, typically only finance a portion of the AR, for example 50 percent, which equates to \$50. The financier would pay the DRE company the full amount of the portion that it finances upfront, in this case \$50. The DRE company would now have collected \$10 from the customer and \$50 from the financier. The DRE company's profit is derived from what remains after the company has repaid the financier the AR portion that was financed plus associated financing costs. DFIs which fund securitization deals are typically targeting financing costs of 6 percent. See Figure 5 for a depiction of this structure.

²¹ D.light, d.light and SFC announce industry-leading USD 238 million multi-currency receivable financing facility, 2022 ([Link](#))
²² Ibid.

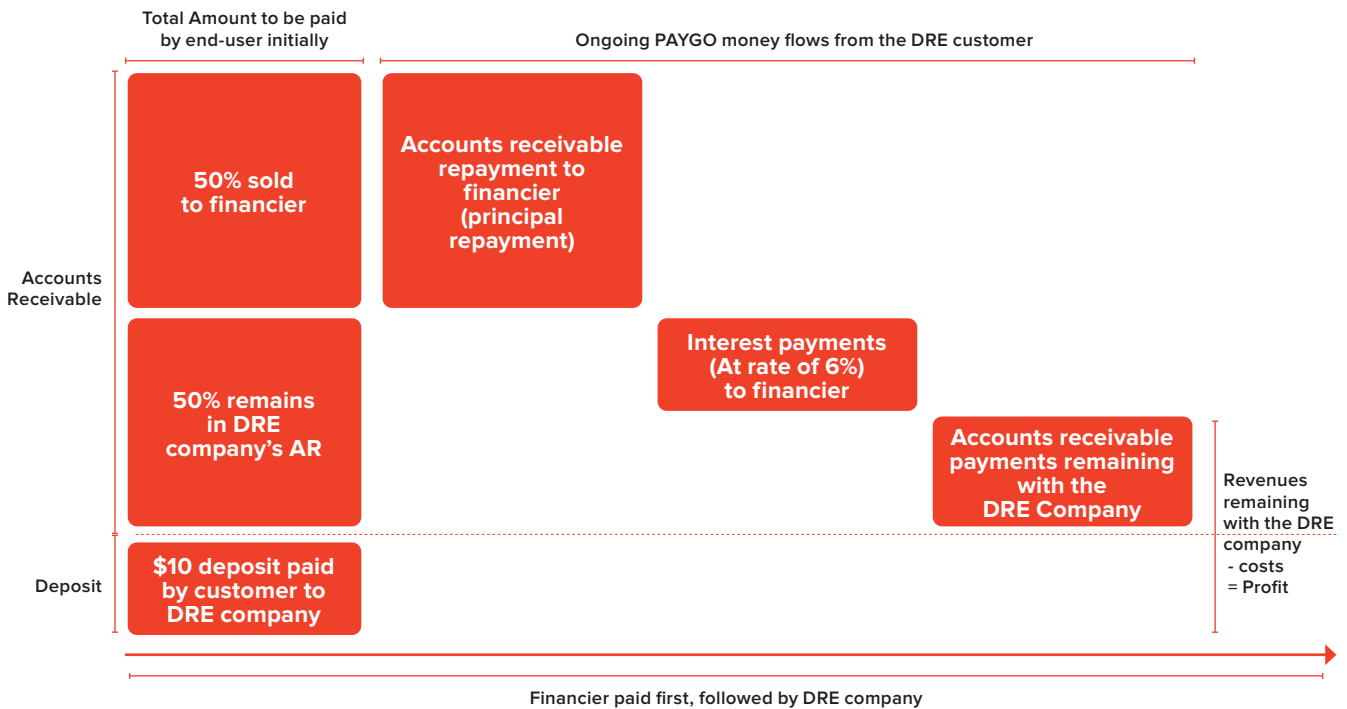


Figure 5: Typical structure of a product-based PAYGO securitization facility

Author's own diagram based on information provided during stakeholder interviews.

What is unique about the OGS sector is that AFC has to play additional roles which do not exist in other sectors or are usually not undertaken by a project sponsor. In addition to acting as a sponsor and subordinated lender, AFC acts as a “Master Servicer” responsible for collecting and managing independent sales and collection data as well as providing independent oversight of the daily “cash sweeps” (cash collection from d.light, who continues to collect payments from customers on SFC’s behalf). AFC also has a separate Kenyan entity which is responsible for playing the role of back up servicer in the event of a d.light bankruptcy.

In addition to standard financial and legal due diligence processes, SFC also performed an assessment of how d.light receivables are originated, in other words how PAYGO units are sold to customers on the ground. An assessment of customer protection policies was also conducted, and considerable time was spent at the company’s call centre and with management.

In addition to employing an independent data management system, instituting frequent cash sweeps and playing the back-up servicer role, SFC has taken some additional steps to de-risk their instrument. SFC uses advanced tranching methodologies to accurately evaluate, select and price high-quality receivables. The company also has foreign currency hedging agreements in place and keeps its foreign currency in its holding company, only drawing down when necessary.

3.3.2 Looking to the future

AFC and its CEO, Eric de Moudt, remain bullish on the commercial potential of OGS receivables, as they have found “solar home system revenues remained robust through COVID, locust infestations and soon enough we will even know whether or not through election cycles”. This transaction exemplifies how African DRE receivables can be leveraged by corporate entities in (international) mature financial markets to finance African operations and ultimately African customers. SFC is aiming to deploy similar facilities in two other jurisdictions in sub-Saharan Africa. Ideally in the future, SFC would prefer to domicile the facility in Kenya itself. This will become possible when the capital market has become more advanced. The company will also look to domicile facilities locally in other jurisdictions where receivables are securitized, if capital market conditions allow.

In August 2023, AFC and d.light announced the establishment of a \$125 million financing vehicle, Brighter Life Tanzania 1 Limited (BLT1), an off-balance sheet securitization structure that provides local-currency financing to the Tanzanian subsidiary of d.light.^{23, 24} This adds to AFC’s existing securitization structures in Kenya (BLK1 and BLK2), bringing the total value of securitized financing provided to d.light to \$490 million.²⁵

²³ d.light, d.light closes USD\$125M funding through a securitization facility to meet growing demand for off-grid solar products in Tanzania, 2023 ([Link](#))

²⁴ African Frontier Capital (AFC), AFC announces expansion of industry-leading USD 490 million multi-currency social impact receivable securitization structure for d.light, 2023 ([Link](#))

²⁵ Ibid.

SFC also aims to roll out a warehousing facility that allows them to buy receivables from a variety of different OGS companies in different jurisdictions. This facility will be aimed at providing access to off-balance sheet financing among smaller companies that originate receivables worth \$100,000 to \$200,000 per month.

The company is increasingly targeting the securitization of receivables from technologies beyond solar home systems, such as productive use systems and smartphones.

Looking to the future, SFC will aim to reduce costs by reducing legal fees. The company plans to achieve this by automating legal documentation. The company notes that legal fees are currently being driven exorbitantly high as most investors are conservative and have limited or no experience in performing securitization deals. As more securitization transactions take place over time, the current approach of developing bespoke legal documentation and processes for every new transaction will give way to more standardized practices, which will help significantly reduce legal costs.



Photo: UNDP/Karin Scherbrucker

4. DFIs and concessional funds involvement in DRE financial aggregation

While financial aggregation facilities are designed to isolate risks, and in turn mitigate overall risk, it is also important to acknowledge that transactions still involve substantial risk. Most of the remaining risks can be labelled as systemic, in that they are characteristic of the DRE sector in emerging markets as a whole. As such, the traditional approach that many transaction arrangers take to crowd-in commercial capital i.e., including concessional funds in the capital stack, will also be applicable to the structuring of DRE financial aggregation facilities.

A precondition that most commercial investors who participated in this research stated for their involvement in financial aggregation facilities is the involvement of concessional funds that can assist with risk mitigation. This would involve concessional funders (DFIs, etc.) taking up guarantee and junior debt positions in the capital stack. The \$16 million limited recourse loan received by Winch Energy for development of mini-grid projects in Uganda and Sierra Leone (case study 3.2 above) offers an example of concessional and commercial fund blending in a financial aggregation transaction. Commercial funders included NEoT Offgrid Africa and SunFunder, while FCDO and BMZ disbursed grant funding.

The Brighter Life Kenya 2 Limited (BLK2) financing vehicle described in section 3.3 is partially financed through a senior lending facility involving two DFIs (DFC and Norfund).²⁶ Its successor, the new BLT1 financing vehicle is being partially financed by a \$30 million senior lending facility provided by the Eastern and Southern African Trade and Development Bank Group (TDB Group)²⁷ an African development finance institution serving 25 member states in the region.²⁸ What's more, the TDB is also involved in the \$130 million securitization transaction with Sun King arranged by Citi, announced in 2023.²⁹

Guarantees can also play a key role as they effectively underwrite the assets in the portfolio. Should the senior lender's return expectations not be met, or the investment lost entirely, a guarantee will compensate the lender for their losses.

A junior debt position would be suitable for a concessional funder that expects some return while still playing a catalytic role by taking losses before the senior lender. In so doing, the concessional funder taking up the junior debt position can crowd in international and local senior lenders and leverage private, commercial capital.

Care should be taken to ensure that concessional funds do in fact crowd in commercial capital for aggregation transactions. Poorly designed concessional facilities can lead to market distortion if funds are allocated to lower risk DRE assets, in which case they effectively compete with commercial capital. In this context, concessional funds should exclusively be applied to lower the risk for commercial capital.

Despite being more risk tolerant than commercial investors, concessional investors still require investees to pass the necessary due diligence checks and meet other requirements. Concessional funders would typically assess the same aspects of a potential investee that a commercial investor would. What is unique about concessional funders is that they would typically focus more on the additionality of their investment. Funds have additionality if they enable desired outcomes that would not have been enabled without the concessional funds. Investors' needs vary, but typically concessional investors would either take on more risk than commercial investors and/or settle for smaller ticket sizes, lower interest rates, longer tenors and lighter collateral needs. The categories that are typically assessed prior to making any investment include the following:

- Company legal and administrative:
 - Company registration;
 - Operating licenses;
 - Tax compliance certificates;
 - Company legal and operating structure;
 - Track record, typically at least 2 years for concessional funders;
 - Governance structure, including human resources details.
- Company financial:
 - Audited financial statements (statement of comprehensive income, statement of financial position and cash flow statement). The statement of financial position is especially key in calculating important financial ratios such as the debt service coverage ratio and the debt-to-equity ratio – often needing to be at least 50:50 but can be stretched to 70:30 for concessional funders. Cash flow statements should reflect positive cash flows, while the statement of comprehensive income should show healthy earnings;
 - Credit report of the company;
 - Status and details of shareholding;
 - Existing contracts in place with debtors and creditors.
- Assessment of the company's products and/or service and associated business model:
 - Year-on-year growth in sales or growth in sites commissioned;
 - Retail prices and/or customer tariffs, average revenue per user (ARPU);
 - Margins;
 - Supply chains;
 - Customer guarantees in place;
 - Service level history (Service uptime, etc.);
 - Data management systems (concessional funders might

²⁶ AFC, d.light and SFC announce industry-leading USD 238 million multi-currency receivable financing facility, 2022 ([Link](#))

²⁷ AFC, AFC announces expansion of industry-leading USD 490 million multi-currency social impact receivable securitization structure for d.light, 2023 ([Link](#))

²⁸ Eastern and Southern African Trade and Development Bank Group (TDB) website ([Link](#))

²⁹ TDB, TDB and consortium of lenders to broaden access to finance for off-grid solar in Kenya via USD 130M transaction with Sun King arranged by Citi, 2023 ([Link](#))

- require investees – companies or funds – to adopt a specific data management system that the funder stipulates);
- Customer contracts;
- Customer repayment rates.
- Environmental, social and governance (ESG):
 - Greenhouse gas emissions avoided;
 - Jobs created;
 - Gender policies in place;
 - Ability to track impact;
 - Anti-money laundering policy;
 - Local ownership and local content.



Conclusion

This white paper was developed in response to recurrent calls among stakeholders consulted in the context of the CAP, to further elucidate financial aggregation transactions. It delves into the main ingredients involved in structuring and closing such transactions, extracting insights from concrete cases, while also acknowledging their complexity and existing limitations – e.g., the commercially sensitive or confidential nature of certain elements of such transactions which cannot be disclosed. In that regard, CAP is particularly grateful to those interviewed for the preparation of this paper, for sharing valuable information that will benefit the sector.

2023 could potentially mark an inflection point with the announcement of two pioneering receivable securitization structures in East Africa that truly showcase the potential of financial aggregation to unlock new sources of capital for the DRE sector. Still, such financing remains confined to a few geographies and market leaders. In that sense, the market is still nascent, and several barriers must be addressed if financial aggregation is to be widely employed in the DRE sector and scaled up.

As more transactions take place, more standardized practices will emerge which, if documented and disseminated across the sector, can reduce the time and cost involved in setting up and closing transactions and pave the way for further mainstreaming of financial aggregation for Distributed Renewable Energy. In fact, in the weeks prior to the finalization of this paper, several exciting announcements were made to that effect: In December 2023, Power Africa launched a report on securitization for solar pay-as-you-go companies which includes a simplified term-sheet template and an SPV Excel model with multiple tools³⁰. In October 2023, CrossBoundary Access announced the open sourcing of project financing tools for mini-grids including a project finance model and template project financing term sheets.³¹ Several platforms are also looking at the topic of aggregation which can help identify and disseminate best practices, including the Global Off-Grid Lighting Association (GOGLA)'s Finance and Investment Working Group through its re-engineering debt taskforce.³²

Furthermore, financial aggregation instruments need to go hand in hand with adequate credit risk management and consumer protection practices³³, and the necessary safeguards (e.g., having back-up servicing arrangements in place), to ensure that end-users continue to benefit from quality energy services they can afford, and the sustainability of the businesses being financed, while also protecting investors.

Finally, blended and concessional finance have and will continue to play a key role to allocate risks to the most appropriate financing parties and crowd in much needed private capital for the sector. This is particularly true when it comes to making such financing more accessible to a wide range of players in the sector.

This paper, together with the CAP's flagship report on '[Linking Global Finance to Small-Scale Clean Energy](#)' jointly published with the Climate Bonds Initiative, the '[Financial Aggregation for Distributed Renewable Energy](#)' report series, and the many insights stemming from the seven innovative financial models supported via the [CAP Financial Innovation Challenge](#), constitutes a compendium of relevant resources, information and analysis on financial aggregation. The intention is that this can spark a conversation; create synergies among stakeholders; inform new interventions; and facilitate future transactions. By fostering innovative finance, we can increase the availability and reduce the cost of financing for clean energy, and ultimately, we can help make clean, reliable, and affordable energy accessible to all.

³⁰ Power Africa's 'Demystifying Securitization for Solar Pay-As-You-Go Companies' report with links to the template and tools can be found [here](#).

³¹ CrossBoundary Access' press release and links to the tools can be found [here](#).

³² GOGLA's working group on Finance and Investment ([Link](#))

³³ CGAP (2021), Two Sides, One Coin: Credit Risk Management and Consumer Protection. ([Link](#))



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