

CLEAN



**SENSITIZING FINANCIAL
INSTITUTIONS TOWARDS LENDING TO
DECENTRALIZED RENEWABLE
ENERGY ENTERPRISES AND
END-USERS**

Prepared by



December 2020

Margdarshan Advisory & Consultancy Services (hereinafter referred to as 'MD') is a fast growing multi-disciplinary services firm helping youth in career building, facilitating ex-servicemen in placement and advising clients across different industries such as Security & Safety, CSR, Decentralized Renewable Energy, Agriculture, Financial Services, Affordable Housing, Food & Nutrition, etc. MD is HQ'ed in Jaipur (Rajasthan) and has other offices in Gurgaon and Noida.



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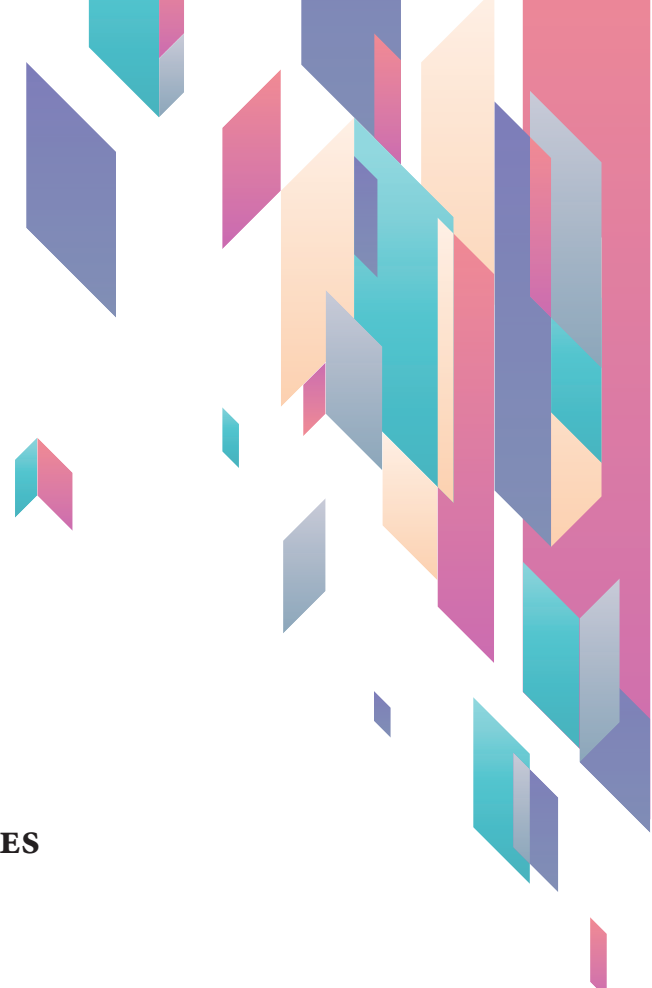

F-5, Ground Floor, Kailash
Colony, New Delhi - 110048

p: +91-11-4160-1543 | [theleannetwork.org](https://www.thecleannetwork.org) | [@thecleannetwork](https://twitter.com/thecleannetwork) | [CLEAN](https://www.linkedin.com/company/clean)

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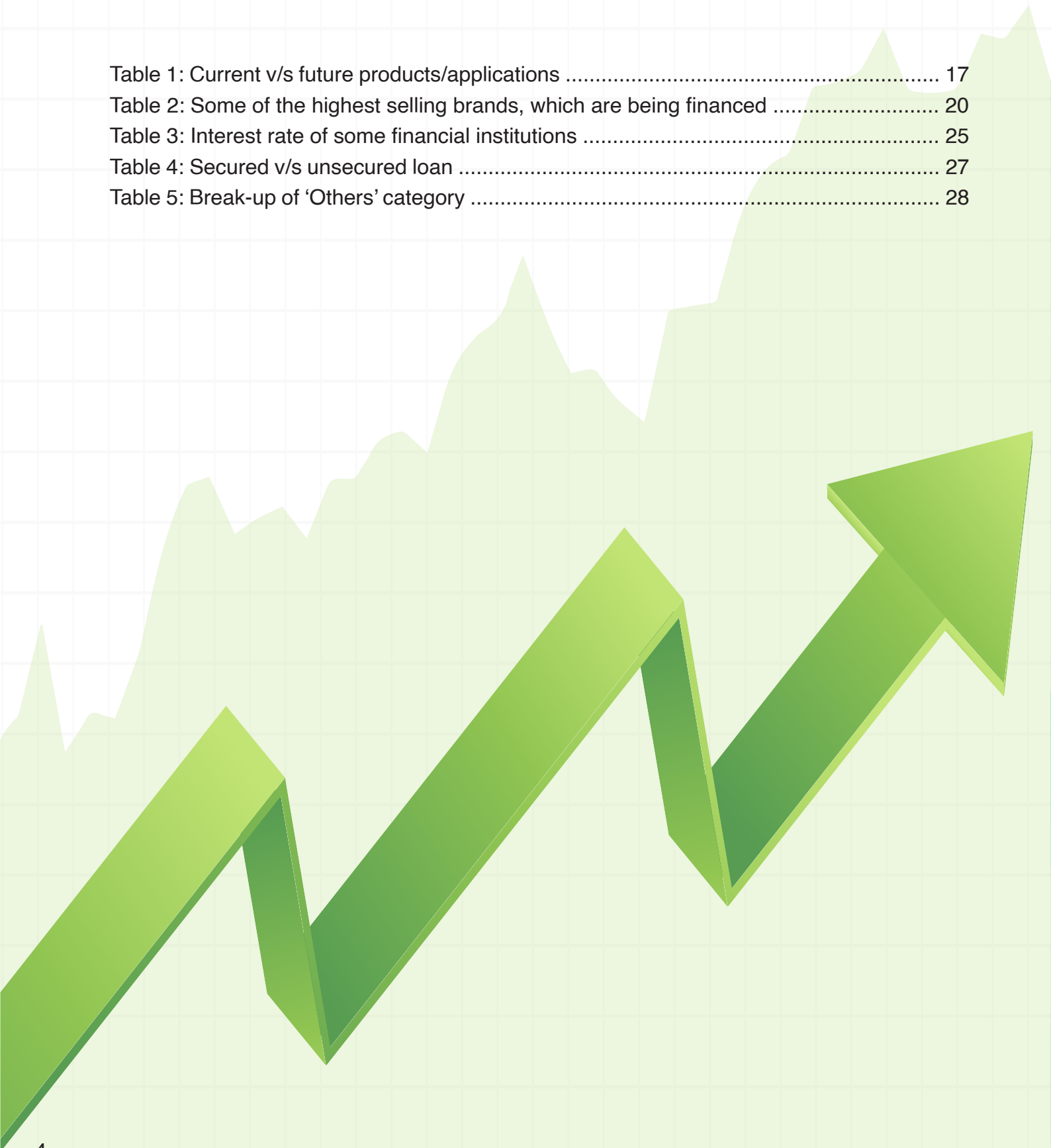
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LIST OF ABBREVIATIONS

DRE	Decentralized Renewable Energy
DCBS	Dhosa Chandaneswar Bratyajan Samity
DREEM	Decentralized Renewable Energy Evaluation and Monitoring
FI	Financial Institution
FPO	Farmer Producer Organization
FWWB	Friends of Women's World Banking
GTNFW	Grassroot Trading Network for Women
IREDA	Indian Renewable Energy Development Agency Limited
JLG	Joint Liability Group
LSK	Lok Sewa Kendras (Solar Powered)
MFI	Microfinance Institution
MNRE	Ministry of New and Renewable Energy
MSME	Micro, Small, and Medium Enterprise
MACS	Mutually Aided Cooperative Societies
MCLR	Marginal Cost of Funds-based Lending Rate
NBFC	Non-Banking Financial Company
NABARD	National Bank for Agriculture and Rural Development
NPA	Non-Performing Asset
PSL	Priority Sector Lending
RRB	Regional Rural Bank
SKDRDP	Shri Kshetra Dharmasthala Rural Development Project
SPV	Special Purpose Vehicle
SFB	Small Finance Bank
SHG	Self-Help Group
SEVA	Self Employment Voluntary Association
SF	Shell Foundation
SVCL	SV CreditLine Ltd
SIDBI	Small Industries Development Bank of India
VLE	Village Level Entrepreneur

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- Adhikar Micro Finance Pvt. Ltd
- Arc Finance
- Bank of Baroda
- Bankers Institute of Rural Development (BIRD)
- Caspian Impact Investments
- Centre for Development Orientation and Training (CDOT)
- Chanura Microfin Manipur
- cKers Finance
- Dhosa Chandaneswar Bratyajan Samity (DCBS)
- ESAF Small Finance Bank
- Friends of Women's World Banking, India (FWWB)
- Gram-Utthan
- Grameen Development & Finance Pvt. Ltd
- Humana Financial Services Pvt Ltd
- Indian Renewable Energy Development Agency Limited (IREDA)
- Jigyasa Livelihood Promotions Micro Finance Foundation (JIGYASA)
- KfW
- Maanaveeya Development & Finance Pvt Ltd
- Madhya Pradesh Grameen Bank
- Mahashakti Foundation
- Midland Microfin Ltd
- Muthoot Microfin Ltd
- RBL Bank
- responsAbility Investments AG
- Samasta Microfinance Ltd
- Sarala Development & Microfinance Pvt. Ltd
- Satin Creditcare Network Ltd
- Self Employment Voluntary Association (SEVA)
- Sarthak SEWA (affiliated to SEWA Bharat)
- Shell Foundation (SF)
- Shikhar Microfinance Pvt Ltd

- Shri K S Hegde (Veteran Banker)
- Small Industries Development Bank of India (SIDBI)
- Shri Kshetra Dharmasthala Rural Development Project (SKDRDP)
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- Uttarakhand State Cooperative Bank Ltd
- ValueFin India Credit Services Pvt. Ltd
- YVU Financial Services Pvt. Ltd

Note: *To maintain stakeholder confidentiality, we are not disclosing the names of some of the contributing stakeholders/institutions. We, however, highly value their insights towards key aspects of this report.*

Project Team:

Margdarshan Advisory & Consultancy Services - Gaurav Bhandari
CLEAN - Anuj Hemant Xess, Juhi Anand, Amittosh Pandey



EXECUTIVE SUMMARY

The entire world is going through challenging times due to COVID-19 pandemic resulting in extended lockdowns. In India, COVID-19 has adversely impacted all sectors (including the DRE sector) and resulted in the drastic slowdown of economic activities. As per the RBI's Monetary Policy Committee, India's economy is likely to contract 9.5% in the current FY 2020/21.¹

However, there is light at the end of the tunnel as concerted efforts are being put in by the Government and private institutions to revive the economy and also become Aatma Nirbhar Bharat.

With regard to the future growth of the DRE sector and financing of innovative DRE products/applications, CLEAN and Margdarshan Advisory & Consultancy Services (hereinafter referred to as 'MD') interviewed 49 financial institutions (FIs) across India as part of a survey. Prior to the outbreak of the pandemic, these interviews happened in-person; the interviews shifted to virtual mode during the pandemic period.

During this survey, both CLEAN and MD tried to create awareness among FIs about the DRE sector so that they are more inclined towards lending to DRE enterprises and end-consumers. Importantly, we also tried to understand the perspectives of FIs towards the DRE sector, as reflected in the responses to 17 questions asked as part of the structured questionnaire. These responses are now captured in this progressive report. This report is an attempt to capture varied perspectives, both qualitatively and quantitatively.

This report captures information from the survey at multiple levels, such as awareness of DRE products/applications, availability of dedicated financial products, current products being financed by FIs, profile of end-consumers, market knowledge, ways of creating consumer awareness, loan characteristics (size, interest rate, tenure, frequency, type, collateral, etc.), risks associated with the DRE sector, and the way to minimize them by creating a support mechanism.

The report ends with sections on challenges experienced, concluding remarks, and the way forward. The main highlights of the report are mentioned below:

- Most of the FIs have dedicated financial products, mainly for traditional DRE products and applications such as solar home systems, solar lanterns, and solar pumps for the past several years (even though the demand for some of these products has decreased over a period of time).
- Nearly 44% of the respondents were completely aware about the DRE applications, which also includes the new and innovative applications existing in the market.
- Among the respondents, the level of awareness was highest among MFIs, followed by other NBFCs.

¹Source: Indian Express (<https://indianexpress.com/article/explained/explainspeaking-takeaways-from-the-rbis-latest-monetary-policy-report-6721167/>)

- Among the products in the current portfolio, the most prominent ones include solar lanterns/ lights, solar home systems, water purifiers, cookstoves. In future, organizations are planning to explore portable solar pumps, which will be useful in agricultural fields, energy-efficient inverters, solar cold storage, E-rickshaws and their batteries, and solar pottery wheels, etc.
- Institutions offering loans with ticket size up to INR 50,000 offer the same as unsecured loans; whereas loans greater than INR 50,000 are secured loans.
- The major risks highlighted during the survey constitute system non-performance (20%), followed by non-scalable models (16%), loan default (16%), and lack of after-sales service (16%).
- With respect to support, 15% of the respondents are of the view that DRE sector enterprises and some FIs also need alternative form of funding. 13% of the respondents are of this view that a credit guarantee fund should be formed (in addition to interest subvention schemes, FLDG, etc.). 12% of the respondents suggest having subsidy for higher valued products. 11% of the respondents are of the view that more awareness of the DRE sector should be created among various stakeholders. 10% of the respondents suggest having a more efficient after-sales service from the manufacturer of DRE products.

INTRODUCTION

CLEAN is a recognized network of 150+ members, including enterprises (manufacturers and system integrators) and other stakeholders such as FIs, consultants, training institutions, and non-governmental organizations (NGOs), working in the decentralized renewable energy (DRE) space. It is committed to support, unify, and grow clean energy enterprises in India. Its primary focus is on rural and underprivileged communities where reliable, affordable, and clean energy plays a unique role in accelerating social, environmental, and economic development. CLEAN has contributed to development and influenced policies for the DRE sector, bridged access to finance for its enterprises, facilitated technology innovations, assisted its members in accessing markets, and build capacity of enterprises through trainings.

BACKGROUND

CLEAN has a mandate to facilitate affordable finance to its members and sensitize FIs about DRE applications, enterprises, and their business models. As the DRE sector is expanding and contributing to various livelihood opportunities, CLEAN believes that it is important to sensitize FIs and create awareness so that they are aware and inclined towards lending to enterprises and end-consumers in the sector. This sensitization drive will help FIs to know about the DRE market, new products and services available for lending under various types of schemes, and products of the financial institutions.

As a first step to sensitize FIs, it is important to understand the perspectives of the FIs on the DRE sector and the challenges faced by them in financing this area. This market research is an attempt in that direction.

The outcome and analysis of this research, as captured in this report, will help FIs, CLEAN, and other DRE stakeholders to explore multiple approaches towards financing both enterprises and end-users.

CATEGORY OF FINANCIAL INSTITUTIONS INTERVIEWED

As a part of research, we conducted 49 interviews. Out of these, we carried out 48 interviews with FIs and 1 interview with a veteran banker (covered in the 'Others' category). The actual sample size varies for each question and is appropriately shown in the figures below. This variation arises as some respondents were not asked certain specific questions due to non-relevance.



Figure 3.1: Category of financial institutions interviewed
(Sample size: 49)

Microfinance institutions (MFIs) in India are incorporated under different acts and thus have different legal forms such as Society, Trust, Mutually Aided Cooperative Society (MACS) or Cooperative, Section 8 Company, and Non-Banking Finance Company - Microfinance Institution (NBFC-MFI).

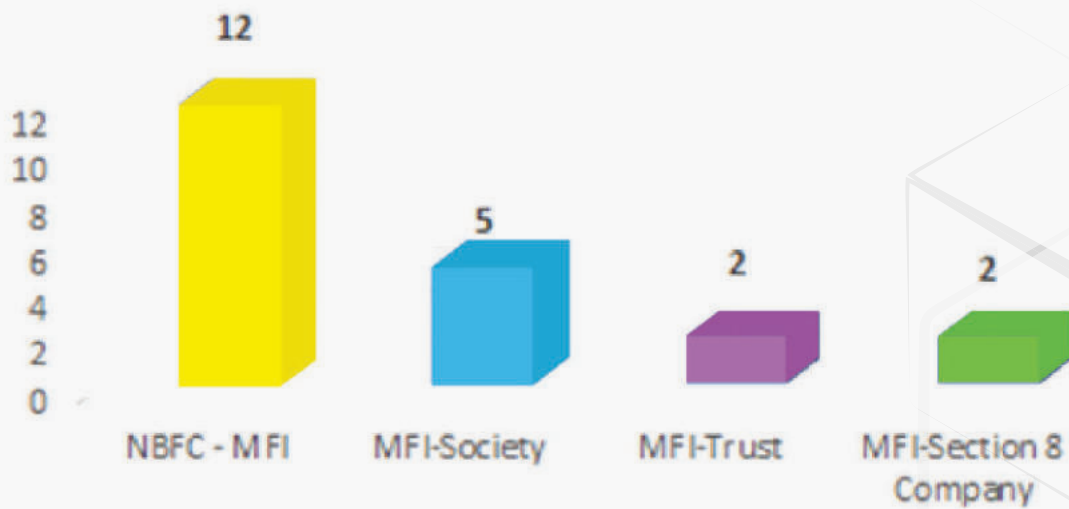


Figure 3.2: Number of MFIs across legal form
(Sample size: 21)

SURVEY RESULTS

i. Availability of financial products for financing DRE applications and enterprises

Out of the 46 respondents, 40 respondents have dedicated financial products such as loan, debt, equity, and revolving fund for DRE applications and/or enterprises.

It is important to highlight that most of the surveyed FIs have dedicated financial products, mainly for the traditional DRE products and applications such as solar home systems, solar lanterns, and solar pumps for the past several years (even though the demand for some of these products has decreased over a period of time). Among the surveyed FIs, MFIs and Banks are such categories. Dedicated financial products are not there amongst the surveyed FIs for most of the other DRE products and applications.

Figure 4.1: Availability of financial products for financing DRE applications
(Sample size: 46)

ii. Awareness of various products/applications under the DRE sector

We provided the list of some agricultural and non-agricultural DRE applications to the respondents, which included following applications:

- (a) **DRE-powered Agriculture/Farm Products/Applications** - pumps, dryer, rice huller, agro-processing machines, cold storage, milking machine, egg incubator, etc.
- (b) **DRE-powered Non-agriculture/Non-farm Products/Applications**- charkha, reeling machine, sugarcane crusher, blower, sewing machine, rope-making machine, pottery wheel, roti-rolling machine, etc.

The categorization in Figure 4.2 represents:

- Completely aware - The organizations that were aware of all the applications mentioned in the list and also some additional applications such as improved cookstove, pellets, mini-grid, and solar home systems (SHS).
- Partially aware - The organizations that were aware of some of the specific products/applications. This majorly included SHS, pumps, lanterns, rooftops, etc.
- Not aware - The organizations that were hardly aware of the products applications but showed interest in understanding about them.

Figure 4.2: Awareness of DRE applications among financial institutions
(Sample size: 48)

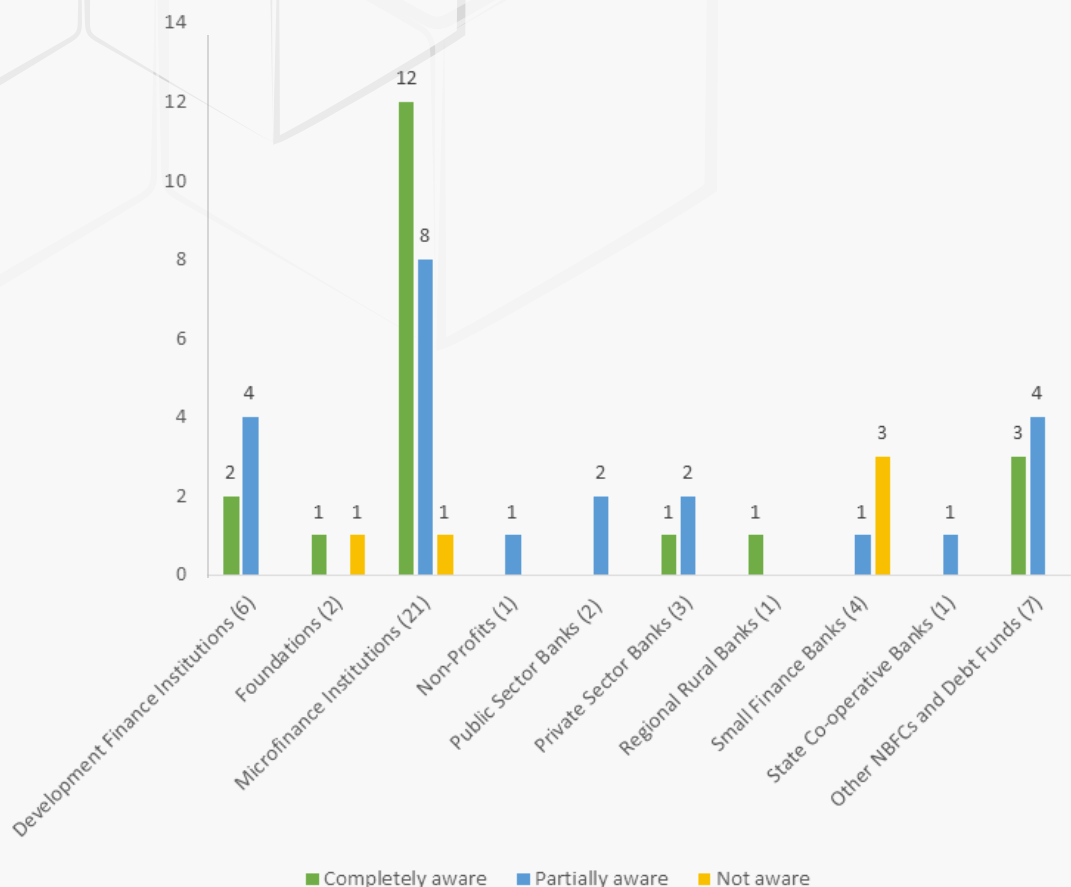


Figure 4.3: Category-wise awareness about DRE applications among financial institutions
(Sample size: 48)

Among the respondents, the level of awareness was highest among MFIs, followed by other NBFCs. Among MFIs, the solar lighting category is most known, followed by other product categories. Some of the MFIs showed awareness of new category of DRE products/applications such as:

- **Chanura Microfinance:** Sewing machine and Blacksmith blower.
- **CDOT:** Solar pumps, Solar Cold storage, Solar lights, Rice hullers.
- **SEVA:** Solar pumps, Solar dryer, Rice huller, Agro-processing machines, Solar cold storage, Milking machine.

Among NBFCs, cKers Finance was partially aware of the products, as they did not know about a few DRE applications such as sewing machine and blacksmith blower. Maximum non-awareness level was seen among small finance banks (SFBs). With respect to regional rural banks (RRBs) and state cooperative banks, we were not able to reach a large pool of respondents due to the ongoing COVID-19 situation. Post the pandemic lockdown, these banks have started focusing more on the implementation of COVID-19 centric schemes/packages/waivers as announced by the Government of India (GoI), given that these banks extend 75% loans to priority sectors.

Under Priority Sector Lending (PSL) monitored by the Reserve Bank of India, all banks are required to finance 40% of the total outstanding advance to eight sectors – agriculture, MSME, export credit, education, housing, social infrastructure, renewable energy, and others. Renewable energy forms an important component of PSL target. There are sub-target of 18% of adjusted net bank credit (ANBC) to agriculture, 7.5% to micro-enterprises, and 10% of ANBC to weaker section. NABARD gives liquidity support to all types of banks (commercial banks, RRBs, and cooperative banks) by way of re-finance. NABARD has extended re-finance of INR 2256 crore during 2019/20 under non-conventional energy sources, which includes biogas and DRE sector (NABARD Annual Report 2019/20). Major part of re-finance has been disbursed to commercial banks (INR 2249 crore) and RRBs (INR 6 crore).

NABARD is not directly involved in financing DRE sector, however, it encourages financing this sector by way of credit planning and extending refinance. It has implemented the solar rooftop scheme of MNRE, Government of India.

However, we did speak to some veteran bankers/consultants to gauge a sense of awareness levels. Overall, RRBs, cooperative banks, public sector banks, and private sector banks do have partial awareness of DRE products and also applications such as lok sewa kendras (LSKs).

iii. DRE products/applications covered in the current portfolio and in future

Among products in the current portfolio, the most prominent ones include solar lanterns, SHS, water purifiers, and cookstoves. In the future, FIs will be looking at financing other products (Table 1).

CURRENT	FUTURE
<ul style="list-style-type: none"> • Solar lanterns, Solar Torches, and Solar home systems • Solar pump, Sewing machines, Blacksmith blower, Micro-grids, BLDC fans, RO systems, Solar water heater, Clean cookstoves, Charkha, Bulk milk chillers. 	<ul style="list-style-type: none"> • E-rickshaw, Charging stations + Swapping of batteries. • Solar pottery wheel, Solar roti rolling machine, Aerators, Solar cold storage, Solar fencing, Solar refrigerator • Non-solar: Biomass-fuelled plant, Electric vehicles, Energy-efficient inverters.

Table 1: Current v/s future products/applications

iv. Profile of target buyers for these products/applications

In India, the target buyers (or end users) for these products are mainly in rural areas and smaller towns, where there is shortage or no power supply. At the same time, these buyers vary from product to product. The profile of target buyers is as given below.

- (a) Women and their families, who do have access to formal financial services and are typically rural MFI clients.
- (b) Daily wage workers, migrants, rickshaw pullers, sweepers, maids, small barber shops, small shop owners, who are clients of semi-rural focused MFIs.
- (c) Farmers (owning 1–2 acres of land) engaged in agriculture and other farmers engaged in dairy, poultry in rural areas of India. This appears to be one of the upcoming customer segments, given its dependency on agriculture for their daily income and livelihood.
- (d) Fishermen, boatmen in states having coastal areas such as West Bengal and Odisha.
- (e) Handloom artisans using DRE products such as DC fans and solar charkhas.
- (f) Group of individuals, SHGs, JLGs, NGOs, farmer clubs, farmers producer organizations for products such as solar photovoltaic pump sets.
- (g) MSME, agro-processing units, small incubator units.

v. Market knowledge about livelihood appliances

Some of the learnings and findings from the respondents are given below.

(a) Products are moving from ‘cost saving’ to ‘income generation’ gradually:

Evidence for the same can be seen from the points listed below.

- Financing and sales of traditional solar lanterns, home systems, and other lighting products are getting saturated. Demand for these traditional products is limited to certain remote off-grid areas only.
- Demand for higher valued DRE-powered agriculture and non-agriculture applications/products has gone up across India, which also helps in generating employment and income. Of all the DRE products, pumps sell the maximum (either through tender or rented by the day or per litre), followed by mini grids (rented per kWh basis). In West Bengal, farmers are using irrigation pumps, which are in high demand.
- Mahashakti Foundation in Odisha had financed solar micro grids in about 40 households. For financing of solar pumps to farmers, it had partnered with local banks and the project was supported by The Energy and Resources Institute (TERI). About 550 solar pumps have also been financed by availing 20% subsidy from the Government of Odisha through Odisha Renewable Energy Development Agency (OREDA).
- Gram Utthan in Odisha installed solar aerators costing about INR 2.5 lakh, which was supported by GIZ (German Agency for Technical Cooperation) fund through an NGO grant fund.

Bank of Baroda has been implementing an innovative financing model since 2018. It got into an exclusive arrangement with GTNFW, a non-profit organization started by SEWA to replace diesel-run water pumps with solar-powered water pumps in Little Rann of Kutch region of Gujarat. Loan limit upto INR 3.5 lakhs is sanctioned for pumps upto 5HP capacity to female saltpan workers. This program is targeted to benefit 3000 saltpan workers and about 15,000 families resulting in affordable credit, more savings, higher productivity and increased income while contributing in huge reduction of carbon footprint.

(b) More awareness on DRE products needs to be created:

More focus seems to be on agriculture and less on non-agriculture productive applications in rural areas due to less knowledge about different DRE products.

(c) Specific challenges with respect to roof top solar:

Customers expect reliability, high quality (steady voltage), and power autonomy at affordable cost. However, the upfront cost is the greatest impediment. There must be a proper market intervention to bring down the price of panels and battery further and/or direct credit of upfront subsidy to the loan amount would be helpful. This will develop the entire ecosystem and will be more customer friendly.

vi. Highest selling products/applications and their brands

Table 2: Some of the highest selling brands, which are being financed

Product/livelihood applications category	Brands	Financial institutions (enterprise and end-user financing)
Solar lighting: Solar lanterns, torches, and Home Systems	Greenlight Planet, D.Light, SELCO, Gloworld, RAL, RICO, E-Hands Energy, SIMPA	Muthoot, ESAF Small Finance Bank, SATIN, Midland, JIGYASA, SKDRDP, Shikhar, Adhikar, DCBS, YVU, Sarthak SEWA, Samasta, Mahashakti Foundation, Gram Uthan, Sarala, Maanaveeya Dev & Finance, RBL, ValueFin India Credit Services
Other DRE-powered productive livelihood applications: <ul style="list-style-type: none"> Solar: Pump, Sewing machines, Blacksmith blower, Micro-grids, BLDC fans, RO systems, Cold storage rooms, Water heaters, Refrigerators, Clean cookstoves, Charkha, Aerators, Bulk milk chillers Non-solar: Biomass-fuelled plant, Electric vehicles 	SELCO, Ecozen, DD Solar, Claro, D.Light, Greenlight Planet, Greenway, Envirofit, Husk Power Systems, Village Industrial Power, SIMPA, Orb Energy, Onergy Solar, E-Hands Energy, Atomberg Appliances, Inficold, Promethean Power Systems	Chanura, SEVA Manipur, CDOT, SKDRDP, Adhikar, Sarthak SEWA, Mahashakti Foundation, Gram Uthan, ESAF Small Finance Bank, Uttarakhand State Cooperative Bank, Maanaveeya Dev & Finance, IREDA, RBL, Bank of Baroda, ValueFin India Credit Services, SIDBI
White goods: Water purifiers, Washing machines, Refrigerators, Sewing machines	HUL, Eureka Forbes, Samsung, Whirlpool India, Usha International Limited, SINGER	Muthoot, ESAF Small Finance Bank, Midland, Shikhar
Consumer electronics: Mobile phones, Television, AC fans, Inverters	Samsung, Nokia, Vivo, RICO	ESAF Small Finance Bank, Midland, Shikhar, Samasta
Kitchen items: Kitchenware, Improved cookstoves, Induction plates, Mixer grinders, Pressure cookers	Bajaj, Prestige, Maharaja	ESAF Small Finance Bank, Samasta
Others: Cycles	Hero	Satin, Muthoot

vii. Ways of spreading consumer awareness

Overall awareness levels for DRE products and applications are low as creating awareness is a challenging task for the product manufacturers. However, some of the interesting takeaways have been as follows.

- (a) MFIs have reported that awareness for DRE products such as solar lanterns and home systems is created mostly during the centre meetings (depending upon the loan repayment cycle) by the MFI field staff or by the sales representatives of the manufacturers. The products are also demonstrated to the customers during their visit to the respective branches, which is accompanied by distribution of pamphlets, handouts/monthly magazines. For instance, Samasta MFI invites all product companies at a fair around its branches to promote their products. Customers can place an order at the product fair itself and deliveries happen on the spot too.
- (b) MFIs such as Gram Utthan also create awareness through NGOs and FPOs among farmers for products such as solar freezers and home systems.
- (c) Organizations such as Shri Kshetra Dharmasthala Rural Development Project (SKDRDP) are involved in campaigning at the village Taluka level too.
- (d) Banks like MP RRB and Uttarakhand State Cooperative Bank Ltd also attend loan and agriculture melas, where companies promote their products.
- (e) Prominent marketing tools have been word of mouth, radio jingles, WhatsApp, leaflets/flyers, demo camps, melas (loan or agriculture/krishi).
- (f) At the banks' regional review meetings (monthly/quarterly), 30–45 min presentation slots are given to manufacturers to promote their products in front of branch managers. Different loan schemes are discussed, which could be availed by the customers. Branch managers are also invited for inaugurating installation of new DRE units.
- (g) BIRD, an autonomous society promoted by NABARD, has sessions on clean energy and its applications. They conduct programmes on financing DRE solutions, Green Finance and Natural Resource Management involving banks and civil society organizations. They are covering DRE as part of sessions to build the awareness level of bankers and other stakeholders.

viii. Ticket size of the loan given to the end consumer and/or to an enterprise

With respect to the ticket-size question, we interviewed 49 respondents. Out of the 49 respondents, we have captured inputs from 33 respondents graphically. Inputs from other respondents are mentioned separately below. This approach has been taken for a better interpretation of the inputs collected by the respondents. Following are the key takeaways from the interviews done:

- (a) MFIs are majorly dealing with unsecured lending, where the ticket size ranges between INR 900 and INR 1,60,000 (maximum) for DRE products/applications financing.
- (b) FWWB has provided huge amount of loans to MFIs for providing solar lighting products to their clients. FWWB has a dedicated Solar Energy Program for providing loans to organizations, which, in turn, provide solar energy products to the low-income population of India.

- (c) cKers Finance provides innovative debt instruments to DRE, which is in the range of INR 50 lakh to INR 5 crore. If the requirement is of more than INR 5 crore, then cKers Finance brings in other lenders. It has funded lighting projects/manufacturers/SMEs as it is a wholesale lender.
- (d) Institutions such as private banks and SFBs are offering high-ticket secured loans, which include hypothecation or mortgaging of assets to the financier. These organizations fund mini-grids, power pumps, etc. As an example, ESAF Small Finance Bank gives unsecured loans in the range of INR 25,000 to INR 10 lakh, which are hypothecated.

Figure 4.4: Ticket size of loans
(Sample size: 33)

- (e) IREDA gives average term loan of INR 50 crore to INR 100 crore to companies in the fields of solar energy, wind energy, hydro energy, bio-energy (including cogeneration, waste to energy, etc.). Loans from IREDA can be used for setting up both on-grid or off-grid projects. The minimum loan eligibility from IREDA is INR 50 lakh. The quantum of loan from IREDA shall be normally up to 70% of the total project cost. There are very few companies in the DRE sector with the requirement of a ticket size of investment as given by IREDA.
- (f) Among impact investors, following information was gathered:
 - **ResponsAbilityInvestmentsAG:** A leading impact asset manager headquartered in Zurich (Switzerland) has a debt financing ticket size range of USD 4–15 million (more from Africa perspective). They can also explore indirect funding, i.e., funding in MFIs or banks, which are working with any of the DRE companies, as these could be scalable business models.

- **Maanveeya Development & Finance Pvt. Ltd.:** Maanveeya is an Indian subsidiary of Okiocredit, a 40-year-old global development financial institution. It provides loans across sectors such as financial services (e.g., MFIs for end-user financing), renewable energy, agriculture. Some of the partners who have availed loans are Punam Energy Pvt. Ltd, Cygni Energy Pvt. Ltd, E-Hands Energy India Pvt. Ltd, a few MFIs for on-lending. The loan provided is in the range of INR 1 crore to INR 8 crore for renewable energy enterprises
 - **Caspian Impact Investments:** Provides customized debt finance to FIs and SMEs in India. The size of loans are as below:
 - Debt: Quick loan of INR 50 lakh to INR 1 crore (for funding gaps with visibility of future cash flows).
 - Term loan of INR 1 crore to INR 15 crore (for medium- to long-term working capital and other requirements).
 - Revolving limits of INR 1 crore to INR 6 crore (for companies having order-based or seasonal revenues).
 - Equity: INR 5 core to INR 35 crore (stake in an individual company not to exceed 15% of the aggregate capital commitments).
- (g) Information gathered from other organizations include:
- **Arc Finance:** Funded USD 1 million directly to an MFI (which showed the capacity to absorb foreign capital) or through a revolving fund of Milaap for energy access programmes. This was like a controlled grant, which was also matched by the MFI.
 - **KfW:** KfW has given a € 20 million credit line to IREDA exclusively for DRE access to energy projects.
 - **Shell Foundation (SF):** SF is a UK-registered charity, founded by Shell in 2000, that creates and scales business solutions to enhance access to energy and affordable transport. SF provides patient grant funding and business support to social enterprises and institutions capable of delivering social change at scale via disruptive technologies or business models without long term reliance on charitable support or subsidy.
 - **Uttarakhand State Cooperative Bank Ltd:** They do not have any DRE-specific scheme. However, they were looking at rooftop financing. For rooftop of capacity 1–3 kW, 40% subsidy is given and for capacity 3–10 kW, 20% subsidy is given. For this, online application can be filled, which is available on UPCL website. This was supposed to begin in February 2020; but due to COVID-19, the scheme could not be implemented.

ix. Interest rate of loans

- (a) Interest rates have been found to be the highest among MFIs, which is expected given the high costs involved and the nature of loans being small ticket and unsecured. There are a few MFIs, which also give small ticket size (less than INR 10,000) loans at 0% for purchasing solar lanterns, home systems, fans, etc. Banks offering higher ticket size secured loans have interest rate ranging between 6% and 26%.

Figure 4.5: Range of interest rates by financial institutions
(Sample size:41)

- (b) Arc Finance, Shell Foundation, Uttarakhand State Cooperative Bank Ltd, and KfW are not considered for Figure 4.5.

Following additional information was gathered from the organizations:

Table 3: Interest rate of some financial institutions

Financial institutions	Interest rate
Bank of Baroda	MCLR rate of 7.6% and also as per RBI/Bank's guidelines revised from time to time. Basically, One Year MCLR (7.6%) + Strategic premium + 1.50%
Caspian (Debt)	<ul style="list-style-type: none"> • Quick loan (15%–18% PA) • Term loan (14%–18% PA) • Revolving limits (14%–18% PA)
DCBS Microfinance	0% interest loans for solar lanterns and home systems and INR 1 lakh loan is given at 10% PA to the client turned Village Level Entrepreneur (VLE)
FWWB, India	14%–15% PA (debt financing/loan support to MFIs)
Mahashakti Foundation	<ul style="list-style-type: none"> • Solar lanterns (18% PA) • Solar pumps (12% PA)
Madhya Pradesh Grameen Bank	<ul style="list-style-type: none"> • Non-agriculture (9.7% PA) • Agriculture (10.5% PA)
Sarala Development & Microfinance	0% interest loans for solar lanterns, home systems
KfW Group	KfW offers concessional soft loans to public entities, which are subsidized by German Government Guarantee. In focal areas agreed between the Government of India and the Government of Germany, loan interest rates are lowered with grants from budget funds.
ValueFin India	DRE applications (16%–18% PA)
IREDA	For the off grid sector (10.25%–11.45% PA)

x. Tenure and frequency of the loan repayment

As loan tenure is directly proportional to the loan amount offered, the average loan tenure offered by major MFIs is 2–4 years. However, banks and NBFCs giving loans for project finance, mini power grids, etc. are for longer duration such as 9–15 years.

Few organizations such as SIDBI, IREDA, and Foundations, debt funds provide funding to FIs or other DRE enterprises in the form of term loans, debts/grants where the tenure for these is relatively higher and may include the loan moratorium period also.

The frequency of repayment is either fortnightly, monthly or quarterly. In majority of the cases, it is monthly.

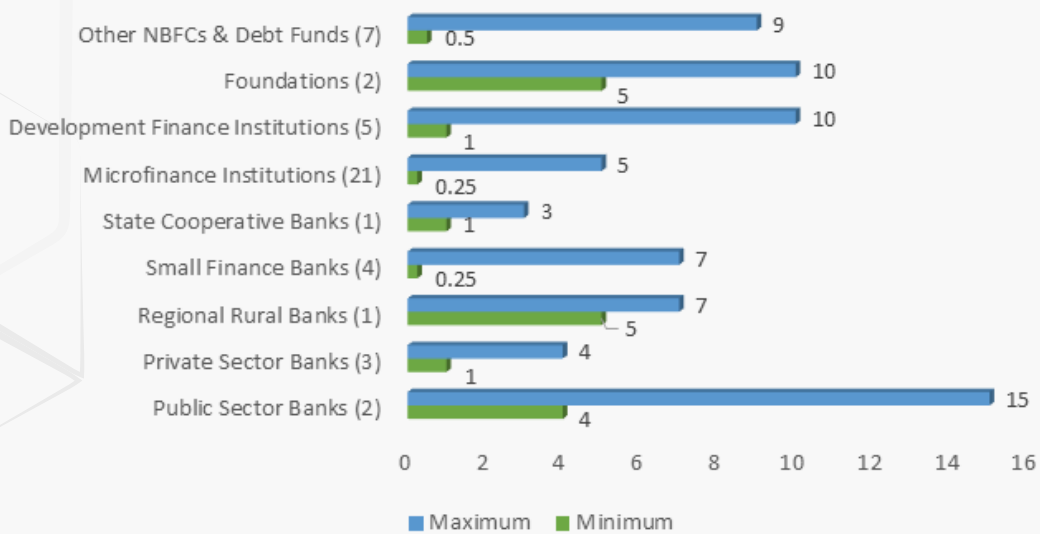


Figure 4.6: Loan tenure of financial institutions (years)
(Sample size:46)

xi. Type of loans: secured or unsecured

Table 4: Secured v/s unsecured loan

	Secured loan	Unsecured loan
Basic definition	Loans, wherein collaterals are pledged or are hypothecated/mortgaged with the financier	Loans that are given on the basis of borrower's creditworthiness
Interest rate	Low as collaterals are pledged and the risk is low	High
Loan size	Relatively higher and is determined based on the availability of collaterals	The amount of loan offered depends on the income and credit score of the borrower. The cap is relatively lower.
Tenure	Short to long term	Short to medium term
Availability	Easily available	Good credit score and sound banking relationship required
Processing time	Verification steps make it longer	Loan disbursal is quicker due to lesser paperwork.
Rejection chances	Low	High

Institutions offering loans with ticket size up to INR 50,000 offer the same as unsecured loans; whereas loans greater than INR 50,000 are secured loans. An exception is FWWB, which has offered unsecured loans up to INR 3 crore to NGO MFIs. 38% of the surveyed respondents are offering unsecured loans. Majority of them are MFIs.

Figure 4.7: Type of loan: unsecured or secured or both
(Sample size: 42)

xii. Collateral for a secured loan

Collateral for a secured loan Financial institutions that offer secured loans hypothecate/ mortgage the asset, partly or fully. Their Loan to Value Ratio (LTV) range between 40% and 50% of the value of the asset.

For example, if an asset value is INR 100,000, the maximum loan that can be offered will be INR 50,000 and the rest margin money is to be given by the borrower to the manufacturer before the loan is disbursed.

A few organizations take signed security cheques, which are kept with the financiers and can be used if a customer defaults on repayment.

Organizations that provide funding to FIs keep securities in the form of FLDGs, corporate guarantees, third-party guarantee, promoters guarantee, etc. because of their high ticket size loans.

xiii. Major risks with respect to the DRE market

49 respondents have provided multiple risk factors totaling to 76 responses, which is shown below. The major risks highlighted during the survey constitute system non-performance (20%), followed by non-scalable models (16%), loan default (16%), and lack of after-sales service (16%).

Figure 4.8: Major risks with respect to DRE sector
(Sample size:49)

Table 5: Break-up of 'Others' category

Theft and pilferage of DRE products
A DRE enterprise's inability to analyze customers or improper customer profiling
Natural calamity/force majeure (e.g., COVID-19)
Lack of professionalism in running a DRE business
Unlike banks, NBFCs are not eligible for subsidy. The cost of funds is high for NBFCs (especially for smaller ones), so default can happen

For a better understanding, some of the risks are elaborated below.

System non-performance: This indicates some of the DRE products/applications being pitched to FIs are of low quality and hence do not give optimal performance.

Lack of after-sales services: This includes after-sales issues faced on the ground by end-users due to non-availability/shortage of technicians at the block/village level. This could lead to loan defaults/NPAs.

Non-scalable models: In the past 12–15 months, the Indian market seems to have got saturated due to lack of demand (with improved electricity situation) from end-users for some of the DRE products/applications, specifically solar lanterns and home systems. This lack of demand sentiment for solar lanterns and home systems has rubbed off on FIs such as MFIs, banks, and NBFCs too. With sales dropping significantly, growth has hit stagnation. This precarious situation has resulted in operating/business models not getting scaled up.

xiv. Risk assessment methodology/tool for appraisal of the potential borrower

The risk assessment tool incorporated by most of the MFIs include leveraging their existing client base for offering these loans; where on the field they gather information about the group/its members over and above. Organizations use their internal analytical models and run algorithms at the back end to calculate customer eligibility and permissible amount to offer these loans, basis customer/household indebtedness, credit history, bureau footprints, loan repayment history, income pattern, etc.

However, a few bigger FIs such as banks and SFBs have developed their inhouse score cards, which capture demographic information, bureau footprints, and cash flow analysis based on which borrowers are given a score and their maximum eligibility is calculated. These scorecards are majorly used for high ticket size loans.

Debt funds, such as **responsAbility Investments**, look at team structure, unit economics, distribution capability, portfolio quality, scalability, roadmap to profitability, existing financial support presence, etc. Using their own financial model and rating framework, they decide whether to invest or not in a DRE enterprise.

Under Debt funds, **FWWB** is another major player, especially for the small MFI category. In addition to the risk assessment points, it looks at the strength of the financials, leveraging, and the timing of association with the MFI.

FIs like **Sarthak SEWA** do community checks at the union level during mohalla meetings. A neighbour is also made the guarantor. Loans are basically given to the shareholders of the Credit and Thrift Cooperative Society.

ValueFin does risk assessment using software tools and looks into credit report, field visit, having direct customer interaction, cash flow assessment, primary/secondary activity of the business, sensitivity analysis, warranty terms, technical robustness of the product and after-sales service, etc.

xv. Awareness of DREEM Tool (a risk assessment tool)

Concept of DREEM Tool²: DREEM helps off-grid enterprises as well as FIs assess the potential of a given business by evaluating the geography of operations or expansion, intended or current energy resource utilized, and the off-grid product/solution offered. The tool displays this information by way of interactive maps, which may be used to identify key areas for expansion or products for diversification. DREEM has been supported by Shakti Sustainable Energy Foundation and Swiss Agency for Development and Cooperation (SDC) and developed by Intellectap. It is currently hosted by CLEAN.

Majority of the FIs surveyed were not aware about the DREEM tool; however, they were keen to understand the tool and had requested CLEAN to show this tool to the risk and credit assessment team.

xvi. Support needed for the DRE sector

All the FIs agreed to the fact that some support mechanism for the DRE sector is required for its fast growth as the sector has immense potential.

49 respondents have given a total of 82 responses, which is shown below. With respect to support, 15% of the respondents are of the view that DRE sector enterprises and some FIs also need alternative form of funding, i.e., philanthropic/CSR/grants/debt, given the lower ticket size of investment required in the initial years. This will help in the initial years of sustaining a DRE enterprise. 13% of the respondents are of this view that a Credit Guarantee Fund should be formed (in addition to interest subvention schemes, FLDG, etc.). 12% of the respondents suggest having subsidy for higher valued products. This will encourage more FIs to give loans as NPAs will get minimized. 11% of the respondents are of the view that more awareness of the DRE sector should be created among various stakeholders. 10% of the respondents suggest having a more efficient after-sale service from the manufacturer for DRE products.

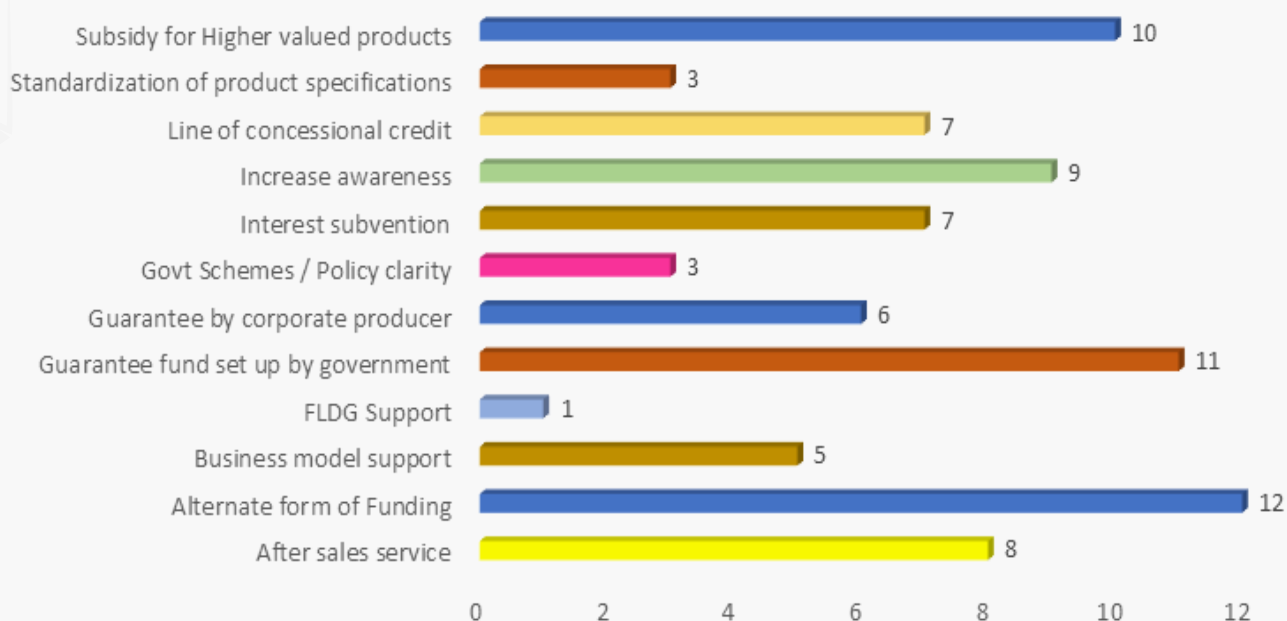


Figure 4.9: Kind of support needed
(Sample size:49)

²More details can be found here: <https://www.dreemtool.com/about-tool/introduction>

CHALLENGES EXPERIENCED

(a) **Awareness:** Lack of awareness/knowledge of DRE products and applications among different stakeholders (end users, FIs, government organizations and departments) is found to be a challenge. This has resulted in limited financing by FIs and less focus by the relevant authorities. For example, many DRE products/applications do not have dedicated financial schemes, creating a state of confusion for the Bank Branch Manager. He/She has less bandwidth (due to multiple activities) to identify the right loan scheme.

Example of on-ground challenges from a bank's perspective: Many bank managers at rural branches know that renewable energy is under PSL, but they are not aware of how to finance the same. As a result, they are left with the only option of informing the customer/enterprise that they will be requiring permission from their Controlling/Head Office to finance DRE products. When a customer/enterprise approaches the Controlling/Head Office, then they are informed that renewable energy is already under PSL and why would bank managers require permission. Thus, there is a confusion between the statements made by bank branch managers and Controlling/Head Office. This clearly indicates that awareness is lacking at the branch level as to - What is DRE? What are DRE products? How to finance DRE products under the existing schemes? How to select the vendor? What are the requirements of after-sales service? etc.

(b) **Scalability:** Most of the FIs are of the view that not many business models in the DRE sector are scalable (or are unproven) and that the operating cost is quite high. Thus, on-ground execution also takes time (given both internal and external risks involved).

(c) **Ticket size:**

- **Enterprise financing:** Higher ticket size of deployment of capital in DRE enterprises is a challenge given the lack of scalability of business models. For instance, Pay-As-You-Go business models in India have not got scaled up to the extent of what we have seen in some other countries due to multiple reasons.
- **End-consumer financing:** There appears to be a big gap in the availability of end-consumer financing, as the consumer moves from low-cost (solar lanterns, home systems, etc.) to high-cost DRE applications (solar-powered rice hullers, etc.).

(d) **Limited bankable project proposal:** FIs are of the view that DRE project proposals are not bankable enough to make investments. Most of these proposals are prepared by DRE enterprises without the major involvement of Company Secretarial services.

(e) **Subsidy:**

- Up to 2017, a subsidy for home lighting and heating systems by MNRE through NABARD was provided. Almost all banks participated in this subsidy scheme and many loans were sanctioned. MNRE was also monitoring the number of loans disbursed in every quarter by different banks. Quarterly meetings were also conducted in New Delhi (where bankers were invited to update MNRE and other ministries). So, it was a moving process then. Once the subsidy was stopped, there was no monitoring by MNRE understandably. This obviously shifted the focus from DRE products/applications financing to other loan schemes.
- Frequent changes in subsidy and credit framework from government and other institutions create confusion.
- NBFCs are not eligible for subsidies that MNRE or IREDA gives, but only available to banks. Thus, it is not a level playing field for NBFCs in the DRE sector from the subsidy perspective.

CONCLUDING REMARKS

Overall, the DRE sector looks promising to FIs. However, a lot still needs to be done on multiple fronts, such as awareness creation at various levels by multiple stakeholders, designing of dedicated loan products or financial instruments by FIs, leveraging of loan schemes, good after-sales service of the products, etc.

The Government of India, state governments, and other government organizations such as RBI, NABARD, SIDBI, and IREDA should also continue to engage meaningfully with different DRE sector stakeholders and among themselves. This way governments can build a better understanding of new innovative products and applications, strengths and weaknesses of the DRE sector, and the new emerging opportunities (such as powering of rural healthcare infrastructure in India with DRE).

The revision of PSL guidelines by the RBI is a welcome step in the right direction, wherein the limit for advances in renewable energy sector has been doubled from INR 15 crore to INR 30 crore. Furthermore, bank finance to start-ups, loans to farmers for installation of solar power plants, and loans for setting up compressed biogas plants have been included as fresh categories eligible under the priority sector.

WAY FORWARD

(a) Consistent awareness creation:

More awareness creation needs to be done consistently through online and/or offline ways by all stakeholders involved on varied themes (i.e., about the DRE sector, different DRE technologies and its applications, new innovations, the actual status of electricity in remote areas). From our interactions with respondents, a few interesting suggestions that came forward are listed below.

- On its part, CLEAN can also create and implement an awareness campaign keeping all stakeholders in mind. As this happens, the demand for DRE products and applications will further go up and in the process a critical mass will also get achieved at company and sector levels. This will result in the overall increase in sales, longer sustainable runway for DRE enterprises. This will also attract more working capital flowing in at affordable cost. Good feedback was received for the Compendium of DRE Technologies, First Edition 2020. Most of the FIs requested a copy of the same to increase their level of awareness. Such initiatives by CLEAN will also help.

- CLEAN can also create additional awareness amongst different FIs about the overall investment opportunity size, as this is a challenge for most of the FIs. Basically some information of CLEAN members can be provided to FIs; covering aspects such as DRE application, enterprise size, seasonal v/s continuous business, runway, turnover, impact created, market potential, fund (grant/debt/equity etc.) raised in the past and future requirement.
- Rural Self Employment Training Institutes (RSETIs), an initiative of the Ministry of Rural Development (MoRD), had dedicated infrastructure in every district of the country. These institutes are managed by banks with active co-operation from the Government of India and state governments. DRE companies, CLEAN, and stakeholders can leverage this facility further to hold workshops, training and awareness programmes for promoting different DRE technologies (both farm and non-farm-based).
- District Central Cooperative Banks (DCCBs) or Zila Sahakari Bank Ltd can also play a role in creating more awareness of DRE products/applications as they have branches in each district.
- Key influencers/opinion leaders for DRE products/applications can be explored by DRE companies and other stakeholders, who can talk about the products. If there is one DRE product/application running smoothly in a village, then the customer acts as a true ambassador for others to buy more such products/applications.

(b) Handholding for building sustainable and scalable business models:

Organizations such as incubators and accelerators (both government and private) can handhold and guide some of the DRE enterprises to scale-up their operations by keeping unit economics positive. This can be done in multiple ways. CLEAN can bring in subject matter experts from outside to help DRE companies with different aspects of the business, can continue to organize relevant workshops, etc.

(c) Two funds can be created:

If subsidy cannot be availed by an individual customer or enterprise, then he/she will not be able to pay on time and the risk of investment for the FI will also increase. In addition to subsidy, we can have a couple of funds as below:

- **Clean Energy Refinancing Fund (CERF):** This is to re-finance the credit that banks and NBFCs are giving so the cost can be reduced and the offtake can be increased. Suppose an NBFC's cost of fund is 12% and say refinancing to the NBFCs is at 9%, then the NBFC can reduce the cost to the ultimate customer. Re-financing by NABARD or RBI-approved schemes would be beneficial.
- **Clean Energy Credit Guarantee Fund (CECGF):** If we want to implement a large scheme, make a big portfolio, and try out various new products, there has to be separate Credit Guarantee Fund (CGF) to which a subscription can be done. This CGF can be managed by SIDBI, NABARD, and IREDA jointly. Bilateral and multilateral organizations such as USAID and ADB, government(s), and CSR funds can contribute to this joint fund, which can be accessed by any FI involved in the DRE sector at no cost or minimum cost. Now if any FI wants to work in the DRE sector in India, they can be helped by CECGF. By doing these things over a period of time, the secondary market for DRE products will grow. For example, there will be a secondary market for 5 or 7.5 HP solar pump (which has been hypothecated).

Given the small size of the DRE sector in India, the secondary market has not developed. The secondary market will not develop, unless we create critical mass of such products/assets (which are in the market, running and in demand), like pumps, etc.

(d) Increasing financing by banks at the local level:

Banks are interested in doing DRE financing in an area, if there is business potential and recovery is ensured. Banks do not show much interest because of small ticket size of financing involved, lot of documentation work, time spent on follow-ups, etc., unless there is a push from the controlling office or direction from the Head Office. However, here are a couple of suggestions with respect to the way forward.

- **National to bank branch-level communication:** To increase financing by banks at the local level, modification of circular needs to be done at the national level as all banks follow circular line by line. A separate scheme can also be launched by way of a circular. With CLEAN's intervention at MNRE level, MNRE can write to Ministry of Finance. If Finance Ministry is convinced, then they can write to RBI, which, in turn, can issue a fresh circular or modify an existing circular to banks pan-India. By way of this discussion and communication, RBI can also assign targets to banks. A lot of persuasiveness is required. This framework needs to be brought in.
- **Relationship building with banks at the branch level:** From a bank's perspective, commercial lending to DRE enterprises should have some return on investments (RoI) to avoid creation of NPAs. DRE enterprises should network and build relationships with bank branches meaningfully. They should identify one person who can propel their ideas in the annual/quarterly/monthly meetings of banks to get a management buy-in. This approach will require patience and at the same time bankers have to be assured about the recovery mechanism.
- **Revolving fund for remote areas:** In some remote areas, a revolving fund of INR 5 lakh to INR 15 lakh can be given to some NGOs (or other partners) for select DRE products/applications, so that the initial financing can happen (even though no bank or MFI or NBFC is willing to give a loan). These installed products/applications in remote areas can be shown or inaugurated by branch managers of banks/MFIs/NBFCs, et al. This way, these managers can get real-time feedback on product functioning, recoveries being done by NGOs, etc. This will instill more confidence in branch managers to lend further. NGOs can also show their account books to bank managers to reassure them that the recoveries are happening as per the schedule or as the case may be.
- **Aggregation of small projects:** To tackle the problem of low ticket size, some of the projects can also be aggregated thus resulting in a higher ticket size, which will be attractive to a bank.

ANNEXURE

A. DRE Market Research Questionnaire

1. Do you have financial products for financing DRE applications?
 - Yes
 - No
2. Are you aware of the following products/applications covered under the DRE sector?
 - Agriculture/Farm Products/Applications
 - Solar pumps
 - Solar dryer
 - Rice huller
 - Agri-processing machines
 - Cold storage
 - Milking machine
 - Egg incubator
 - Others: _____
 - Non-Agriculture/Non-Farm Products/Applications
 - Solar Charkha
 - Solar reeling machine
 - Solar sugarcane crusher
 - Solar blower
 - Solar sewing machine
 - Solar rope-making machine
 - Solar pottery wheel
 - Solar roti-rolling machine
 - Others: _____
3. If yes, which of the above-mentioned products/applications are covered in your current portfolio and which all will get covered in future?
4. In your opinion, who are the target buyers for these products/applications among your customers/clients in your geographical area?
5. Any other market knowledge you wish to share about livelihood appliances?
6. Which are the highest selling products/applications and their brands?
7. By what means does the consumer get to know about a particular appliance?
 - Demonstration camps
 - Nationals dailies and channels
 - Radio/TV
 - SMS updates
 - Pamphlets
 - Word of mouth
 - Others: _____

8. What is the ticket size of the loan being given to the end consumer for product purchase and / or to enterprises?
 - Minimum:
 - Maximum:

9. What is the range of interest rate at which you provide loans for these products and / or to enterprises?
 - Minimum:
 - Maximum:

10. What is the duration/tenure for loan repayment and frequency of the repayments done?

11. Are these secured or unsecured loans?
 - Secured loans
 - Unsecured loans

12. If secured loans, then what is the range of collateral percentage?
 - Minimum:
 - Maximum:

13. What are the three major risks you foresee with respect to the DRE market?
 - Seasonal and unpredictable incomes
 - System non-performance
 - Lack of formal lending history
 - Inability to provide collateral
 - Change in government policies
 - Others: _____


14. Do you use any risk assessment tool for appraisal of the potential borrower?
 - Yes
 - No
 - If yes, please specify _____

15. Are you aware of the Decentralized Renewable Energy Evaluation & Monitoring (DREEM) Tool (a risk assessment tool)?
 - Yes
 - No (*More details can be found here: <https://www.dreemtool.com/about-tool/introduction>*)


16. Do you feel there is a need for any support mechanism?
 - Yes
 - No

17. If yes, which kind of support is needed?
 - Guarantee fund set up by government
 - Guarantee by corporate producer
 - Interest subvention
 - Line of concessional credit
 - Any other, please specify _____

 F-5, Ground Floor, Kailash Colony, New Delhi - 110048

 +91-11-41601543

 support@thecleannetwork.org

 www.thecleannetwork.org