

Improving Women's Productivity and Incomes Through Clean Energy in India

Sasmita Patnaik, Shaily Jha, and Tanvi Jain

Report | July 2021





Access to energy enables value addition at the farm gate, improving incomes of several women in food processing sector.

Image: Wase Khalid/CEEW



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July 2021
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SEWA Bharat
All India Federation of Self-Employed Women's Association



JAGRITI
DIGITAL YATRA



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Suggested citation:

Patnaik, Sasmita, Shaily Jha, and Tanvi Jain. 2021. *Improving Women's Productivity and Incomes Through Clean Energy in India*. New Delhi: Council on Energy, Environment and Water.

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Peer reviewers:

Dr Vanita Viswanath, Member of the Board of Directors, Jagriti; Soma Dutta, Consultant, Energy Poverty and Gender; Richa Goyal, Senior Insight Manager, Energy Savings Trust; Shankha Lahiri, Manager – Energy Practice, Villgro; and Rishabh Jain, Manager – Market Intelligence, CEEW Centre for Energy Finance.

Publication team:

Alina Sen (CEEW), Venkatesh Krishnamoorthy, Twig Designs, and Friends Digital.

Organisation:

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Council on Energy, Environment and Water
Sanskrit Bhawan, A-10 Qutab Institutional Area,
Aruna Asaf Ali Marg, New Delhi - 110067, India

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The Council's major contributions include: The 584-page *National Water Resources Framework Study* for India's 12th Five Year Plan; the first independent evaluation of the *National Solar Mission*; India's first report on global governance, submitted to the National Security Adviser; irrigation reform for Bihar; the birth of the Clean Energy Access Network; work for the PMO on accelerated targets for renewables, power sector reforms, environmental clearances, *Swachh Bharat*; pathbreaking work for the Paris Agreement, the HFC deal, the aviation emissions agreement, and international climate technology cooperation; the concept and strategy for the International Solar Alliance (ISA); the Common Risk Mitigation Mechanism (CRMM); critical minerals for *Make in India*; modelling uncertainties across 200+ scenarios for India's low-carbon pathways; India's largest multidimensional energy access survey (ACCESS); climate geoengineering governance; circular economy of water and waste; and the flagship event, Energy Horizons. It recently published [Jobs, Growth and Sustainability: A New Social Contract for India's Recovery](#).

The Council's current initiatives include: A go-to-market programme for decentralised renewable energy-powered livelihood appliances; examining country-wide residential energy consumption patterns; raising consumer engagement on power issues; piloting business models for solar rooftop adoption; developing a renewable energy project performance dashboard; green hydrogen for industry decarbonisation; state-level modelling for energy and climate policy; reallocating water for faster economic growth; [creating a democratic demand for clean air](#); raising consumer awareness on sustainable cooling; and supporting India's electric vehicle and battery ambitions. It also analyses the energy transition in emerging economies, including Indonesia, South Africa, Sri Lanka and Vietnam.

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Acknowledgments

We, the authors of this report, would like to thank Abhay Srivastava and Tanya Kothari of Shell Foundation for supporting our research and providing critical feedback at various stages of the study. We also express our gratitude to Adritha Subbiah of Foreign, Commonwealth & Development Office (FCDO), for her inputs through the analysis.

Many thanks to our implementation partners—SEWA Bharat and Jagriti Yatra—and our colleagues—Vaishakhi Shah (SEWA Bharat) and Pragati Baheti (Jagriti Yatra)—for helping us conduct primary interviews with women micro-entrepreneurs in their network for this study. We would also like to extend our gratitude to all the respondents (clean energy enterprises, micro-entrepreneurs, and ecosystem stakeholders) of the study who spent time to speak with us and share their experiences. Finally, we express our gratitude to the enterprises who facilitated interviews with their customers and micro-enterprises for the study.

The advisory group members for this research—Subhalakshmi Nandi (BMGF), Nilanjana Sengupta (ICRW), Suhela Khan (UN Women), Vanita Viswanath (Jagriti Yatra), Smita Rakesh (Social Alpha), Nitya Nangalia (SEWA Bharat), Santanu Chari (Global Alliance for Mass Entrepreneurship), and Mamta Kohli (FCDO)—invested a lot of their time to read through research plan and analysis, provided critical comments, and offered crucial and highly relevant suggestions. The inputs of each member of the advisory group enhanced the report's quality in terms of its narrative and analysis. And we thank them for it. As part of the project, we conducted a closed-door workshop to discuss the key findings and recommendations from the report. The workshop was attended by experts from a range of sectors including clean energy enterprises, ministry officials, financiers, entrepreneurship development programmes (EDPs), government-run initiatives and departments, donors and research organisations, nongovernmental organisations (NGOs), and women's associations. We acknowledge the contributions and comments of all the workshop participants.

The reviewers of the report—Vanita Viswanath (Jagriti Yatra), Richa Goyal (Energy Savings Trust), Soma Dutta (Energia), Shankha Lahiri (Villgro), and Rishabh Jain (CEEW)—provided valuable inputs for which we express our gratitude.

The authors



Sasmita Patnaik

sasmitaa.patnaik@gmail.com

Sasmita worked as the Programme Lead of the Energy Access team at The Council. She led the work on access to clean cooking and livelihoods, with a focus on gender and social inclusion. She holds an MSc in development studies from the School of Oriental and African Studies (SOAS) and a postgraduate diploma in rural management from Xavier Institute of Management, Bhubaneswar (XIMB).

“Access to clean energy solutions that mechanise economic activities for women in self-employment can lead to both increase in productivity as well as reduction of drudgery. Our research reveals that while many entrepreneurs are keen to optimise their business’s impact on women, they often struggle to find the right implementation strategies. Thus, it is necessary to translate the principles of gender equality into practical steps—for entrepreneurs, investors, and policymakers. We hope this research is able to provide some relevant ideas for action to all stakeholders.”



Shaily Jha

shaily.jha@ceew.in

Shaily is a Programme Associate in the Energy Access team at The Council. She works on access to clean cooking energy and livelihoods with a focus on gender and social inclusion. Shaily holds a postgraduate degree in disaster management from the Tata Institute of Social Sciences (TISS), Mumbai, and an undergraduate degree in geography from Miranda House, University of Delhi.

“Improving women’s productivity and incomes through reliable and affordable access to energy for economic activities could help achieve Sustainable Development Goals 5, 7, and 8 simultaneously. Clean energy enterprises offering solutions for livelihoods have the potential to mainstream a gender equity lens in their business model not only for their benefit but also to create opportunities for women across the energy value chain (as founders, employees and end-users).”



Tanvi Jain

tanvijain17.in@gmail.com

Tanvi is a young development policy researcher who worked as a consultant at The Council. Her research interest includes gender and livelihoods, environment protection, and green economy. Tanvi has completed post-graduation in society and culture from Indian Institute of Technology, Gandhinagar, and graduation in humanities and social science from the University of Delhi.

“A huge gap exists between the policy formulation and implementation for supporting women’s livelihoods. The schemes and policies need to have a gender-integrated approach than only being gender targeted. Merely targeting gender misses the intent and only acts as a tick box exercise. It is hoped that this report will help narrow the gender gap.”



Lack of mechanisation in livelihoods constrains women to operate at low levels of productivity and high levels of drudgery.

Image: Wase Khalid/CEEW

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Acronyms

BRLPS	Bihar Rural Livelihood Promotion Society
CMRC	Community Managed Resource Centres
CLCSS	<i>Credit Linked Capital Subsidy and Technology Upgradation Scheme</i>
CSP	Customer Service Point
DAY-NRLM	<i>Deendayal Antyodaya Yojana—National Rural Livelihoods Mission</i>
DIC	district information centre
DMMU	district mission management unit
DRE	decentralised renewable energy
EDPs	entrepreneurship development programmes
GBS	gender budgeting scheme
IWWAGE	Initiative for What Works to Advance Women and Girls in the Economy
JLGs	joint liability groups
KVIC	Khadi and Village Industries Commission
LEAD	Leveraging Evidence for Access and Development
MAVIM	Mahila Arthik Vikas Mahamandal
MFIs	micro-finance institutions
MKSP	<i>Mahila Kisan Sashaktikaran Pariyojana</i>
MSME	micro, small, and medium enterprise
MUDRA	Micro Units Development and Refinance Agency
NABARD	National Bank for Agriculture and Rural Development
NRETP	<i>National Rural Economic Transformation Project</i>
NPA	non-performing asset
NBFCs	non-banking finance companies
PLFS	Periodic Labour Force Survey
PMKSY	<i>Pradhan Mantri Kisan Sampada Yojana</i>
PM-KUSUM	<i>Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan</i>
SCs	Scheduled Castes
STs	Scheduled Tribes
STEM	science, technology, engineering, and mathematics
SHGs	self-help groups
SMEs	small and medium enterprises
SIDBI	Small Industries Development Bank of India
SRLM	<i>State Rural Livelihoods Mission</i>
TREAD	Trade-Related Entrepreneurship Assistance and Development
WEP	Women Entrepreneurship Platform
WiRES	Women Initiative Renewable Energy and Solutions



Improving women's productivity and incomes through reliable and affordable access to energy for economic activities could directly contribute to achieving Sustainable Development Goals 5, 7, and 8.

Image: Abhishek Jain/CCEW

Executive summary

Women comprise almost **half of the self-employed farmers** (National Statistical Office 2020) and own over **one-fourth of the proprietary micro, small, and medium enterprise (MSME) units** in the country (MoMSME 2020). And access to electricity can drive economic and social development by increasing productivity, enabling mechanisation (Pueyo and Maestre 2019), and reducing drudgery in economic activities.

Women traditionally have had limited access to mechanisation compared to men, even within family-based occupations, owing to the gendered socio-economic barriers that deprive women of decision-making control and access to credit in economic activities. **Lack of mechanisation compels women to operate at low levels of productivity and high levels of drudgery. This restricts their income and available time preventing them from investing in their capabilities and families more meaningfully.**



4.3 million micro-enterprises report lack of reliable electricity as the biggest bottleneck
(operated by both men and women)

Source: NSSO 2016; Waray, Patnaik, and Jain 2018

79% of women-owned enterprises are self-financed, 3.4% accessed government schemes, and 1.1% accessed loans from financial institutions

Source: Central Statistics Office 2014



Access to decentralised renewable energy (DRE) and energy-efficient innovations (such as sewing machines, milk-chillers, milking machines, motorised pottery wheels, *charkha* and weaving machines, and solar pesticide sprayers) have the potential to improve productivity and reduce drudgery in livelihood activities for both men and women (Waray, Patnaik, and Jain 2018). DRE-enabled solutions are also easier to use and more affordable. However,

traditionally more women are involved in manual work than men so they could benefit more from mechanisation, especially self-employed women.

Improving women's productivity and incomes through reliable and affordable access to energy for economic activities could directly contribute to achieving Sustainable Development Goals 5, 7, and 8 simultaneously. Furthermore, as women happen to be an integral part of livelihood activities, their access to access-to-energy companies could help expand markets and achieve scale by working with other women across the value chain as producers, customers, and suppliers of energy products.

Focusing on women-led micro-enterprises as users or potential users of clean energy appliances, this study explores the impediments women entrepreneurs face with the aim to i) increase support for women leading energy access businesses in India, ii) increase participation of women in the clean energy value chain, and iii) increase uptake of clean-energy-powered livelihood equipment by women micro-entrepreneurs.

As we discuss barriers and proven solutions with the potential to scale, we emphasise on access to finance and government schemes and services to help women micro-entrepreneurs scale and use clean-energy-powered livelihood technologies in their business.

Who should read this report?

Enterprises, donors, financiers, incubators and policymakers in the clean energy sector: The report discusses how energy enterprises have supported mechanisation for women in rural India. For enterprises in the energy sector, it offers ideas and data for mainstreaming the gender lens in their business and experience gains from it. The report informs other stakeholders (donors, policymakers, financiers, and incubators) on how to support such enterprises, include women as end-users of energy products, and address the barriers presented within the realm of social norms, market approaches, and government policies.

Non-profits, donors, and policymakers working on livelihoods and women's economic empowerment initiatives: The report offers insights into new business models at the intersection of mechanisation, energy access, and women's livelihoods. As an intermediary, energy is uniquely positioned to create impact across sectors and demonstrate ways of inclusion. For organisations working across various livelihood sectors, the report offers ideas on working with energy enterprises to mechanise activities and access new financing forms to enable it.

Methodology

We primarily focus on **women as end users of energy products** (own account workers/self-employed/micro-entrepreneurs), who are mostly dependent on debt (loan) and sales to expand their business.¹ Typically categorised as micro-entrepreneurs, these are self-employed women who could potentially be buyers and users of clean energy equipment or machines in their business.



We conducted semi-structured interviews with clean energy entrepreneurs (both men and women), micro-entrepreneurs (women only), and ecosystem stakeholders (across clean energy, women's economic empowerment and livelihoods sector)

1. A detailed assessment of barriers and opportunities for women-led clean energy enterprises has already been covered in [Martin and Glinski \(2019\)](#).

We adopted a mixed method for data collection, in partnership with Jagriti Yatra and SEWA Bharat, to understand the challenges women micro-entrepreneurs face in accessing finance and utilising schemes and policies.

- We ascertained the **supportive provisions and lack thereof in policies** designed to foster entrepreneurship and enhance livelihood opportunities for women across all sectors, with a focus on clean energy, through a literature review.
- We conducted interviews with respondents across the three categories: 26 interviews with clean energy entrepreneurs (primarily working with women), 28 interviews with women micro-entrepreneurs using energy products/mechanisation in their business (**hereafter referred to as CEEW micro-entrepreneur survey**), and 25 interviews with a range of ecosystem stakeholders².
- In addition, we collaborated with SEWA Bharat to survey 112 women micro-enterprises from Bihar, Gujarat, and Rajasthan (**hereafter referred to as SEWA-CEEW survey**) to understand the impact of COVID-19 on women's businesses and their access to finance and policies.

We analysed the barriers to scale and opportunities for women micro-entrepreneurs through society, market, and state triad (Pal et al. 2020) to identify overlapping impact and suggest interventions by key stakeholders to enable clean energy enterprises and micro-enterprises to achieve their goals.

Engagement of women in the clean energy sector

We describe the involvement of women entrepreneurs across the energy value chain and deep dive into the barriers and support available across a range of aspects.

Women founders of clean energy enterprises

Grant and debt funding remain an essential source of finance for most early-stage women entrepreneurs in the energy sector. While the majority of women-owned enterprises³ have received some form of grant (from donors or incubators), less than 50 per cent of the clean energy enterprises have preferred debt funding, whereas very few have sought equity.

We find that the majority of entrepreneurs relied on personal resources for initial financing. About 25 per cent of women entrepreneurs reported accessing available government schemes.

Customised approach to mentorship and technical and financial assistance (based on enterprise's business stage) is of value for all entrepreneurs. Still, with a strong gender lens, incubation and acceleration programmes can benefit women more than gender-neutral approaches.

Women employees or value chain partners in clean energy enterprises

Women are significantly underrepresented as employees in clean energy enterprises, particularly in technical roles like product design and engineering that could improve products' uptake and usability (Martin and Glinski 2019). In our interviews, most entrepreneurs reported having women in office-based roles. In technical roles like supply chain management, manufacturing, and installation, only male employees are preferred.



The study primarily focuses on women as end users of energy products (own account workers/self-employed/micro-entrepreneurs), who are mostly dependent on debt (loan) and sales to expand their business

2. Refer to Annexure I for the detailed list of stakeholders interviewed.

Women are also involved in the clean energy sector (1) as product distributors and sales agents and (2) as workers or suppliers in agriculture and textile value chains. Women as last-mile distributors of energy products have to travel to nearby villages, and they are primarily dependent on other family members for mobility. However, they earn a commission-based income, and the employer ensures the market is big enough to make a good income. As workers and suppliers, women are supported with guaranteed market linkage, flexible work, access to technologies through a grant model or long-term loans facilitated by partner organisations or the clean energy enterprises offering margin money for loans.



Women as last-mile distributors of energy products are often dependent on family members for mobility

Women-led micro-enterprises as users/customers of energy products and services

Women micro-entrepreneurs are self-employed women who could potentially be buyers and users of machines powered through electricity or renewable energy. In this study we primarily focus on women micro-entrepreneurs. This section highlights key characteristics of women micro-entrepreneurs in our sample using data from the **CEEW micro-entrepreneur survey**.

43%

enterprises are based in rural/semi-urban areas while the rest are urban based

39%

are home-based enterprises

64%

are group-based enterprises

39%

micro-entrepreneurs do not own any physical assets

14%

micro-entrepreneurs reported that machine used in the business is the first and only asset owned by them

Source: CEEW analysis; Data: CEEW micro-entrepreneur analysis

The technologies used by the micro-enterprises in our study sample included:

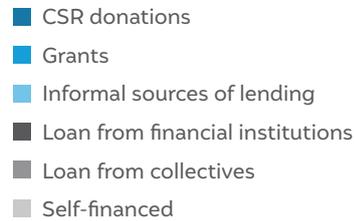
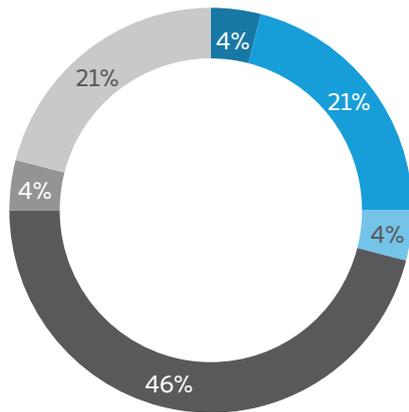


Clean energy powered: Solar panels, solar dryer, solar pumps, solar lighting, improved cookstoves, biomass gasifiers, solar-powered power looms, solar-powered agri-processing machinery



Electricity-run: Sewing machine, e-rickshaws, yarn spinning machine, jewellery polishing, bangle making, tool sharpening and screen-printing

3. About 75 per cent of the clean energy enterprises we interviewed were women-owned, operational for about four years.

**Figure ES2**

Loans are the most prominent source of finance for procuring for the machine

Source: CEEW analysis;
Data: CEEW micro-entrepreneur analysis

Sample size: 28

For **43%**

enterprises, the business is the primary income source for the household⁴

Gross monthly income ranges from

INR 2,000 to INR 15,000

in rural/semi-urban areas compared to

INR 9,000–20,000

in urban areas

80%

of the enterprises report that their income is seasonal

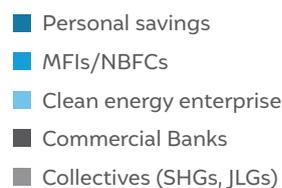
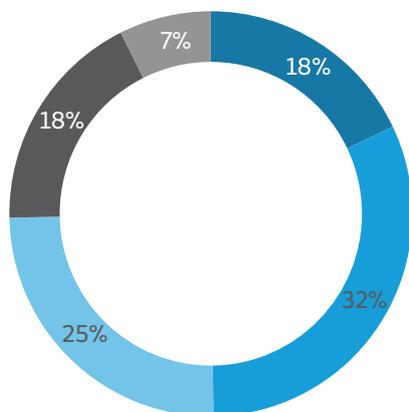


93% women own a bank account, but **52%** undertake cash transactions

62% women deposited their savings from income in their bank account

46% women micro-enterprises reported accessing any government schemes

Source: CEEW analysis; Data: CEEW micro-entrepreneur analysis

**Figure ES3**

Loans and clean energy enterprises are the primary source of financing to use DRE-powered products

Source: CEEW analysis;
Data: CEEW micro-entrepreneur analysis

Sample size: 28

4. In such cases, often-family members are also involved in running the business.

How clean energy enterprises engage with women micro-entrepreneurs

We note two predominant forms of business models through which clean energy enterprises engage with women micro-entrepreneurs: product-based approach and value chain-based approach.

Product based approach



The clean energy enterprise focused on sales and service of the product through partners or micro-entrepreneurs/collectives. Through this model, many enterprises who primarily worked with male collectives or micro-enterprises have reached women micro-enterprises with their solutions.

Examples: Alto Precision utilises the State Rural Livelihoods Mission scheme to install agro-processing machinery for women and Devidayal Solar Solutions works with Gramshree or Mahila Arthik Vikas Mahamandal to install truck-mounted solar refrigerators for tribal women.

Value chain approach



The clean energy enterprise is involved in the business value chain for the end user. The product is part of the offering. Training, financing, product deployment, and market linkage are also provided by the enterprise. This approach helps the enterprise in sustainable growth through repeated customers and closer engagement with micro-entrepreneurs.

Examples: S4S Technologies producing solar dryers has ventured into the food processing value chain and SMV Green Solutions supports women e-rickshaw drivers.



Clean energy enterprises predominantly use two business approaches - product based and value chain based - to reach women micro-entrepreneurs

Financing options used to buy clean energy appliances

Within the product-based approach and value chain-based approach, women-led micro-enterprises access technologies through one or a combination of the following financing options:



Grant

Donors and non-government organisations (NGOs) have either financed (through margin money assistance, interest subvention) or purchased equipment from clean energy enterprise. Devidayal Solar Solutions works with Gramshree and Mahila Arthik Vikas Mahamandal (MAVIM)⁵ to install truck-mounted solar refrigerators for tribal women. In this case, women didn't have to pay for the equipment but have experienced gains from using the product.



Loan

Financiers have partnered with clean energy enterprises to provide financing for the equipment. For example, SMV Greens partners with Avanti Finance to offer loans to the *Vahinis* to buy the e-rickshaws.



Subsidy

Government policies offer benefits to end users such as upfront capital subsidy, margin money assistance, or interest subvention. Schemes like *Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan*, *Solar Charkha Mission*, and *Credit Guarantee Scheme for MSMEs* provide subsidy support on equipment purchase.

5. MAVIM is Maharashtra's state 'Women Development Corporation', established in 1975 and registered under Companies Act, Section 8A, as a not-for-profit company.

Gender mainstreaming in the business strategies of clean energy enterprises

Donors and investors have enabled clean energy enterprises to include women across their value chain—as employees, suppliers, and customers. We highlight aspects of gender mainstreaming in their business and motivations for pursuing the same. This has enabled more enterprises to support a just and inclusive transition to clean energy while supporting key livelihood sectors for women and scaling economic returns, increasing depth of impact for the business.

Aspects of gender mainstreaming in business	Motivations for pursuing gender-targeted interventions
 <p>Product design Ensuring women-friendly design and needs of women integrated in the process</p>	 <p>Where women entrepreneurs form the predominant customer base: i.e. working in sectors which are predominantly female (e.g., textiles)</p>
 <p>Change in business model Reliable after sale servicing, gender smart messaging, safety measures</p>	 <p>Grant and other financial incentives to pilot business models with women customers</p>
 <p>Improving end-user financing Enabling bank loans, micro credit, service, or rental models</p>	 <p>New markets through partnerships (with NGOs or state rural livelihood missions) that have acted as nudges to explore working with women</p>
 <p>Addressing the intrahousehold dynamics Involvement and continued interaction with spouse/family members</p>	 <p>Entrepreneur's personal motivation and passion to work with women</p>

Barriers and opportunities for women-led micro-enterprises



Figure ES1
Society, market and state: Barriers to scale and opportunities for women micro-entrepreneurs

Source: Authors' compilation

A. Society

Barriers within the household



Women micro-entrepreneurs report spending 7 hours of unpaid care work and 6.5 hours in business as opposed to men who spend less than 3 hours on unpaid care work while spending similar time in employment related activities.

Women experience a greater overlap between their personal and professional responsibilities due to gender division of roles in society. We also find that **97 per cent of women micro-enterprises reported an increase in the number of hours they spent on household and caregiving responsibilities since the pandemic.**

Market-level barriers



About 65 per cent of the women micro-entrepreneurs relied on family members to take business decisions. Women need the buy-in of family members for financing the livelihood appliance or scaling the business. As women may not own assets and as social norms do not bestow them with asset ownership, they may have to depend on family members for collateral, margin money, co-borrowing support, or seek their approval to take on any financial commitment. Women as last mile distributors of energy products depend on family members for mobility.

B. Market

Access to finance



We find that **54 per cent of women-owned micro-enterprises are unregistered.** While 93 per cent of women micro-entrepreneurs own a bank account, more than half of them rely on cash transactions for their income and expenditure. The financial system makes it challenging for women to access loans in the first place due to the requirement of registration, collateral, margin money, and trust deficit in their loan repayment capacity. These issues have further exacerbated owing to the economic impact of COVID-19.

Further, financiers are hesitant to sanction loans to clean energy products due to novelty of the technology used and lack of knowledge among them about energy products. In non-traditional sectors like e-mobility or manufacturing of solar products, the challenges are further aggravated, and the need for ecosystem enablers in this case is far more significant for success.



While 93% of women micro-entrepreneurs own a bank account, more than half of them rely on cash transactions for their income and expenditure

Entrepreneurship development programmes



Many gender-agnostic networks and associations do not offer services tailored to their female members' needs and often fail to accommodate time constraints that women face (Asian Development Bank and The Asia Foundation 2018) or account for the social dynamics within family and community that influence the business operations of women's enterprises.

Access to networks



Many gender-agnostic networks and associations do not offer services tailored to their female members' needs and often fail to accommodate time constraints that women face (Asian Development Bank and The Asia Foundation 2018) or account for the social dynamics within family and community that influence the business operations of women's enterprises.

BOX ES1 Market transformation by state

Collectivisation has had a positive effect on energy enterprises to reach more women in the value chain and as end users. Collectives have greater loan absorption capacity than individual borrowers. Under the *National Rural Livelihoods Mission* (NRLM), all states have mobilised poor rural households into effective self-help groups (SHGs) across the village, cluster, and block to enhance credit access. It also provides them with technical and marketing services and builds capacity for business activities.

Women in the collectives have already been imparted training on financial and digital literacy and marketing, enabling clean energy enterprises to partner with *State Rural Livelihoods Mission* (SRLM) and employ trained women as vendors or sales agents. These enterprises then can shift their focus to bridging market linkage barriers. Social aspects of navigating household and community dynamics are already a part of collectives, which helps clean energy enterprises scale to newer customers.



C. State

Awareness and facilitation of access to schemes



Only a few schemes include clean energy for mechanisation in various sectors such as agriculture and textiles. The higher capital cost and lower recurring cost of DRE-powered appliances mean that schemes have to customise their approach to accommodate them. As a result, micro-entrepreneurs and financiers have lower awareness and interest in DRE-powered products, affecting their market demand.

The data from SEWA-CEEW survey with women-owned micro-enterprises suggests that about half of the respondents have accessed a government scheme. These schemes, however, are social protection schemes for pension, housing, and public distribution system. Access to schemes for financing of business or mechanisation has been limited.

Background and documentation support for access to schemes



While flagship schemes like Micro Units Development and Refinance Agency (MUDRA) loans have relaxed requirements for women (and men) to access bank loans and provided low-cost credit without collaterals, complex lending process, documentation, effort, and the perceived risk of default that limit the bankers' incentive. Women-owned enterprises endure a higher average turnaround time for getting a loan processed than men (IFC 2018).

Gender-inclusive policy design



While some policies are gender-inclusive by design, yet the implementation procedures are gender neutral. The requirement of documentation and eligibility criteria of schemes could inadvertently exclude benefiting women. **The data from SEWA-CEEW survey with women-owned micro-enterprises suggests that 75 per cent of the women have no assets in their name.** The eligibility requirements of schemes include collateral, margin money, registration documents, and business proposals and projections, which become more significant barriers for women than men. Further, the uncertainty and need for regular follow-ups prevent women from investing their (limited) time and resources to pursue government schemes.

With low asset ownership and registration of business, women find it challenging to access available schemes. Therefore, schemes like MUDRA and the *Shishu* loans that relax collaterals or formalisation requirements see a higher share of women borrowers (66 per cent of the accounts in *Shishu* category belonged to women) (MUDRA 2020).

A higher concentration of loans availed by women-owned enterprises were from women-led branches (IFC 2018). The skewed gender-balance and lack of sensitisation among government staff also reinforce the gendered bias against women-led enterprises.

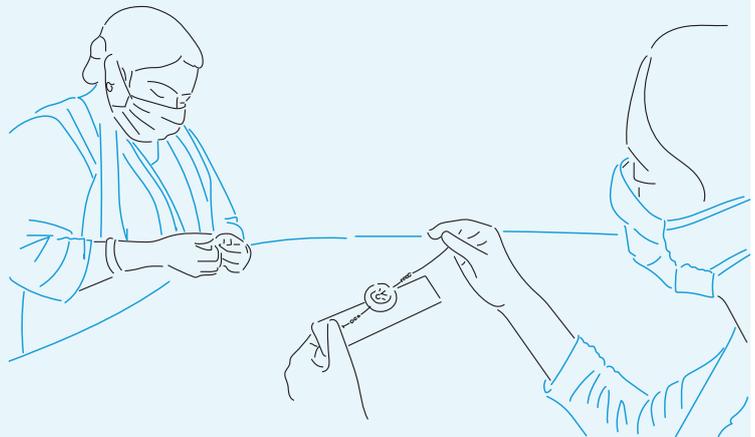


Schemes like MUDRA and the *Shishu* loans that relax collaterals or formalisation requirements see a higher share of women borrowers

BOX ES2

Impact of COVID-19

Most micro-enterprises in the SEWA-CEEW survey (78 per cent) relied on their savings to manage their expenses during the lockdown. While 36 per cent relied on borrowing money from their family and friends, less than two per cent of the enterprises sought lending from financial institutions to manage their expenses. Only 31 per cent of micro-enterprises who had ongoing loans for their business repaid instalments during the lockdown because of COVID-19.



Recommended solutions in practice offering potential to scale for impact

Empower women through institutional support, and enable men to support women	
Key stakeholders	Recommendation
 Polymakers	<p>Government policies need to value women's care work to families and provide support for it.</p> <p>Extend social safety net support for self-employed workers; tax incentives to start-ups for the development of childcare infrastructure; interest breaks during pregnancy and early childcare to avoid additional burden on women.</p>
 Investors and donors	<p>Encourage and support project and programme design to integrate gender analysis during conceptualisation. This would allow programmes to be cognisant of women's needs and include men and the larger community of influence in women's lives in an enabling manner.</p>
 EDPs (supported by donors and NGO partners)	<p>Beyond skills, mainstream legal rights and awareness training into enterprise development programmes will help women negotiate their space in the household and economic sphere.</p> <p><i>Examples: GIZ Her&Now programme, Mann Deshi's MBA programme.</i></p>
 Clean energy enterprises (along with NGO partners)	<p>Involve spouses and families of women entrepreneurs in the discussion helps build a healthy relationship with the entrepreneur's family, providing an enabling environment within the community and families. This should be integrated strategically into marketing and sales plans as the acquired customers prove to be remunerative for clean energy firms.</p> <p>Create community-level gender champions among youth and men. Positive masculinities could enable support for women-owned enterprises with clearly demarcated roles and responsibilities.</p>
Market mechanisms to enable financial access for women micro-entrepreneurs	
Key stakeholders	Recommendation
 Clean energy enterprises (and their partners)	<p>The enterprise's role is significant in building financiers' confidence to formalise lending to first-time borrowers in non-traditional livelihoods. They could accomplish it by:</p> <ul style="list-style-type: none"> acting as aggregators of loan demand for financial institutions and enable end-user financing for their customers and, providing margin money assistance or financing through a revolving fund supported by profits or philanthropic capital.
 Financiers (Banks, MFIs, NBFCs)	<p>Enabling credit through incentives, alternate credit assessment methods, and leveraging the micro finance institutions (MFIs) and collectives' credit history.</p> <p>A separate segment within MFIs like 'entrepreneurship loan' to women for asset acquisition where ticket size is larger than the usual MFI loans.</p> <p>Customise loan products accounting for women's needs and focused on lending to women in partnership with women's organisations.</p> <p>Increase the pipeline of women customers along with improvement in gender ratio and sensitisation of staff.</p>
 Donors and financiers	<p>Pilot alternative credit assessment methods with financial institutions. Harnessing alternative data can enable lenders to make reliable predictions about the creditworthiness of potential borrowers.</p> <p>Invest in financial institutions lending to women, in particular, that can meet women's asset acquisition needs. Tailored financial solutions are more likely to increase women micro-enterprises' access to livelihood loans, align repayment plans with cash flow, and improve credit conditions for micro-enterprises.</p>
Role of Entrepreneurship development programmes (EDPs)	
Key stakeholders	Recommendation
 Donors (along with EDPs)	<p>Mainstream gender lens in EDP support services and cohort design.</p> <p>Training and capacity building of entrepreneurs to identify and address gendered challenges in the entrepreneurial ecosystem.</p> <p>Mainstream gender lens in business for clean energy enterprises to expand their reach to women-led micro-enterprises as customers.</p> <p>Programmes for micro-entrepreneurs need to adopt a decentralised approach through customised focus for specific states or regions; focus on rural areas.</p>
 EDPs (supported by technical experts, NGOs and women's organisations)	<p>Targeted handholding support is needed for women-led micro-enterprises for services such as registration, documentation, and access to credit.</p> <p>Bridge information asymmetry and facilitate access to government schemes and policies for women entrepreneurs as per growth stage of the business.</p> <p>Facilitate sessions for women micro-entrepreneurs through mentors on navigating the process of accessing various kinds of support, including access to government schemes.</p> <p><i>Examples: Women Entrepreneurship Programme at NITI Aayog, Telangana Government's We Hub, Zone Startups.</i></p>

Enabling policy access for women micro-entrepreneurs	
Key stakeholders	Recommendation
 Policymakers	<p>Build on existing schemes to integrate DRE-powered mechanisation—Ministry of Micro Small and Medium Enterprises offers schemes on technology upgradation or capital subsidy that are to be designed, factoring in the high upfront cost of clean energy appliances.</p> <p>Mainstream gender-inclusive policy targets and gender-responsive budgeting for clean energy access.</p> <p>Have schemes supporting clean energy technologies (especially in non-traditional sectors) with targeted support for women.</p>
 Women's organisations and technical experts (supported by donors)	<p>Support and build capacity of policymakers and implementation officials to design and implement schemes with a gender lens.</p>

Policy ecosystem for women's entrepreneurship and the intersection with energy access and mechanisation

Our analysis suggests that the existing government policies in India have provided additional incentives to encourage entrepreneurship and support livelihoods for women (and other marginalised sections). Beyond the government schemes, financial institutions in India, including banks and MFIs, have focused on women as part of their lending strategy through customised loan products that are offered for working capital requirements, acquisition of capital assets, or for skilling and capacity building of women. Some schemes also provide access to markets by covering the costs of fairs and exhibitions to sell products. The schemes enabling financial access to women for mechanisation can be categorised as:

- 1** Sector-specific government schemes
- 2** Sector-agnostic government schemes targeted at women
- 3** Cluster development schemes
- 4** Energy access schemes

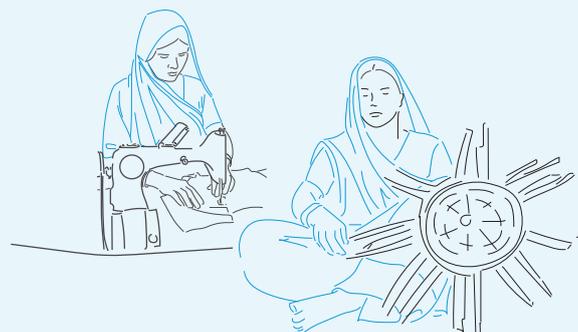
A detailed assessment of schemes across all these categories can be found in the Spotlight III section on the policy ecosystem.

Our analysis shows that women cannot benefit from schemes that do not target parts of the value chain in which more women are involved or support women's transition to new areas of the value chain. So they may not absorb or qualify for large value grants unless they are staggered to help them build scale for their business. In the case of preferential loans offered by banks, despite targeting women, documentation needs pose a barrier for women in the informal sector. Most schemes focus on working capital loans, while productivity boost for women-owned enterprises would need asset financing support. Some of the energy access schemes have additional incentives for Scheduled Caste/Scheduled Tribe communities or specific states considered more needy of support. Women are not typically targeted for these schemes, which implies that the implementation process and the requirements for qualification remain the same for men and women, which could inadvertently exclude women as potential beneficiaries of the scheme.

BOX ES3

How can policies support access to energy for women-led micro enterprises?

- Energy sector policies need to be gender inclusive and integrate a focus on women's livelihoods.
- Policies focused on women have integrated a mechanisation lens. There is a need for energy products that can be integrated within core end-use sectors such as agriculture, textiles, and food processing.
- Across sectors, the policy focus on women should be expanded beyond the parts of the value chain. The existing presence of women in the value chain shows their future potential.
- Schemes focusing on mechanisation could be complemented with skill upgradation to be more gender-inclusive.
- Schemes should offer additional incentives for technology innovators to create women-friendly product designs keeping in mind the needs of women users.



The SEWA-CEEW survey data reveals that 38 per cent of the micro-enterprises received government relief during the COVID-19 lockdown under Pradhan Mantri Garib Kalyan Yojana. Yet, the COVID-19 Enterprise Response Research (Valenti et al. 2020) study suggests that although around 88 per cent of respondents were aware of at least one of the schemes, 59 per cent preferred not to apply for any scheme. In policies that are not necessarily targeted at women or parts of the value chain that women are involved in, it is difficult to measure the scale of the benefits realised by women as sex-disaggregated data on scheme beneficiaries is not available. The Periodic Labour Force Survey 2018–19 reveals that the share of enterprises owned by women has gone up to 21.5 per cent from 13.8 per cent in 2014, which points to an increasing role of women entrepreneurs in the economic growth and employment generation in the country. Therefore, **a targeted gender lens across policies and schemes to enable women's access to finance would be timely and wise.**

BOX ES4

Gender budgeting: a tool to include women in all schemes, including energy access

Gender budgeting uses the budget as one of the avenues to correct gender gaps (Kapur Mehta 2020). Rather than being a mere accounting exercise, it presents an opportunity to integrate a gender lens at all stages of planning and policymaking.

In India, gender budgeting was introduced in the 2005–06 budget but has remained under 5 per cent of the overall budget. However, the absolute value of allocations under gender budgeting has increased to INR 1,43,461 crore in the 2020–21 budget estimates (at 4.72 per cent of the entire budget). The budget circular requires ministries and departments to highlight “the quantum of public expenditure earmarked for (a) programmes with 100 per cent provision for women in Part A of the GBS, and (b) between 30 per cent and 99 per cent provision for women in Part B” (Kapur Mehta 2020).

The *Pradhan Mantri Ujjwala Yojana* comprised 4 per cent of the contribution under Part A, only scheme from an energy ministry to make it. Under Part B, energy ministries have the following allocations, totalling less than 0.05 per cent of the overall budget in Part B. The proportion of the budget within the larger ministry budget is also low.

The following challenges constrain gender budgeting:

- Issues with characterisation where ministries are often not aware of what and how much to include under gender budgeting
- Inadequate allocation, which has remained under 5 per cent of the budget since its implementation, despite many more schemes looking to include women
- Lack of gender-disaggregated data on scheme beneficiaries, making it challenging to map the proportion of women beneficiaries and therefore limits an understanding of how gender-based challenges could be addressed and how spending translates into gender-based outcomes (Kapur Mehta 2020).

For solutions, the budgetary allocations for girls and women should be based on a roadmap (Kapur Mehta 2020) at the state and national levels, indicating how ministries/department plans meet women's needs and bridge existing gender gaps (Chakraborty 2013). Besides, sex-disaggregated data on scheme beneficiaries in all ministries, gender-inclusive policy planning and design that integrate women's needs in both policy and its implementation guidelines, coupled with capacity building of policymakers and implementers, and a closer engagement with women's organisations while designing schemes, would be a good starting point.



Conclusion

The study highlights a variety of initiatives targeting women's livelihoods in the domain of society, market, and state, which have enabled clean energy enterprises and women-led micro-enterprises to achieve scale and impact. We note that barriers of financing, access to schemes, and policy design need well-targeted support to truly create gender-transformative impact through energy access for women founders of clean energy enterprises, women employees, and value chain partners and end users of energy products and services (women-led micro-enterprises).

Closing the gender gap in the economy would entail better targeting of funding for women and integration of gender-inclusive strategies in all sectors, including the energy sector. As of 2017–18, the energy sector, despite being well funded, has had around 10 per cent of the total funding focused on gender equality over the past years. With an optimistic business case for the sector, there is an opportunity to better integrate a gender perspective in energy programmes, with the understanding that enhanced access to reliable and affordable modern energy is crucial for women and girls (OECD GENDERNET, 2020). In the current economic recovery context post COVID-19, it is important that governments, donors and investors work to improve productivity and reduce the drudgery for women-led micro-enterprises, which can contribute to the rebuilding of the economy through better incomes for the household and generation of employment.

This study sheds light on the potential strategies that could be adopted and scaled in the energy sector to support women entrepreneurs across the value chain by addressing the barriers of financing and access to policies. The recommendations listed in the document could guide key actors in the sector—clean energy enterprises, donors, financiers, accelerators and incubators, policymakers, and entrepreneurs themselves across all stages of growth—to accelerate the pace and scale of interventions that could impact and improve productivity as well as incomes for women's micro-enterprises in India.



Policies need to have gender-sensitive design and implementation guidelines in both traditional and non-traditional livelihood sectors for women



Decentralised renewable energy (DRE) for cold storages and freezers is being leveraged to create supply chain solutions in agriculture and allied sectors.

Image: CEEW

1. Introduction

Access to energy is increasingly recognised as a critical enabler of economic growth and poverty reduction in developing countries (Pueyo and Maestre 2019). According to India Residential Energy Survey 2020 (Agarwal et al. 2020), nearly 97 per cent of households now have access to electricity, with another 0.33 per cent relying on off-grid electricity sources. Beyond households, electricity access can drive economic and social development by increasing productivity, enabling mechanisation (Pueyo and Maestre 2019), and reducing drudgery in economic activities. Access to decentralised renewable energy (DRE) could facilitate mechanisation, leading to benefits for both farm and non-farm sectors. DRE-powered and energy-efficient innovations such as sewing machines, milk chillers, milking machines, motorised pottery wheels, charkha and weaving machines, and solar pesticide sprayers present the potential to improve productivity and reduce drudgery in livelihood activities for both men and women (Waray, Patnaik, and Jain 2018).

In the context of economic growth and poverty, gender inequality is strongly associated with “income inequality across time and countries of all income groups, even after controlling for factors like financial openness and deepening, technological progress and labour market institutions” (Jain-Chandra 2015).

Women's economic empowerment in India



India ranks **112** in gender equality out of 153 countries, four ranks lower than last year

Source: Global Gender Gap Report 2020



Female income in India is a mere one-fifth of male income, which is among the world's lowest at **144th** position

Source: Global Gender Gap Report 2020



Women in India represent **20%** of the labour force, one of the lowest participation rates in the world, down from **32%** in 2004

Source: World Bank 2020

Access to DRE solutions, as an enabler of economic growth and poverty reduction, could become the lever for women's economic empowerment by enhancing productivity and incomes (Pueyo and Maestre 2019; Jha et al. 2019). DRE-enabled solutions, mentioned before, are easier and affordable to use. Businesses having access to energy realise higher productivity. However, traditionally more women are involved in manual work than men. Therefore, they tend to benefit more from mechanisation, especially self-employed women, and it also reduces drudgery of work for all.

Women entrepreneurship in India

8 million

women-owned MSMEs

Source: Central Statistics Office (CSO) 2014

20%

micro-enterprises are owned by women

Source: MoMSME 2020

12.3 million

unregistered women proprietary enterprises

Source: NSSO 2016

>80%

women entrepreneurs running single-worker firms, women entrepreneurship in India is skewed towards solopreneurs

Source: MoMSME 2020

17%

women-owned businesses employ paid workers (22-27 million workers), amounting to just 10% of total workers

Source: IFC 2018

Women traditionally have had limited access to mechanisation compared to men, even within family-based occupations, owing to the gendered socio-economic barriers that deprive women of decision-making control and access to credit in economic activities. Women from marginalised castes have even lower mechanisation access as marginalised caste households are even more deprived. According to the Periodic Labour Force Survey (PLFS) 2018–19, about 46 per cent of Scheduled Caste women workers in the rural areas are casual labourers compared to 16 per cent in the General category. Lack of mechanisation constrains women to operate at low levels of productivity and high levels of drudgery, eventually restricting their income and available time, which prevents them from investing in their capabilities and families more meaningfully.

4.3 million

micro-enterprises operated by both men and women report lack of reliable electricity as the biggest bottleneck

Source: NSSO 2016; Waray, Patnaik, and Jain 2018

31.3%

women entrepreneurs cited lack of finance as a reason for discontinuing their businesses (vis-à-vis 27.1% men)

Source: Elam et al. 2019

60%

women compared to 30% men have no valuable physical assets in their name

Source: UNIBF 2018a

Financing for women-owned enterprises



79%
self-financed



3.4%
government schemes



1.1%
accessed loans from financial institutions

Source: Central Statistics Office 2014

The energy and gender literature has focused mainly on the household (Pueyo and Maestre 2019). Women suffer the burden of energy poverty (SEWA Bharat 2017) heavily in livelihoods despite comprising almost half of the self-employed farmers (National Statistical Office 2020) and owning over one-fourth of the proprietary micro, small, and medium enterprise (MSME) units in the country (MoMSME 2020). Access to reliable energy for mechanisation of productive activities for women is notably essential, particularly in increasing feminisation of livelihood activities. Women entrepreneurs and employees face “different challenges than men because they operate in different types of productive activities, at different parts of the value chain, at different locations” (Pueyo and Maestre 2019). Women have lower access to the key enablers—assets, finance, markets, infrastructure, and skills—due to lack of linkages between the market and the household (ibid.).

Beyond access to finance, women-owned businesses face additional social and institutional biases, as evident in various government policies and their implementation. Government policies can play a pivotal role in normalising women entrepreneurs’ presence and demonstrate to key stakeholders—investors, governments, and companies—that women deliver on the expectations. Policies need to be formulated for women’s economic empowerment by redressing women’s disadvantaged position to ensure improved access to finance, markets and networks and addressing the underlying structural gendered differences (Hunt and Samman 2016).

As per the McKinsey Global Institute (2015), women contribute 17 per cent to India’s GDP, one of the lowest contributions by women, palling in comparison with than the global average of 37 per cent. If women were to participate in the economy equal to men, it could add USD 2.9 trillion to India’s annual GDP by 2025 (UNIBF 2018b). Thus, improving women’s productivity and incomes through reliable and affordable access to energy for economic activities could directly contribute to achieving social and economic outcomes. Furthermore, as women happen to be an integral part of livelihood activities, access-to-energy companies could expand their markets and achieve scale by working with women across the value chain as producers, customers, and suppliers of energy products.

BOX 1

Economic empowerment of women through government initiatives

The self-help groups (SHGs) across the country formed under the Government of India's flagship *Deendayal Antyodaya Yojana—National Rural Livelihoods Mission (DAY-NRLM)* is a successful example of how government initiative has led to economic empowerment of women by providing the much-needed access to non-usurious loans, entitlements, and social and institutional support. SHG participation led to “women's higher ability to exert control over resources, access credit from formal financial institutions, participate in decision-making focused on access to resources, rights and entitlements within communities (political empowerment), and make decisions about the reproductive health in the household and increased mobility” (Hoop and Tripathi 2020).



The primary objective of this study is to understand the impediments women entrepreneurs face, focusing on women-led micro-enterprises as users or potential users of clean energy appliances. The findings of the report focus on increased uptake of energy services by women micro-entrepreneurs while elaborating on notable opportunities to increase support for women entrepreneurs in the access to energy and as value chain partners. This study highlights the potential opportunities for gender integration in the clean energy ecosystem. We discuss the barriers in the ecosystem and discuss the tested solutions that have the potential to generate scale for business and bring greater participation of women as entrepreneurs, value chain partners, employees and customers. While including other barriers, the research emphasises on access to finance and government schemes and services, in particular, to help women scale and use clean-energy-powered livelihood technologies in their business.

The aim is to enable-

- 1** Increased support for women founders leading energy access businesses in India,
- 2** Increased participation of women in the clean energy value chain, and
- 3** Increased uptake of clean-energy-powered livelihood equipment by women micro-entrepreneurs.

2. Research methodology



Image: Milan George Jacob/CEEW

We adopted a mixed method for data collection to understand the challenges and enablers for women entrepreneurs across society, market, and the state. Information on registration of business, access to finance, business models for scale, government support, scale-up of business operations, and socio-cultural expectations around gender roles were collected. We conducted an extensive literature review on the abovementioned areas, with an additional focus on existing policies and schemes that foster entrepreneurship and livelihood opportunities for women across sectors and its intersection with access to energy and mechanisation.

We conducted semi-structured interviews with three categories of respondents: clean energy and sustainability sector⁶ entrepreneurs (both men and women), micro-entrepreneurs (women only), and ecosystem stakeholders (in clean energy, women's economic empowerment and livelihoods sector).

A. We conducted interviews with 26 clean energy entrepreneurs, primarily working

with women. We identified respondents through energy-specific entrepreneurship development programmes (EDPs)⁷ like POWERED, Powering Livelihoods, Shell Foundation portfolio, and other industry associations.⁸ About three-fourths of the enterprises interviewed are women-owned or women-led enterprises. The interviews with clean energy enterprises also focused on understanding their customers' challenges and experiences (micro and nano entrepreneurs). To understand the gendered nature of such challenges, we analysed clean energy entrepreneurs' business models for products that were used by both men and women.

B. We conducted interviews with 28 women micro-entrepreneurs using energy products/mechanisation in their business (hereafter referred to as CEEW micro-entrepreneur survey).

We identified the interviewees through the clean energy enterprises (their customers) and women's organisations, primarily Jagriti Yatra, SEWA Bharat, and PRADAN.

C. We conducted 25 in-depth interviews with diverse ecosystem stakeholders,

including financiers (debt providers, microfinance institutions [MFIs], cooperatives, non-banking finance companies [NBFCs]), entrepreneurship development programmes (EDPs) focused on micro and small enterprises in the energy sector, government-run initiatives (state-run incubation, *State Rural Livelihoods Mission (SRLM)*, central government departments), donors and research organisations, non-government organisations (NGOs), and women's associations.⁹ These interviews focused on understanding the role of ecosystem stakeholders in enabling participation and growth of women in the sector, their motivations and objectives behind working with women-owned or women-led micro and small enterprises, and the kind of support offered by them in facilitating access to finance and other forms of support for women. The data from stakeholder interviews also helped us triangulate the data from entrepreneur interviews and understand the issues from a sectoral perspective.

D. We collaborated with SEWA Bharat to survey 112 women micro-enterprises from Bihar, Gujarat, and Rajasthan (hereafter referred to SEWA-CEEW survey).

The objective of the survey conducted by SEWA Bharat was to understand the impact of COVID-19 on women's businesses and their access to finance and policies. The SEWA union conducted all the interviews as it had ease of access to women entrepreneurs. The respondents were selected through a purposive sampling method. We added questions about entrepreneur's access to assets, mechanisation in their enterprises, and access to government schemes and support, in addition to the questions on financial access and impact of COVID-19 that SEWA Bharat had in place. The survey was conducted between July, September, and October 2020.

6. We included the sustainability sector entrepreneurs to diversify our pool of women entrepreneurs who are looking at scalable businesses with equity infusion at a later date. Sustainability as a larger sector would highlight similar challenges for entrepreneurs and women in particular and due to the limited sample size of women co-founded companies in the clean energy sector, we had to expand the pool through such an approach.

7. Includes incubators and accelerators.

8. Refer to Annexure I for the detailed list of enterprises interviewed.

9. Refer to Annexure I for the detailed list of stakeholders interviewed.

The data collection using semi-structured interviews was undertaken between June and September 2020. Since this was a period of nationwide lockdown and travel restrictions due to COVID-19, all interviews were conducted telephonically. Given the mobility constraints, the partnerships with Jagriti Yatra and SEWA Bharat helped us leverage their existing micro and mass entrepreneur network for the data collection process. While we have balanced the diversity of entrepreneurs by geography, scale, and sectors, the method adopted to reach entrepreneurs and the concentration of women in specific sectors could have led to limitations in the general applicability of our findings to entrepreneurs in all livelihood sectors.



The study focuses on women end-users of energy products who benefit from mechanisation through improved income and reduced drudgery

2.1 Frame of analysis

We analyse the challenges and enablers for women entrepreneurs in the sector across three categories:

1. Women founders leading enterprises offering energy products and services
2. Women as employees or value chain partners working with the clean energy enterprises
3. Women leading micro-enterprises who are end users or customers of energy products and services across sectors

However, the primary focus is on **women as end-users of energy products** mostly dependent on debt (loan) and sales to expand their business. A detailed assessment of barriers and opportunities for women founders leading clean energy enterprises has already been covered in Martin and Glinski (2019). We also interviewed female employees of clean energy enterprises; however, our interviews showed a low proportion of women employees in the DRE solutions sector.

We focus on women-owned micro-enterprises as end-users or customers (own account workers/self-employed/micro-entrepreneurs) of energy products and services because they are a less-researched category of entrepreneurs in the energy sector. The sector has primarily focused on households, farmers, or communities, or women founders of clean energy enterprises. However, micro-entrepreneurs can benefit from mechanisation through improvement in income and reduction of drudgery.¹⁰ As the conversation in the energy access space moves from households to productive applications, we see a need for our research to focus on women-owned micro-enterprises as end users.

We used the Women's Economic Empowerment Framework (Donor Committee for Enterprise Development, 2013) for our line of enquiry and as a tool for data collection. The key themes that we adapted for our interviews from the framework include:

- economic advancement (income, financial inclusion, access to financial support),
- institutional environment, norms, recognition, and status (access to government schemes, training, incubation support, and control over assets),
- agency (power of decision-making, autonomy, and mobility), and
- impact of COVID-19 on the business of women in particular.

10. Mechanisation may have unintended consequences in the form of a renegotiation of labour (women may mechanise their own tasks or transgress into male domains), or female jobs may be taken over by males as soon as they become mechanised and profitable (World Bank 2008). But in the context of self-employed or home-based women entrepreneurs, mechanisation tends to increase productivity and incomes and reduce drudgery.

We mapped the questions against a broader framing of society, market, and state (Pal et al. 2020) for analysis. Figure 1 shows how the triad of state, market, and society interacts with key themes of our research. This framework was used only for women-led micro-enterprises, which is the primary focus of the study.



Figure 1

The triad of society, market, and state is used to analyse the barriers and opportunities for women micro-entrepreneurs

Source: Authors' compilation

3. Engagement of women in the clean energy sector



Image: Wase Khalid/CEEW

Our research analyses women entrepreneurs across the value chain with a primary focus on micro-enterprises. The categories used are as follows.



Women founders leading enterprises offering energy products and services

Clean energy start-ups founded or co-founded by women who provide clean energy-powered products and services for household or business use. Examples include Frontier Markets, Greenway, S4S Technologies, Cydee Tech, DDBio Solutions, and GTarang Energy Solutions.



Women as employees or value chain partners working with the clean energy enterprises

Women working as full time or part-time employees working with clean energy enterprises. This category would also include women as last-mile distributors of energy products—for example, Dharma Life and Frontier Markets.



Women leading micro-enterprises who are end users or customers of energy products and services across sectors

Micro-enterprises owned and operated by women who are often users of the products and services offered by clean energy start-ups founded by men or women. Examples include users of solar-powered dryers, cold storage, processing machines, weaving and sewing machines, and milk chillers. These enterprises are found across all end-use sectors such as agriculture and allied services, textiles, and small and medium enterprises (SMEs). However, since such customers' pool was small, we have also included in our study women who have used or purchased electricity- or diesel-run machines for their work.

We outline some characteristics of the first two categories of women's involvement in the energy sector, noting significant barriers or support available to them. We delve deep into the barriers and support available across a range of aspects for the third category—women-led micro-enterprises who are potential or current energy products and services users.

3.1 Women founders of clean energy enterprises

The energy sector has been traditionally among the most male-dominated science, technology, engineering, and mathematics (STEM) fields. This gender stereotype reflects the implicit assumption that women entrepreneurs cannot compete in STEM sectors. When it comes to accessing finance and policies, women entrepreneurs in the clean energy sector may not have access to the same opportunities, services, and networks as their male counterparts. We also note that women founders in this domain predominantly have a strong business or family background. The exceptions are women educated in STEM from institutions of national and global repute, also usually partnering with male colleagues to start a business in this field.

Access to finance and policies

Grants and debt funding remain an essential source of finance for most of the early-stage enterprises in the energy sector. **While a majority of women-owned enterprises¹¹ have received some form of grant support (from donors or incubators), less than 50 per cent of the clean energy enterprises report accessing debt funding, whereas very few have accessed equity.** We find that a majority of the entrepreneurs relied on personal resources for initial financing. As these enterprises move to business development and expansion stages, they need funding to grow. **Women-owned clean energy enterprises are more inclined to raise revenue through sales since they want to be definitive about their cash flows before accessing debt to ensure repayment.** Additionally, clean energy enterprises, due to the novelty of technology deployed and yet-to-be-proven business models, take longer to break even than others. Therefore, these enterprises find it difficult to raise working capital and often revenue from sales remains a crucial source of finance.



Majority of women entrepreneurs in the clean energy sector are first-time entrepreneurs who find it challenging to access the policies due to lack of existing networks or not knowing the requisite procedures

11. About 75 per cent of the clean energy enterprises we interviewed were women-owned, operational for about four years.

Majority of women entrepreneurs in the clean energy sector are first-time entrepreneurs who find it particularly challenging to access the benefits offered by the government because of lack of existing networks or not knowing the requisite procedures. **About 25 per cent of women entrepreneurs reported accessing any form of government schemes.** Lack of awareness about government schemes, unfamiliar and tedious application processes, high uncertainty, need for regular follow-ups, and unsuccessful peer experiences have discouraged women entrepreneurs from investing the time and resources to seek benefits available from government through various policies and schemes. However, some of them are now working to enable access to loans through partnerships with financial institutions for their end-users, including women.

Incubation and acceleration support

Most incubation and acceleration programmes in the energy sector are found to adopt either a gender-targeted or a gender-agnostic approach, which makes women entrepreneurs seek both kinds of programmes for a holistic experience. However, qualitative insights from our interviews suggest that women founders overwhelmingly appreciated the value of women-centric acceleration programmes that offer both financial and technical skills to scale up their business, particularly those in early stages or new to entrepreneurship. **All entrepreneurs who have been part of gender-targeted programmes with a specific focus on the energy sector reported having benefited from the programme, which could provide them with sectoral support.** The customised approach to mentorship and financial and technical assistance (based on enterprise's business stage) is of value for all the entrepreneurs. Still, targeted incubation and acceleration programmes can benefit women more than gender-agnostic approaches.

Integrating a policy component in incubation and acceleration programmes could improve entrepreneurs' access to government policies. Some business models are more strongly linked to policy changes than others. In such cases, mentors who can facilitate engagement with policymakers or the programme supporting entrepreneurs to provide input in the policymaking process and access the policy ecosystem would be helpful.

A range of recommendations has been discussed in Martin and Glinski (2019) on how key stakeholders in the government and private sector could foster an enabling environment for female energy entrepreneurs to access the financing and support needed to create and grow their businesses.

Women founders creating opportunities for women in other parts of the value chain

According to previous research on women energy entrepreneurs, women-owned enterprises have a wider vision and scope for gender inclusion. They are more likely to work with women across the value chain than male energy entrepreneurs (Martin and Glinski 2019). However, we found that this attitude is often driven by whether women are the product's direct buyer. Clean energy enterprises in traditional sectors (such as textiles or handicrafts) have engaged with women customers without looking for additional incentive or specific strategy. But, in case of solar pumps, solar street lights, or solar cold storage solutions, where women may not be the dominant decision-makers or the solution is expensive, women founders



Integration of support to understand policies and apply for schemes in incubation and acceleration programmes could improve entrepreneurs' access to public funds

look for similar support as men to work with women end users. Among the enterprises we interviewed, the share of women users varied from as low as 8 per cent to as high as 80 per cent. However, women founders showed a greater interest in working on women-friendly policies and benefits if they already had women as employees or value chain partners. Though we find that women entrepreneurs were motivated and keen to work with more women across the value chain, a range of push factors for enterprises also encourage them to work with more women across the value chain as employees, partners, or customers. Some of these aspects include the existing share of women in the sector, grants, and other financial incentives that offer them the opportunity to engage deeper with the part of the value chain where women are present, and partnerships (with NGOs or State Rural Livelihood Missions [SRLMs]) that nudge the enterprises to explore working with women.

3.2 Women employees and value chain partners working with clean energy enterprises

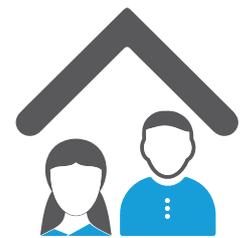
Women as employees

Women are underrepresented as employees in the clean energy sector in technical roles such as product design and engineering that could improve products' uptake and usability (Martin and Glinski 2019). **Having more women in technical roles in the sector could help in a better understanding of the customers' needs and ensure gender-inclusive product design.**

On an average women-led clean energy enterprise in our sample has a high (more than 45 per cent) share of women employees. In our interviews, most entrepreneurs reported having women in office-based roles. But mostly male employees occupy technical roles like supply chain management, manufacturing, and installation. Some enterprises also hired women in design for freelance positions where they could work remotely. Enterprises based out of Tier II cities generally have difficulty in recruiting women due to their barriers to relocate. Though women employees form a part of the team in enterprises, achieving gender parity depends upon women's availability in the sector and an ecosystem that enables entrepreneurs to reach potential women candidates.

Even though diversity clauses are included in some enterprises, they mostly recruit through word-of-mouth from their existing networks, which are primarily male-dominated in a sector with a few women. Suitable women candidates with skill sets and preferences may not be available in these networks. Unless the sector or the role provides them access to a larger pool of women, women founders did not show a preference for hiring women employees. However, female founders reported having benefited with men in their team or co-founders to navigate the gender barriers for them when dealing with suppliers, investors, or other value chain partners.

In sectors with more women (or feminine sectors), women could take up conventionally masculine jobs such as marketing or operations. If they acquire and demonstrate the skills, it would help them transition to other sectors.



Female founders report relying on men co-founders and in teams to navigate gender barriers in dealing with external parties

Women in the value chain

Women take up the following roles in the value chain:

- 1. As product distributors and sales agents:** Companies like Dharma Life and Frontier Markets have designed a resilient business model in which women in proximity can distribute energy products (and sometimes services) to customers' homes. For example, Dharma Life has built and trained a network of 13,000 rural women agents to make energy products like clean cookstoves, and solar lights accessible and affordable in rural markets. They also conduct innovative campaigns with the communities to create and sustain market demand. Women agents work within a radius of three or four villages to commute easily and also have enough customer bases to earn a viable income. However, fewer women can serve as field managers as it may require longer working hours or travel.

Women as last-mile distributors of energy products have to travel to different villages; they are primarily dependent on other family members for mobility. Even women who travelled on their own for business-related work before the restrictions were imposed due to COVID-19 greatly depend on male members for mobility during the post-lockdown period. Enterprises gave women access to demonstration kits for improving sales and included spouses and family early on in the discussion to ensure continuity of work and less resistance and safe working times.

- 2. As workers or suppliers in agriculture and textile value chains:** Clean energy enterprises with a higher penetration in the value chain employ women as workers. For instance, S4S Technologies have set up the value chain involving women in processing high-quality food products in their own homes and central processing facilities. Greenwear procures fabric from women who weave and spin using solar looms and charkhas, respect.

Women are provided guaranteed market linkage, flexible work, access to technologies through a grant model or long-term loans, and margin money facilitated by partner organisations or clean energy enterprises. However, there is a risk of over-reliance on women micro-entrepreneurs on one or few players in the market who could determine terms of payment and work in such a model.



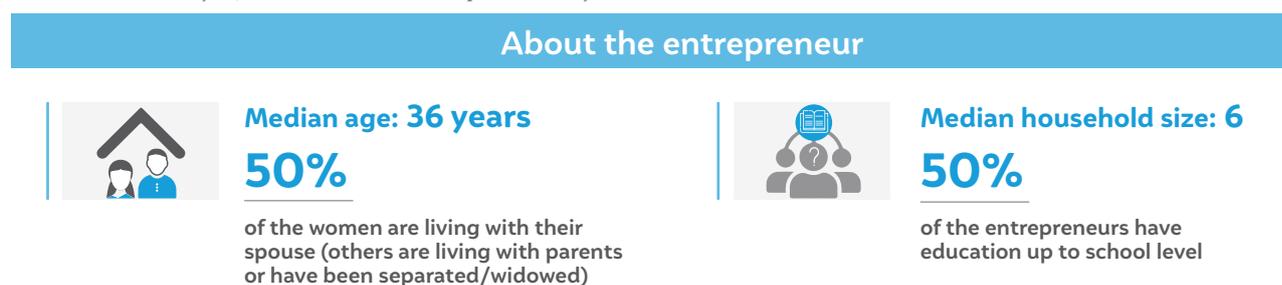
Image: Wase Khalid/CEEW

3.3 Women-led micro-enterprises who are end users or customers of energy products and services

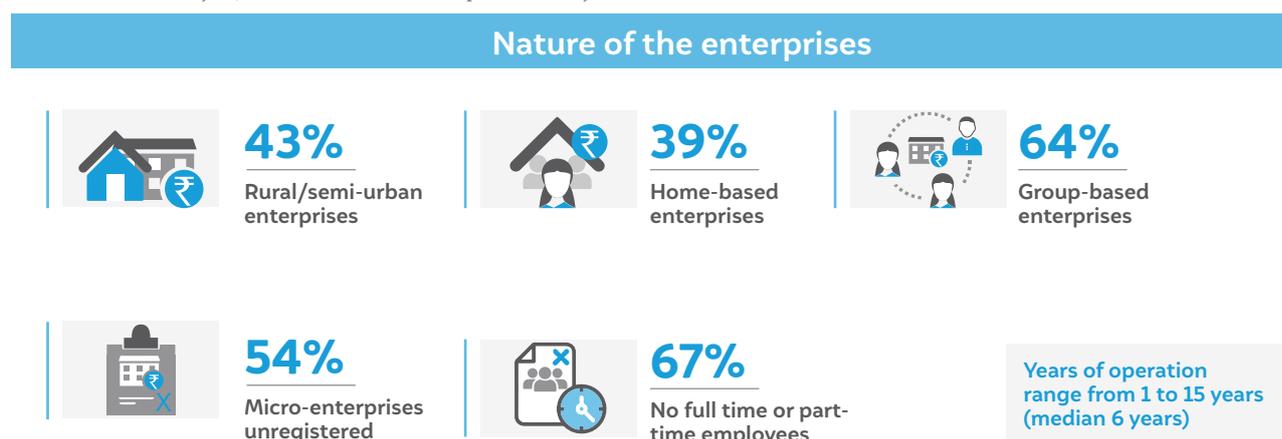
Self-employed women who are users of machines powered either through clean energy or electricity are categorised as micro-entrepreneurs. Some of them have scaled up their businesses and provide jobs to others. **This section highlights key characteristics of women micro-entrepreneurs in our sample using the data from CEEW micro-entrepreneur survey.**



Source: Authors' analysis; Data: CEEW micro-entrepreneur analysis



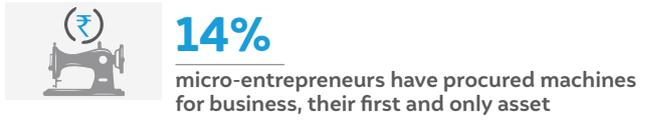
Source: Authors' analysis; Data: CEEW micro-entrepreneur analysis



Source: Authors' analysis; Data: CEEW micro-entrepreneur analysis

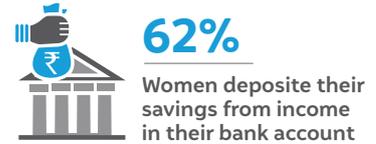
12. Street vendors, printing press, sanitary napkin distributors, temple waste recycling, printing, bangle making, and polishing jobs.

Mechanisation



Source: Authors' analysis; Data: CEEW micro-entrepreneur analysis

Economic condition



Source: Authors' analysis; Data: CEEW micro-entrepreneur analysis

The following technologies used by the enterprises:

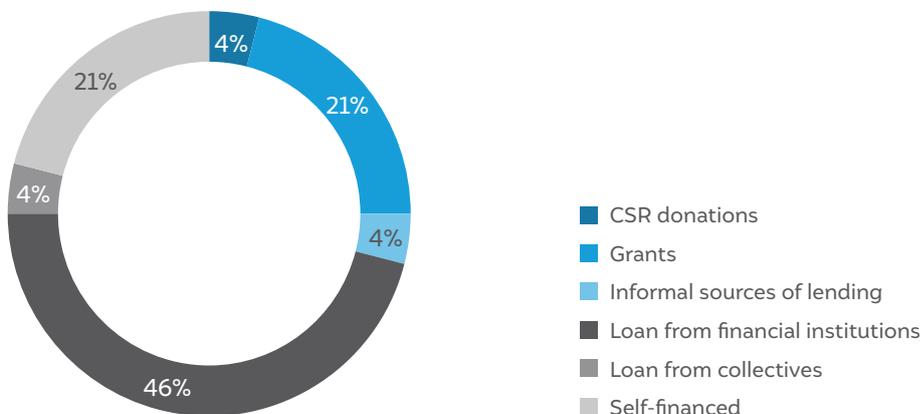
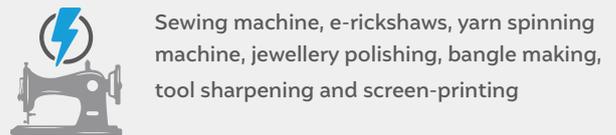
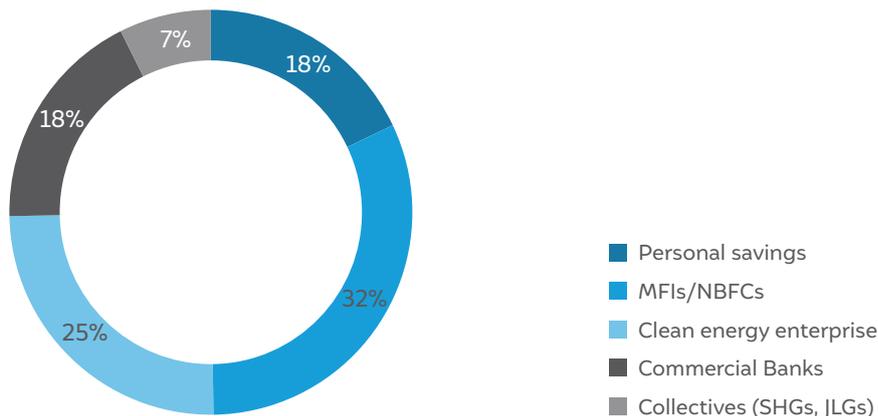


Figure 2
Loans are the most prominent source of finance for procuring any machine

Source: Authors' analysis; Data: CEEW micro-entrepreneur analysis

Sample size: 28

13. In such cases, often-family members are also involved in running the business.

**Figure 3**

Loans and clean energy enterprises are the primary source of financing to use DRE-powered products

Source: Authors' analysis; Data: CEEW micro-entrepreneur analysis

Sample size: 28

Access to policies



46%

of women micro-enterprises report accessing one or more of the following government schemes:

- Social welfare schemes like *Jan Dhan Yojana* and *Kisan Credit Card*
- *Prime Minister Employment Generation Programme*, *Start-up Odisha*
- Assistance from Central Silk Board
- Partnering with local municipality for market linkage
- Electricity subsidy for the enterprise under the Maharashtra Package Scheme of Incentives
- National Bank for Agriculture and Rural Development (NABARD) refinancing scheme for promotion and financing of Joint Liability Group
- Sovereign Gold Bond Scheme by Bank of Maharashtra

Source: Authors' analysis; Data: CEEW micro-entrepreneur analysis

4. Analysis: Society, market, and state



Image: Abhishek Jain/CEEW

In this section, our attention is on women micro-entrepreneurs (own-account workers and self-employed) who have used some form of mechanisation powered either by clean energy or electricity. The triad of society, market, and state allows us to understand the overlaps in impact created across all aspects for women (and men). Market interventions, as well as support from the state, could trigger cultural and social change. However, social norms and beliefs strongly influence market design and access to resources needed to capitalise on the market's gains for women.

4.1 Society

We elaborate on how social norms and stereotypical gender roles impact women's ability to achieve economic gains in this section. We also provide recommended solutions and the possibilities that could address the barriers to growth in women-led micro-enterprises. Social norms restrict women both within the household and the market. These norms are influenced by factors such as geography, age, class, and caste in India. Gender roles defined within the household prevent women's access to the market. However, the intersection between social norms and market access may affect women across class, caste, or region differently. These barriers apply to all women's participation in economic activities across all sectors, including clean energy.

Women experience a greater overlap between their personal and professional responsibilities due to gender division of roles in society, whether they join the workforce for employment or choose self-employment.

In our interviews, women micro-enterprises report working for 6.5 hours daily on their business, six days per week. This is not very different from what an average male spends on employment-related activities—7.6 hours (National Statistical Office 2020). But an average female spends an additional 7.2 hours daily on unpaid domestic services (including caregiving for other household members) as opposed to only 3 hours spent by males (National Statistical Office 2020).



97% women

micro-enterprises reported an increase in the number of hours they spent on household and caregiving responsibilities since the pandemic

Source: Authors' analysis; Data: CEEW micro-entrepreneur survey

Most micro-enterprises included in our interview are run by self-employed women who work with clean energy enterprises. **While self-employment provides them the flexibility to balance work and household responsibilities, it also denies them a safety net, such as paid parental leave or childcare services that comes with an employment contract.** According to the PLFS 2018–19, of the total women in the workforce, 54 per cent are engaged in the informal sector and 66.5 per cent of the salaried/regular wage workers had no written job contract. These safety nets associated with employment enhance women's bargaining power by providing more resources to the household and women (Independent Evaluation Group 2014).

Market barriers: Socio-cultural biases and norms dictating women's role in the business



Traditional gender roles within the household and lack of clear opportunities drive women to restrict their business activities to the “feminised” part of the business value chain. Social norms restrain women

from participating in some business functions.¹⁴ For example, our interviews with Durga Energy and Orora Global revealed that women entrepreneurs work with clean energy enterprises as last-mile distributors, but they are not preferred for manufacturing or assembly of energy products perhaps due to prevailing socio-cultural norms. In a local area, many



Women micro-entrepreneurs report spending 7 hours of unpaid care work and 6.5 hours in business as opposed to men who spend less than 3 hours on unpaid care work

14. The data in this report is limited to how well the women were able to recognise and articulate the biases faced by them. In reality, the gendered challenges could extend beyond what we have been able to capture.

women are engaged by clean energy enterprises for providing services or for partnering with women's organisations for livelihood programmes. Spouses of women micro-entrepreneurs are also assisting in these efforts.

Women need the buy-in of family members for financing the livelihood appliance or scaling the business. As women may not own assets and as social norms do not bestow them with asset ownership, they may have to depend on family members for collateral, margin money, co-borrowing support, or seek their approval to take on any financial commitment. Women entrepreneurs in early stages may need support from family and their spouse for down payment and margin money for investment in mechanisation.

Our interviews revealed that women micro-entrepreneurs also faced resistance from family members for starting an enterprise on their own, travelling, and investing. The resistance eased only after their organisation stabilised and eventually grew (Kochar et al. 2020).



Women entrepreneurs in early stages may need support from family and their spouse for down payment and margin money for investment in mechanisation

65%

women micro-entrepreneurs report family members are involved in taking their business decisions

75%

women micro-entrepreneurs report that the decision to spend their income is taken jointly with their spouse¹⁵

Source: Authors' analysis; Data: CEEW micro-entrepreneur survey

The SEWA-CEEW survey suggests that 88 per cent of women take decisions on how to utilise their income from the business themselves or jointly with their spouse. **But for 12 per cent of the respondents, family members decided how their income was being spent.**

BOX 2

Intrahousehold gender dynamics around asset ownership

In male-owned or family-run businesses using clean energy appliances, women may be using the appliance but not necessarily own them. In traditional sectors like farming, even though the enterprise directly engages with male farmer-producer organisations, women can benefit from the use of the clean energy appliance because of their involvement in many farm-level activities.

"Though most agriculture work is done by women, the land is under the male family member's name, the person who is cultivating does not have the freedom to make decisions regarding mechanisation or have access to banks in the same way as men. Men have to be convinced about farming products' decisions even though women farmers are on-board (since they realise the benefits of mechanisation). This mismatch leads to marital conflicts in some cases."

Spudnik Farms, a network of community-supported agriculture



15. The small size of such women limited us from undertaking further analysis to understand the factors that enabled women to have more control over decision-making.

Recommended solutions to support women within and beyond the existing socio-cultural context

a) Empower women through state and institutional support

Government policies and institutional practices need to value women's care work and ensure that women have the same opportunities as men to engage in economic activities (Asian Development Bank and The Asia Foundation 2018). A systemic change is needed to look at the way women's care work is valued, which can be achieved by framing suitable policies and introducing changes in financial institutions. Various stakeholders working with women entrepreneurs offered the following suggestions:

- The government could offer tax incentives to startups for the development of childcare infrastructure.
- Social safety nets should include the extension of maternity leave and benefits to the self-employed micro-entrepreneurs; this could come from the government or from the enterprise utilising women's services', or both.
- Financial institutions should offer interest breaks during pregnancy and early childcare to avoid additional burden on women taking a break for childcare.

Stakeholders could pilot test some of these strategies and document their impacts to understand the effectiveness of such measures.



Extension of maternity leave and benefits to the self-employed micro-entrepreneurs could come from the government or from the enterprise utilising women's services', or both

BOX 3

Recommended benefits to women outside organised labour

Maternity benefits can be extended to casual, seasonal, and self-employed workers in the following ways:

- Entitlement to compulsory cash transfers under the existing social security schemes where self-employed women are protected under the same qualifying conditions and at the same level of benefits as employed women such as in Costa Rica, Finland, Philippines, Portugal, Brazil, and Singapore;
- Voluntary affiliation with the social insurance system such as in Bulgaria, Mali, and Paraguay;
- Eligibility for special insurance systems to protect self-employed women during maternity such as in Belgium, France, Gabon, Luxembourg, and Spain.

The government could implement a maternity benefit scheme for the self-employed, in which the state pays for the assistance, or the self-employed workers are required to pay the contributions for the assistance and their insurable benefits are limited to a ceiling deemed representative of an average wage.

Source: International Labour Organisation, 2014.



Business training for women that creates awareness of their rights and covers gender sensitisation could enable women entrepreneurs to overcome social norm constraints and negotiate their space in the household and economic sphere. Integration of legal rights and sensitisation training on gender relations into incubation programmes for women (and men) helps them negotiate the intrahousehold power dynamics and the biases they might face while conducting business. It would also help them identify enabling laws, policies, and institutions to sustain and scale their business. However, care must be taken to ensure that such training does not threaten the spouses or women's families to prevent any repercussion for women.



Gender sensitive design of GIZ Her&Now Project - Good practice model 1

The [GIZ Her&Now](#) is a project focused on 'Economic Empowerment of Women Entrepreneurs and Start-ups by Women', implemented by the German Federal Ministry for Economic Cooperation and Development in partnership with the Ministry of Skill Development and Entrepreneurship, Government of India. One of the programme's key features is that they closely work with local partner organisations in select regions (North East, Rajasthan, and Telangana). The programme features a gender-sensitive design that focuses on childcare support, counselling sessions, and peer group discussions on challenges and solutions. The programme also supports women in developing confidence in finance through training sessions on negotiating skills and navigating the procedures for obtaining loans.



Mann Deshi's MBA programme focused on rural women - Good practice model 2

[Deshi MBA programme](#) is focused on empowering women from the most vulnerable groups in rural areas. It includes training women in legal rights, financial and digital literacy, and skill development workshops like tailoring, and electronics repairs. This is a year-long intensive course that enables women micro-entrepreneurs to examine and strengthen their financial, planning, inventory, marketing and accounting systems.

b) Empower men and communities to support women

Involving men and family members in the growth of women's business has helped women navigate the personal and economic challenges in a better manner. Ecosystem stakeholders and clean energy enterprises play an important role in helping entrepreneurs fulfil their financial needs. Enterprises and business practices need to convince women's families about the business nature of their work and not treat it as social work.

- Clean energy entrepreneurs have partnered with NGOs to conduct sessions involving family members. This helps build a healthy relationship with the entrepreneur's family, leading to an enabling environment within families and the community.
- NGO partners help bring the family onboard, which helps women to sustain in entrepreneurial activities as they grow and need more time and shoulder added responsibilities as the business scales. They also involve other family members of the women borrowers in financial and digital literacy training.



Engagement with family members part of the WeHub incubation programme - Good practice model 3

WeHub, a women's incubation programme by the Telangana government, involves the women entrepreneurs' family members. Monthly check-ins by WeHub with family members creates a sense of respect and acknowledgement of the entrepreneur's journey and struggles.

Men, as community-level gender champions, can strengthen and lend legitimacy to the endeavours of women. Research highlights that male role models help women navigate socio-cultural barriers and enter more lucrative economic spheres, often dominated by men. For example, having a male co-founder in senior management could assist women in dealing with masculine networks. As long as the ownership and decision-making are equitable, male family members or male partners could add strength to women-owned enterprises with clearly demarcated roles and responsibilities. Male branch managers and government officers support women entrepreneurs once they have proven their ability or shown interest in doing something unconventional. In their personal space, such support for women could come from their spouse, siblings, or other relatives. Gender champions within government offices, private sector offices, communities, and households need to support women in pursuing economic activities.

“To tackle gender biases and negative perception, there is a need for gender-sensitive training for men so that people change their mindset, particularly involved in hiring, and can contribute to communication outreach and nominating more women in leadership positions in the community. We are planning to conduct these gender sensitisation sessions with men—probably good to start with women’s spouses.”

Orora Global, a social enterprise working with solar engineers.

Key Recommendations: Empowering women through institutional and community support

Key stakeholders	Recommendation
 Policymakers	<p>Government policies need to value women's care work to families and provide support for it.</p> <p>Extend social safety net support for self-employed workers; tax incentives to startups for childcare infrastructure development; interest breaks during pregnancy and early childcare to avoid additional burden on women.</p>
 Investors and donors	<p>Encourage and support project and programme design to integrate gender analysis during conceptualisation. This would allow programmes to be cognisant of women's needs and include men and the larger community of influence in women's lives in an enabling manner.</p>
 EDPs (supported by donors and NGO partners)	<p>Beyond skills, mainstream legal rights and awareness training into enterprise development programmes will help women negotiate their space in the household and economic sphere.</p>
 Clean energy enterprises (along with NGO partners)	<p>Involving spouses and families of women entrepreneurs in the discussion helps build a healthy relationship with the entrepreneur's family, leading to an enabling environment within the community and families.</p> <p>Create community-level gender champions among youth and men. Positive masculinities could enable support for women-owned enterprises with clearly demarcated roles and responsibilities.</p>

4.2 Market

In this section, we characterise the market that converges women-led micro-enterprises and clean energy solutions for livelihoods. Martin and Glinski (2019) suggest that market linkage has been particularly challenging for women's enterprises because of their limited access to parts of the value chain dominated by men, restricted mobility (compared with their male counterparts), and lower or no access to networks for finance and sales. In the current digitalisation era, women's ability to use information and communication technology for accessing new markets is linked to her predetermined access to education, smartphones, capacity and skillsets, and networks.

We characterise the market by elaborating the barriers and opportunities across four key themes: business models of clean energy enterprises, access to finance, role of entrepreneurship development programmes (EDPs) and access to networks.

Business models of clean energy enterprises

Clean energy enterprises predominantly use two models to reach women micro-entrepreneurs. A social enterprise may start with one model and transition into another. But these two models often overlap.

Product-based approach



Clean energy enterprises offer sales and service of products for existing or new micro-enterprises. Other aspects of the business (like backward and forward market linkage, financing, and training) are outside their purview, managed by the micro-entrepreneur or supported by other partners. Under this model, in addition to selling the product directly to the micro-entrepreneurs and collectives, clean energy companies may also offer rental service to improve the affordability of its product for users. For example, Claro Energy offers a pay-per-use irrigation service to farmers (18 per cent of those being women) through portable solar pumps (Claro Energy, n.d.).

Alto Precision is working with State Rural Livelihood Mission (SRLMs) to install agro-processing machinery for women. Devidayal Solar Solutions works with Gramshree and Mahila Arthik Vikas Mahamandal (MAVIM)¹⁶ to install truck-mounted solar refrigerators for tribal women. In the product-based approach, the product is either paid for by a partner (usually an NGO or resource institution) and then used by the women entrepreneurs or directly purchased by the entrepreneurs.

This approach allows micro-entrepreneurs to access products through their partners. It enables clean energy enterprises to deploy their solutions in a wide range of micro-enterprises, including those run by women and marginalised groups. The cost and effort associated with community training, setting up market linkages, and financing is shared with the partner organisation. Through this model, many enterprises who primarily worked with male collectives or micro-enterprises have reached women micro-enterprises with their solutions.



Clean energy enterprises predominantly use two business approaches - product based and value chain based - to reach women micro-entrepreneurs



With the help of partners, many enterprises using product based approach have reached women micro-enterprises with their solutions

16. MAVIM is the State's 'Women Development Corporation' for Maharashtra, established in 1975 and registered under Companies Act, Section 8A, as a not-for-profit company.

Value chain approach



With the support of multiple partners, clean energy enterprises are involved along the end users' business value chain (micro-enterprises), such as training, financing, product deployment, and market linkages.

S4S Technologies, which produces solar dryers, ventured into the food processing value chain, working with women to process high-quality food products in their own homes and employing women in their central processing facility. They provide women with raw materials, financing for the solar dryer, and buy-back of the finished products to be sold. Since S4S Technologies buys back the dehydrated products to on-sell in the B2B market, it provides assured revenue to women farmers using solar dryers. By operating across the entire value chain, the enterprise significantly reduces post-harvest losses while maintaining a functioning market.

In non-traditional sectors, enterprises like SMV Green Solutions support women e-rickshaw drivers (Vahinis) through training, assistance to get driving license, enabling access to finance through partners, working with the families to address safety concerns, and mapping the driving routes for Vahinis in their initial days.

More clean energy enterprises are now focusing on the value chain approach for sustainable growth through repeated customers and closer engagement with micro-entrepreneurs.

BOX 4

Potential to scale through the value chain model

Some Vahinis have purchased their second e-rickshaw, with the support of SMV Green Solutions, which they rent out for additional income. This model leads to increased sales for the clean energy enterprise, and with the expansion of end users' business, it also creates more jobs through mass entrepreneurship. However, the choice of women-led micro-enterprises employing more women depends on the nature of the enterprise. We find that micro-entrepreneurs would have more opportunity to employ women in sectors where women are easily willing to work (e.g. textile) compared to non-traditional sectors (e.g. mobility).



Predominant forms of financing for clean energy appliances

We observe three dominant modes of financing or a combination of either or all the modes for the financing of clean energy appliances.



Grant

Donors and NGOs either finance the appliance fully or incentivise asset financing for women micro-entrepreneurs (e.g., margin money assistance, interest subvention). Devidayal Solar has been able to deploy truck-mounted solar equipment for women's use as they were financed by grants. In this case, women do not have to pay for the equipment.



Loan

Clean energy enterprises partner with lending companies to provide financing for their equipment to women. *SMV Greens* has partnered with *Avanti Finance* to provide loans to the *Vahinis* to buy the e-rickshaws.



Subsidy

Government schemes extend support to end-users by providing an upfront capital subsidy, margin money assistance, or interest subvention. Schemes like *Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM)*, *Solar Charkha Mission*, and *Credit Guarantee Scheme for MSMEs* provide subsidy support on the purchase of equipment.

As shown in Figure 3, loans are the most prominent source of finance for women to procure equipment. However, philanthropic capital in the form of grants has been a significant factor enabling clean energy enterprises to expand their markets or reach new customers. The grant-based model has become common to target women customers in particular. The way this grant is used can be varied—some spend it on direct subsidy for products, some on pilots with improved loan access, and so on. Some grant-based models have been able to convert such interventions into sustainable and scalable business models by using grants for improved access to credit or service based models.

Partnership with NGOs or resource organisations that work on livelihoods for women also has been a predominant medium of financing, building on philanthropic capital invested in these NGOs or resource organisations. This model shows how funding in one sector can translate into gains for another. This cost is either integrated into the clean energy enterprises' business model or subsidised through grants made to the NGOs who have worked with the target communities for years.

SPOTLIGHT I

Gender mainstreaming in the business models of clean enterprises



Both women and men need to experience the benefits of clean energy access for using it to tackle the challenging issues of poverty, productivity, and climate change. Therefore, by investing in gender inclusion initiatives, businesses could generate opportunities for women micro-entrepreneurs and also expand their top line. There is a range of push factors that enable clean energy enterprises to opt for gender inclusion in their businesses:

Motivation and challenges of working with women micro-enterprises

The motivation of clean energy enterprises to work with women micro-enterprises arises from the following factors:

- Women as a predominant customer base, especially in sectors that are predominantly female-oriented in nature (e.g., textile)
- External partnership opportunities like grant and other financial incentives to pilot business models with women customers
- New markets through partnerships (with NGOs or SRLM), which have acted as nudges to explore working with women, and
- Entrepreneur's motivation and passion for working with women.

Clean energy enterprises have taken up a range of activities to reach more women customers and create sustainable revenue—from women-friendly product design to changing the business model to facilitate end-user financing and developing buy-back mechanisms for their products. We elaborate on some of the key aspects below.

a) Product design



Mechanisation through clean energy and friendly product design could help women reduce drudgery and time poverty, leading to an increase in their incomes. Not all enterprises necessarily design their products to be women-friendly to start with, but once they started conducting pilots with women, design changes were made. Those that experienced productivity and profitability gains from this approach (e.g., S4S Technologies, Alto Precision) have integrated the design within their business models. As many clean energy companies are in the early stage of business, they are open to suggestions for modifying the product design according to customers' preferences, be it a new blade for a processor or wheels attached to machines for ease of moving them. They have also incorporated process level changes such as sliding functions and pulleys instead of lifting into their products that would make it easier for women to operate.

Enterprises like GTarang note that they have incorporated an inclusive design in their machines to ensure easy and intuitive operability without training. This design has been useful for women users of their machines.



b) Safety measures

Clean energy enterprises have used technology, community mobilisation, and engagement with the family, and flexible work timings to ensure the safety of their women employees and entrepreneurs working with them. Though technology alone may not solve safety issues, it gives a sense of security and confidence among women and their family members, making it easier for them to work in non-traditional sectors such as mobility. Similarly, convincing of families by enterprises has allowed women to seek assistance from their spouses for margin money and greater mobility. A few enterprises in the sector lend support through donors and partners. Many enterprises have included safety advisory modules in their initial training and induction programmes.

“We have undertaken safety measures like cameras and GPS installed in the e-rickshaw for tracking. We have also contacted Mahila thana and got the police officer’s number for Vahinis to reach out anytime. We have also provided smartphones with a panic button that directly connects Vahinis to the nearest Mahila Thana.”

SMV Green Solutions



c) Finance

To ease the burden of financing for women customers, enterprises have undertaken steps like incorporating a service or fee-based model instead of upfront sale to women customers. Some of them have partnered with financial institutions to assist women customers in the purchase of machines, along with training.

“We had learnt very early that farmer producer organisations would not be able to own the system. The upfront capital will be a challenge, so we pay as you go model/ monthly rental. In some cases, the system is bought by the partners and NGOs.”

Cool Crop, decentralised cold storage company

Promethean Power has adopted a similar approach of selling cooling as a service through their clean energy-powered milk chilling units, which dairy farmers can use to store milk/ milk products for a minimal cost.

Dharma Life, working through an entrepreneurship model with rural women, has an efficient financing system for customers of its energy products. The women entrepreneurs working as Dharma Life agents carry out a credit assessment of the customer. Then the customer can buy the product by depositing a small token fee followed by interest-free customised monthly repayments.

d) Addressing the intrahousehold dynamics



To gain the support of family members for women in the purchase of assets or running the business, clean energy enterprises deploy the following strategies to convince them:

- Involvement of spouse/family members in the induction and other training
- Convincing the primary decision-maker of the family
- Reaching out to rural women via community or panchayat leaders
- Continued interaction with family members
- Behaviour change campaigns through community meetings
- Providing flexible timings to women so that it doesn't cause stress within the household, and
- Providing pick up and drop services to the women to ease the mobility constraints
- NGOs, local implementation partners, and women's organisations play an instrumental role in helping clean energy enterprises reach women customers.

Orora Global, a social enterprise working with solar engineers, has provided flexible timings and childcare facilities for women in their manufacturing unit.

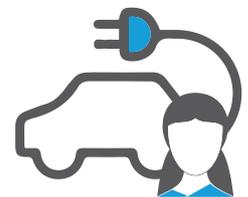
“We keep a check with the women constantly to ensure they're not facing domestic violence. We also check if the money earned by them is being saved and used by them; we support them in saving their money.”

Baya Weaves, a handicraft enterprise

In traditional sectors like textile or agriculture processing, clean energy enterprises have a greater scope to work with women as these sectors are feminised. The inclusion of women in non-traditional occupations such as electric vehicle drivers pose barriers of cost and lack of operational and financing partnerships. Women entrepreneurs thus have to navigate pre-existing gendered challenges in accessing markets and finance, thus requiring external assistance from stakeholders (government and private) to design and implement gender-inclusive strategies to overcome the dual challenge of working with new technology and new customers.

However, even for enterprises working with women, the gender lens is not always central to its business functions. As fewer women are present in the paid workforce, their differential needs are considered additional expenditure and not thought of as the cost of acquisition of a wider market and customer base. For example, childcare is considered an additional cost, whereas paid leave for staff is considered an investment in employee well-being.

A solar street light manufacturing company, Cydee Tech, while installing street lights in residential or commercial spaces, did not necessarily get the opportunity to interact with women users to understand their needs for the placement of these lights. For example, women would benefit more from lighting up dark alleys and corners. Even though the enterprise is looking to solve the problem of road safety, their approach could not include a women end-users' perspective in product installation, especially in cases where the buyer is an institutional entity or the government and access to the direct user is limited for the enterprise.



The inclusion of women in non-traditional occupations such as electric vehicle drivers pose barriers of cost and lack of operational and financing partnerships

Access to finance



Women-owned micro-enterprises are more inclined to increase revenue through sales since they want to be definitive about their cash flows before accessing loans to ensure repayment. They also rely on personal

savings (including support from family members), NBFCs, MFIs, and clean energy enterprises (including their implementation partners) for accessing finance. Broadly the credit requirement for micro-enterprises is of two types:

- 1. To acquire fixed assets** (for new businesses or the expansion of existing production lines or mechanisation) and
- 2. To finance working capital** (to purchase raw materials or inventory used in the production of final goods)

Previous studies have shown that most women-led micro-enterprises need finance for working capital requirements (Banerjee et al., 2015). Most women's enterprises are micro in scale. In home-based enterprises and family farms, though women participate in the business they are not seen as partners and have no ownership or income.¹⁷ Hence the proportion of women accessing banks for large working capital loans is small, leaving bankers with little experience of lending large ticket size loans to women. As women micro-enterprises may not have a credit history, bankers insist on spouses or other male family members becoming co-borrowers.

Further, the financial and asset requirements required by lenders are exaggerated by lack of knowledge and confidence among financiers to finance energy products. This challenge becomes acute for unmarried or single female entrepreneurs (who cannot have spouses as co-borrowers). Our interviews with entrepreneurs suggest that, in their experience, bankers sometimes tend to be apprehensive of lending to unmarried women since their marriage could lead to a change of locality or profession and a possibility of default. Women-owned enterprises also endure higher average turnaround time for getting a loan processed than men (IFC 2018).

54%

of women micro-entrepreneurs are unregistered in our sample

93%

of women micro-entrepreneurs own a bank account, but only 52% perform cash transactions for their income and expenditure, and

62%

of women deposited their savings from income in their bank account.

Source: Authors' analysis; Data: CEEW micro-entrepreneur survey

MFIs and group-based lending form a prominent source of finance for working capital requirements. But microfinance is limited to providing working capital for small home-based income-generating activities (IFC 2018). Sometimes, the high capital cost of clean energy solutions requires a large loan size, beyond the lending capacity of micro-credit institutions.¹⁸ The classic microfinance contract's immediate repayment obligations may also inhibit borrowers from investing in fixed assets that promise higher returns but may require a longer time horizon to yield profits.



The high capital cost of clean energy solutions requires a larger loan size, and often beyond the lending capacity of micro-credit institutions

17. According to Periodic Labour Force Survey 2018–19, self-employment is the main source of employment for rural women, with 38 per cent of all employed rural women working as helpers in household enterprises, which could be unpaid. Only 22 per cent of rural women are own account workers or employers and almost all of these enterprises are in the informal sector.

18. MSMEs in India are constrained by microfinance's mono-product environment, singular delivery model, lack of flexibility, and shorter-tenure loans with limited amount of credit (Banerjee et al. 2015).

Recommended solutions to enable financial access for women micro-entrepreneurs

a) Enterprises to act as aggregators and loss guarantors. Clean energy enterprises have partnered with NBFCs and banks to aggregate loan demand for their customers. However, this has been possible once the enterprise has sold enough products to demonstrate stability and impact. S4S Technologies and SMV Green Solutions have partnered with Avanti Finance to provide loan access to their customers for solar dryers and e-rickshaws, respectively. In some instances, enterprises have also committed to supporting customers by paying part of margin money or securing the financier's loan through a revolving fund. Here, the enterprise's role is particularly significant in building financiers' confidence to formalise lending loans to first-time borrowers in non-traditional livelihoods.



SMV Green Solutions partnered with Avanti Finance to aid women with initial funding requirements - Good practice model 4

[SMV Green Solutions](#) has partnered with [Avanti Finance](#) to facilitate loans from a formal financial institution. It is particularly challenging to convince banks to extend loans to women working in non-traditional sectors like mobility. In case of SMV Green Solutions, while male e-rickshaw drivers could get loans from commercial banks, women had to rely on NBFCs, which charge a relatively much higher rate of interest (22–26 per cent). This again was possible due to an intermediary organisation like SMV Green Solutions stepping in.

b) Alternate ways of credit assessment to account for the difference in access to collateral and margin money for women, alternatives are being explored in other sectors, which could be extended to the clean energy sector. For example, an alternative credit score can help lending institutions better calculate risk for current clients and expand their reach to new and previously unbanked borrowers (Alibhai et al. 2019). By performing a psychometric analysis, lenders can make reliable predictions about potential borrowers' creditworthiness. A recent study by Initiative for What Works to Advance Women and Girls in the Economy (IWWAGE) corroborates this methodology, where a Women Business Readiness Scorecard was employed to survey micro-enterprises by assessing diverse factors which inform the entrepreneurial performance of women based on social, economic, cultural as well as behavioural parameters—ranging from the ability to sustain and scale their enterprise, risk preferences, to their aspiration for self and business and time management (IWWAGE 2020).

“I applied for a loan in a private bank under the PMEGP, I got the approval from the government office, but the bank manager was not convinced at first. After I showed him my transactions with the Mann Deshi Bank, he was impressed and helped me a lot in the scheme application process.”

A women borrower from Mann Deshi bank



Clean energy enterprise play a significant role in building financiers' confidence to formalise lending to first- women borrowers



A unique credit scorecard for those who lack a formal credit history - Good practice model 5

[Kaleidofin](#) (a fintech organisation) and [Leveraging Evidence for Access and Development \(LEAD\)](#) in partnership have developed a unique credit scorecard for those who lack a formal credit history and thus could not avail loans. The idea is to promote lending institutions to calculate potential borrowers' creditworthiness using untapped non-traditional finance-related information such as assessing legal readiness with indicators like business registration status and scheme awareness, agency indicators like control over finances and business decisions, and market readiness indicators like the product's potential in increasing reach to new and unbanked customers. This can also aid in better evaluation and predictions about credit potential and risks of borrowers.

c) A different segment within MFIs like 'entrepreneurship loan' to support women in running their business where ticket size of the loan is larger than usual, a different category of entrepreneurship loans could also be an alternative. This has already been implemented in case of micro-housing loans by MFIs. Alternatively, Bandhan Bank has set up a separate Project Management Unit to support loans with larger ticket size and longer tenures; here, the bank uses an existing MFI network for disbursement and collection of loans.



Svakarma Finance's partnership approach with grassroot organisations has helped them reach a wider customer base - Good practice model 6

[Svakarma Finance](#), an impact-focussed NBFC with a vision of democratising access to capital and knowledge, lends to MSMEs with the aim of lasting socio-economic gains for their clients. They have adopted a partnership approach with the grassroots organisations to aid borrowers with mentorship, marketing support, and digital financial literacy. This approach has helped them reach a wider customer base using the network of grassroots organisations and build trust with new customers. One of Svakarma Finance's key features is the focus on customising the loan according to the key aspects of business operations and income cycle.

d) Increase the women in the loan disbursement pipeline. While financiers that we spoke to seemed hesitant to offer differential loan terms for women, fearing proxy borrowers, having gender-inclusive outreach and banking procedures to reach more potential women borrowers in the pipeline is a healthy alternative. A recent report on closing the credit gap for women-owned enterprises suggests that "gender-inclusive solutions should tackle supply-side issues such as legal and regulatory policy bias, misconceptions about female credit risk and unfavourable credit terms for women; along with demand-side issues such as women's reluctance to apply for loans given a lack of business training and risk aversion, perception of the complicated application process and higher rejection rates" (Stupnytska et al. 2014).

Financial institutions that are keen on reaching more women borrowers also encourage them to be co-borrowers if they are involved in the business with their spouse or other family members through incentives such as:

- positive weightage in credit assessment,
- speedy loan approval,
- full loan amount approval, or
- reduced rate of interest.



SEWA Bharat's Sarthak programme employs local women as Customer Service Point (CSP) - Good practice model 7

The model identifies and employs local women as banking agents and provides the technical capacity to bring banking services to previously unbanked areas. In this programme, each agent serves as a Customer Service Point (CSP) in a cluster (an operation area defined by the bank, covering two or more villages).

e) Sensitise bankers by showing evidence of existing women borrowers. The evidence of loans and repayment by women across sectors should be used to sensitise bankers, financiers, and implementers to encourage them to provide loans for the mechanisation of women-led micro-enterprises, along with proven success of energy products to build bankers' confidence for lending towards acquiring such technologies. Our research shows that women borrowers in Karnataka using solar-powered sewing machines and digital kiosks repaid their loans on time, with 61 per cent of tailoring entrepreneurs and 65 per cent of the digital kiosk operators being able to repay their loan instalments from the increase in income they realised by adopting the solution (Jha et al. 2019).

Financiers across the board would also need to improve the gender ratio in their branches, women in sales, and loan officials. A study has shown that a higher concentration of loans availed by women-owned enterprises were from women-led branches (IFC 2018). Yet only 17 per cent of employees in India's scheduled commercial banks are female (IFC 2014). The existing relationship with branch managers, location of the branch, and branch's emphasis on the MSME loan segment or lending to women are key determinants that influence the entrepreneur's experience of accessing credit, despite women equally participating in running the business. The situation could be improved by appointing more women as loan officers and sensitisation of male branch managers and sales staff to understand the needs of women customers better.



The evidence of loans and repayment by women, along with proven success of energy products should be used to build bankers' confidence for lending towards such technologies



Evidence from Avanti Finance's lending to clean enterprises has the potential to improve access to capital for women and encourage others to lend — Good practice model 8

[Avanti Finance](#) started lending to women adopting clean energy technologies in their livelihoods. With time, the repayments from women borrowers were found to be good and defaults low, which has resulted in both the clean energy enterprise and Avanti Finance increase their revenue and profits by investing in women. Evidence of such cases will improve access to capital for women and encourage others to lend. Again, social enterprises/clean energy enterprises would be the intermediary organisations that facilitate the process and build the financier's trust. Donors could support initial pilots to test such models and scale them up eventually.

f) Create and support financial institutions focused on lending to women. Cooperative banks such as Shri Mahila Sewa Sahakari Bank Ltd. and Mann Deshi Mahila Sahakari Bank, which have a gender-targeted approach, have worked as an alternative to government-run commercial banks for women-owned small businesses. Tailored financial solutions are more likely to increase the access of women micro-enterprises to livelihood loans, align repayment plans with cash flow, and improve the credit situation for micro-enterprises (Jha et al. 2019). Once women have established a savings and credit history in such banks, it is easier for them to access larger capital from other commercial banks.



Mann Deshi Bank provides a customised loan structure to match the borrower's cash flow — Good practice model 9

Mann Deshi Bank has taken the banking services to women's doorstep—for the loan process, disbursement, and collection. They have also started a weekly cash credit loan product for women vegetable vendors, which provides them with easy access to daily/weekly credit for working capital requirements. Previously, the vendors borrowed from moneylenders and paid a usurious interest on a daily basis. The bank representatives are present in the markets, making it easier for vendors to access credit in the morning and repay the money within the week.

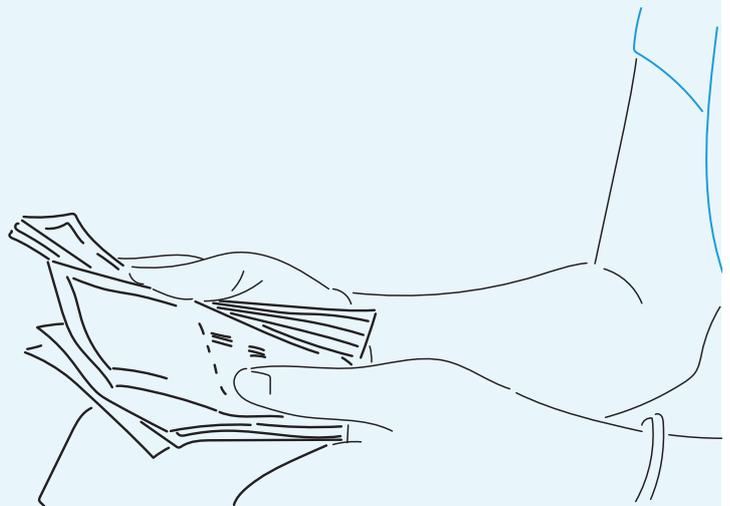
BOX 5

Impact of COVID-19 on access to finance

From our interviews, we find that financiers are noticing a sudden spike in default rate for ongoing loans during the lockdown, but this trend declined after the restrictions were relaxed and the enterprises restarted their operations. The SEWA-CEEW survey data suggests that *less than one-third of the women micro-entrepreneurs (31 per cent) who had ongoing loans for their business indicated repaying instalments during the lockdown*. Financiers across the value chain (including government banks, MFIs, cooperatives) have extended the moratorium periods and provided additional loans to borrowers with a good repayment history.

“During the lockdown, the RBI instructed banks to offer its customers a six-month moratorium on their loan repayments. At the same time, we also stopped doorstep collections both to comply and also because we needed to be cautious during this period. However, many of our customers wanted to repay! In fact, nearly 30 percent of our women insisted on making their repayments, and what’s more, 10 percent were repaying us digitally.”

Rekha Kulkarni, CEO, Mann Deshi Bank



BOX 6**Two categories of financing for women in the clean energy sector**

Women as explicit beneficiaries (targeted)—Financing organisations specifically lending to women have a much more nuanced understanding of gender issues. They tailor the loan products and lending design in a way that benefits women micro-entrepreneurs.

Women as implicit beneficiaries (integrated)—Organisations lending to both men and women often have a broader focus on livelihood generation for the poorest or most vulnerable but without any proactive gender lens in their work. This approach could add women in their portfolio by virtue of women being the poorest or most marginalised, but the organisation may not have transformative impacts on women's lives due to absence of change in lending products or design.

**Entrepreneurship development programmes (EDPs)**

In the past decade, both globally and in India, there have been increased efforts towards supporting women entrepreneurs through incubation and acceleration programmes. The support programmes¹⁹ provide immense help to women entrepreneurs, especially for navigating ecosystem barriers and accessing early-stage start-up requirements that include assistance in developing a business strategy, building a team, connecting with investors, building market knowledge, and funding other shared business services. But more recently, select EDPs have included a gender lens in their programmes that goes beyond women entrepreneurs towards mainstreaming gender across all business functions.

EDPs in the sector can be categorised as:

**Gender targeted**

Programmes exclusively focused on women

**Gender integrated**

Mainstreaming a gender lens across some or all aspects of the programme; not limited to inclusion of male and female entrepreneurs in the cohort

**Gender agnostic**

No distinction between male and female entrepreneurs and absence of a gender lens in programme design and implementation

The challenges of and solutions for effective enterprise development support to women-led ventures have been discussed in [Martin and Glinski \(2019\)](#).

19. For the purpose of this study, we use the word support programmes and entrepreneurship development programmes interchangeably because that over the years the difference in their definitions have blurred owing to the kind of support they render.

EDPs focusing on clean energy enterprises

In our assessment, we found that most incubation and acceleration programmes in the energy sector adopt a **gender-targeted or a gender-agnostic approach**, making women entrepreneurs seek both kinds of programmes for a holistic experience. However, gender-integrated incubation and acceleration programmes have the potential to benefit both male and female entrepreneurs. Mainstreaming gender lens within the programme would offer entrepreneurs a sensitised group of peers to engage with, within and beyond the programme. It would also encourage entrepreneurs to include a gender lens in their team-building process and business operations, creating better value for the business. Where relevant, these businesses would reach out to women-led micro-enterprises as customers. However, donors supporting EDPs have a critical role in encouraging them to undertake a gender-inclusive approach. A gender-inclusive approach could include the following:

- Training and capacity building of male and female entrepreneurs to identify and address gendered challenges in the entrepreneurial ecosystem
- Partnering with gender lens experts to provide targeted support to clean energy enterprises to reach more women and women-led micro-enterprises
- Collaboration among EDPs for entrepreneurs to gain from gender-targeted and gender-integrated programmes
- Targeted access to capital for women entrepreneurs and to include gender lens in business models

Globally, donors (e.g., Australian Aid, Shell Foundation, UK's Foreign, Commonwealth and Development Office [FCDO], USAID, Sasakawa Peace Foundation, Aspen Network of Development Entrepreneurs, Deutsche Gesellschaft für Internationale Zusammenarbeit [GIZ]) encourage business incubators and accelerators to bring in a gender lens to their services, enabling creation of specialist organisations that help EDPs to integrate a gender lens more strategically into programme design and execution.

Women on Wings is a business consultancy organisation with the mission to co-create women's economic opportunities in rural India by working with social entrepreneurs. The purpose is to accelerate the growth of social enterprises that work with rural women in their value chain as their direct beneficiary. Similarly, Value for Women works with small and growing businesses worldwide to help them reach more women and women-led businesses by creating and piloting a gender lens investment strategy, framework, and work plan for the business. Simultaneously, EDPs, such as Powered Accelerator by Zone Start-ups and Upaya Social Ventures' 2021 Scale-Ups Accelerator, have launched gender-targeted programmes to enable more women entrepreneurs to gain access to capital, mentorship, and skills.

EDPs focusing on micro-entrepreneurs

Urban-based women entrepreneurs benefit from an increasing number of EDPs, but women micro-enterprises in rural areas have limited access to such programmes. As institutional and societal challenges for micro-enterprises in rural areas are different from those of urban enterprises, EDPs for micro-enterprises should undertake a more targeted approach. Broadly, EDPs engage with micro-enterprises in two ways:

- Existing programmes for clean energy entrepreneurs provide financing or market linkage assistance to their customers, who are typically micro-enterprises in the livelihoods space. Some programmes have a component of end-user financing that provides capital and



EDPs in the energy sector adopt a gender-targeted or a gender-agnostic approach making women entrepreneurs seek both kinds of programmes for a holistic experience



EDPs could also inadvertently exclude women entrepreneurs from marginalised castes or certain geographies by relying on similar networks for outreach

installation support to the users. This helps the micro-entrepreneurs manage high upfront costs required for procuring machines, which reduce drudgery and increase production capacity and quality.

- GIZ, WeHub, Mann Deshi, or SEWA Bharat work directly with women-led micro-enterprises and provide targeted support (financing, training, market linkage). In addition to business and technical skills training, these programmes have built in field visits and meetings with key stakeholders in the value chain, which provides better exposure and practical skills to the entrepreneurs.

There is a need to create a continuum of opportunities within EDPs, as a short-run programme-based approach may not be sustainable in the longer run. EDPs need to adopt a more decentralised approach targeting certain specific geographies. A state-level focus is needed, targeting incubation support tailored to the region and partnering with local organisations familiar with the socio-cultural context. Micro-entrepreneurs also need capital to translate their learning in EDPs to action. Most programmes offer limited capital support but facilitate the process of access to loans and grants for entrepreneurs. EDPs could also inadvertently exclude women entrepreneurs from marginalised castes or certain geographies by relying on similar networks for outreach.

Mann Deshi MBA programme is a yearlong intensive course that empowers women micro-entrepreneurs to evaluate and strengthen their financial planning, accounting systems, and marketing channels. Programme participants attend workshops, visit successful businesses, attend market fairs and have a mentor who guides them throughout the year. The GIZ Her&Now project is focused on supporting existing and aspiring women micro-entrepreneurs, especially in tier II and tier III cities, who have been running an informal enterprise or are seeking to start-up on their own. The programme provides mentorship, on ground enterprise support for scaling up, product development, market diversification, and financial linkages.

Our interviews suggest that micro-entrepreneurs require handholding at least till they apply for financial support. Organisations like De Asra have been working with small businesses (including a small but growing proportion of women) offering assistance in their business registration and getting access to loans for scaling up. However, their reach in rural areas is limited. Such targeted support is needed for women-led micro-enterprises across all sectors where energy products have a market. Currently, women's organisations also provide this support, but it could be scaled if EDPs are also included within their ambit. Programmes like Her&Now are offering such assistance, but donors need to encourage more programmes.



SEWA incubation program builds the enterprises' capacity through support services - Good practice model 10

As part of the SEWA incubation program, SEWA enterprise support system includes a framework for providing business growth assistance to the enterprises. This programme provides services for enterprises that are required for running the business. Still, micro and small businesses cannot afford to invest in them (e.g., research and advocacy). SEWA also builds the enterprises' capacity through support services (e.g., mentorship, training, market linkage). The programme also aims to maximise learning through diversity. Thus, it includes enterprises in various sectors at different business growth stages in the incubation programme to provide stage-specific support to the enterprises.

Access to networks



Women entrepreneurs tend to have entrepreneurial networks that are more local than their male counterparts owing to their localised nature of work. First-time women micro-entrepreneurs tend to have limited and professional networks. Women's entrepreneurship networks have a different

composition than those of men entrepreneurs and are more likely than men to include family, friends, and educators (Potter, Halabisky, and Hanning 2016). This points to a need for enabling access to professional networks and strengthening existing networks for women.

Many gender-agnostic networks and associations do not offer services tailored to their female members' needs and often fail to accommodate the time constraints that women face (Asian Development Bank and The Asia Foundation 2018). Online platforms (e.g., Sheroes network, CLEANTECH-WIN) could be used for actively facilitating useful connections and opening up networks for new entrepreneurs, which would have a greater impact than simply sharing experiences. Older and extensive networks (e.g., SEWA Bharat, MAVIM, and other localised but well-networked women's associations) could offer strong business linkages and partnership opportunities for women.

It is important to be cognisant that "limitations on mixed-gender networking can further confine women to low-profit, low-productivity sectors, rather than enabling them to branch out into more profitable sectors traditionally dominated by men" (Potter, Halabisky, and Hanning 2016). Further, intersections of caste and class would limit participation of women from marginalised castes to network with the relevant organisations or individuals.



Online women-only platforms and networks could be used for actively facilitating useful connections and opening up networks for new entrepreneurs



MAVIM (Mahila Arthik Vikas Mahamandal) is enabling finance and business assistance for women — Good practice model 11

[MAVIM \(Mahila Arthik Vikas Mahamandal\)](#) has organised women into self-help groups (SHGs). These SHGs are then managed by Community Managed Resource Centres (CMRC) who advise women on securing better livelihoods and assistance for starting by providing the necessary support. The CMRC acts as a last-mile service delivery agent for the banks. They identify potential customers and link them with the partner banks, organise and facilitate the loan process (know-your-customer, documents). CMRC also act as aggregators of products manufactured by SHGs and are responsible for providing access to new and improved markets. They are now advocating for micro-enterprise loans beyond SHGs for businesses that have already been set up. Banks should extend loans to individuals on similar terms like SHGs.

Key recommendations: Market responses to enable financial access

Key stakeholders	Recommendation
 Clean energy enterprises (and their partners)	<p>The enterprise's role is significant in building financier's confidence to formalise lending to first-time borrowers in non-traditional livelihoods. They could do this by:</p> <ul style="list-style-type: none"> Acting as aggregators of loan demand for financial institutions and enabling end-user financing for their customers. Providing margin money assistance or financing through a revolving fund supported by profits or philanthropic capital.
 Financiers (MFIs, NBFCs, banks)	<p>Enabling credit through incentives, alternate ways of credit assessment, and leveraging the MFI and collectives' credit history.</p> <p>A different segment within MFIs like 'entrepreneurship loan' to women for asset acquisition where ticket size is larger than usual MFI loans.</p> <p>Customise loan products accounting for women's needs and focused on lending to women in partnership with women's organisations.</p> <p>Increase the pipeline of women customers along with improvement in gender ratio and sensitisation of staff.</p>
 Donors and financiers	<p>Pilot alternative credit assessment methods with financial institutions to make reliable predictions about the creditworthiness of potential borrowers.</p> <p>Invest in financial institutions lending to women that can meet women's asset acquisition needs in particular. Tailored financial solutions are more likely to increase women micro-enterprises access to livelihood loans, align repayment plans with cash flow, and improve their credit conditions.</p>
 Donors (along with EDPs)	<p>Mainstream gender lens in EDP support services and cohort design.</p> <p>Training and capacity building of entrepreneurs to identify and address gendered challenges in the entrepreneurial ecosystem.</p> <p>Mainstream gender lens in business for clean energy enterprises to expand their reach to women-led micro-enterprises as customers.</p> <p>EDPs for micro-entrepreneurs to adopt a decentralised approach through a customised focus for specific states or regions; focus on rural micro-enterprises.</p>
 EDPs (supported by technical experts, NGOs and women's organisations)	<p>Targeted handholding support is needed by women-led micro-enterprises for services such as registration, documentation and access to credit.</p> <p>Bridge information asymmetry and facilitate access to government schemes and policies for women entrepreneurs as per the stage of growth.</p> <p>Facilitate sessions for women micro-entrepreneurs through mentors on navigating the process of accessing various kinds of support, including access to government schemes.</p>

SPOTLIGHT II

Impact of COVID-19 on women's enterprises



Most clean energy entrepreneurs could not afford to work from home during the pandemic because of the nature of their business. Processes like product testing, manufacturing, and installations had to be put on hold during the lockdown. It was anticipated that even after the restrictions are lifted, the market would be cash-constrained, leading to low demand for clean energy equipment. However, customers (individuals and institutions) who were already using clean energy appliances like solar-powered cold storages have benefited from their ability to store the produce longer.

Around 69 per cent of micro-entrepreneurs covered in the SEWA-CEEW survey had no problem with the procurement of raw materials. However, the finished products were unsold, as there was no demand. Concerning the supply chain, procurers of products from micro-enterprises (clean energy enterprises included) also reported their inability to procure because of low demand, market restrictions, and unavailability of avenues for sales like exhibitions and fairs, and lack of working capital for mass procurement.

Impact on women micro-entrepreneurs

Women across the informal economy—weavers, artisans, and home-based workers—have shouldered the nationwide lockdown burden and were severely affected by the disruptions in the global supply chains (SEWA Bharat 2020). The economic crisis also means that the plans of women micro-entrepreneurs may see a lower rate of revival post-lockdown.

55%

micro-enterprises report that the demand in their business reduced significantly; almost a quarter of them have not resumed work

91%

enterprises planned to continue their business after the lockdown was lifted

Source: Author's Analysis; Data: SEWA-CEEW Survey

The women micro-entrepreneurs were also optimistic about business recovery and repaying business loans. But their plans to invest in the business (for mechanisation or business expansion) are on hold currently to prioritise the limited financial resources for the household requirements (FWWB 2020).

Ecosystem stakeholders have also assisted micro-entrepreneurs in pivoting their business models to sustain during the crisis. For instance, women associated with SEWA Lok Swasthya, a social enterprise dedicated to health services, have been licensed by the government to produce hand sanitisers and face masks (SEWA Bharat 2020).

In what could be considered a great support movement, many investors, donors, NGOs, and other ecosystem actors came together to support micro-enterprises in building an online presence during the pandemic. Organisations like SEWA Bharat and Women on Wings have helped businesses create a digital presence, enabling an online market for their products by redesigning their marketing and communication channels. Women's organisations have played an important role in using the online medium to train and upskill women entrepreneurs. Since this training is more self-paced and offers the flexibility of participation, women can use them at their convenience as their household responsibilities have increased immensely during the pandemic.

However, transition to digitalisation comes with its challenges. Access to technology is limited for women micro-enterprises. The SEWA-CEEW survey shows that while 91 per cent of women entrepreneurs have access to mobile phones, only 35 per cent use smartphones, of which only 5 per cent use it for digital payment. Less than 11 per cent of the women micro-entrepreneurs use the internet for any business activity. While e-commerce channels can significantly increase sales for products produced by women, the literature suggests that using e-commerce platforms presents challenges such as meeting eligibility criteria and fulfilling registration requirements like GST certification and other incorporation details (Valenti et al. 2020).

Responding to the pandemic, government departments such as SRLMs²⁰ have also started online sales platforms to provide SHGs and rural enterprises with a wider market (Valenti et al. 2020). Some key examples of these initiatives include the waiver of certification and legal compliance, assistance from block-level officers in operating seller accounts, commission waiver on sales of products, and transfer of payments to the bank account of SHGs. Bihar Rural Livelihood Promotion Society (BRLPS) aggregated producer groups under one roof to set enterprises to scale. In *Shilpgram Mahila Producer Company Pvt. Ltd.*, around 400 SHG women work as shareholders contributing to the company's operations like producing, packaging, and shipping the products.



Women across the informal economy—weavers, artisans, and home-based workers—were severely affected by the disruptions in the global supply chains



Women's organisations have helped businesses create a digital presence, enabling an online market for their products and pivoting their business models

20. Kerala, Bihar, Maharashtra, and Andhra Pradesh

SPOTLIGHT III

Policy ecosystem for women's entrepreneurship and the intersection with energy access and mechanisation



Across sectors, additional incentives have been provided in government policies in India to encourage entrepreneurship and support livelihoods for women and other marginalised sections of the society. More recently, policies and schemes have been drafted for economic empowerment designed to enable economic opportunities for women, such as *Stand-up India* and *National Rural Economic Transformation Project (NRETP)*. Beyond the government schemes, financial institutions in India, including banks and microfinance institutions, have focused on women as part of their lending strategy through customised loan products. Most of these products and schemes offer working capital and finance for acquiring a capital asset or skilling and capacity building of women. Some schemes have also focused on providing access to markets by covering the costs of fairs and exhibitions to sell products. Women's enterprises are not a homogeneous unit and as diverse as enterprises. The expanded definition of micro-enterprises today would include a broad spectrum of entrepreneurs with different needs at different stages of the enterprise.

Schemes enabling financial access to women for mechanisation can be distributed into the following categories:



Sector-specific government schemes



Sector-agnostic government schemes targeted at women



Cluster development schemes



Energy access schemes

Sector-specific government schemes



Many ministries, such as Agriculture, Food Processing Industries, MSMEs, and Textiles, offer schemes for mechanisation of production activities in their respective sectoral value chain.

- **Pradhan Mantri Kisan Sampada Yojana (PMKSY)**, under the Ministry of Food Processing Industries, is an umbrella scheme incorporating the ongoing schemes and the new schemes of the ministry to encourage entrepreneurs to set up food processing units based on cluster approach while building new capacities along with the modernisation or expansion of existing food processing units.
- **The MSME ministry's Credit Linked Capital Subsidy and Technology Upgradation Scheme (CLCSS)** offers facilitating technology upgradation by providing capital subsidy to micro and small enterprises on institutional finance for induction of well-established and improved technologies.
- **In-situ Upgradation of Plain Power Looms** of the Ministry of Textiles provides support for upgradation from plain loom to semi-automatic shuttle loom, from semi-automatic shuttle loom to shuttle less rapier loom, and from plain loom to shuttle less rapier loom by way of fixing certain additional attachments and kits.
- **Pradhan Mantri Credit Scheme for Powerloom Weavers and National Handloom Development Programme** provides margin money assistance, credit guarantee, and interest subvention on loans for technology upgradation for handloom weavers within and outside the cooperative fold, including to SHGs and NGOs.

However, if women are not active or experienced in these areas of work, such as weavers or loom operators, they would not benefit from such schemes. Therefore, schemes that intersect both technology and gender, such as *Pradhan Mantri Credit Scheme for Power Loom Weavers* enabling women to set up new power loom units, could significantly impact women's ability to mechanise and adopt clean energy solutions in their business. Another example could be the *Mahila Coir Yojana* that offers subsidies for women to mechanise their operations in the coir industry and the necessary training needed to operate the machine. Schemes could be leveraged as a tool to support women in current sectors and incentivise their employment in non-traditional sectors.

In sectors like agriculture, women-friendly technologies are promoted in agricultural processes and access to finance for enabling access to these technologies. The National Gender Resource Centre in Agriculture, set up by the Department of Agriculture, Cooperation and Farmers Welfare, is a focal point to converge all gender-related activities and issues in agriculture and allied sectors, within and outside the department. The *Sub-Mission on Agricultural Mechanisation* supports training programmes on gender-friendly equipment for women farmers and allocates at least 30 per cent of funds for women for all schemes under the mission. Women are also offered higher subsidies on farm equipment purchase than men across many schemes offered by the Ministry of Agriculture and Farmers Welfare. This seems to be the only ministry that has focused on gender-inclusive product design catering to women's needs in the design of the technology itself.

The *Mahila Kisan Sashaktikaran Pariyojana (MKSP)* is one of the largest state-run initiatives under Ministry of Rural Development to strengthen women's participation in agriculture and promote sustainable, climate-resilient agricultural practices by enabling their access to credit and building their capacity through skill training. It also promotes the effective use of women-friendly tools and transfer of technologies. Working with 3.6 million women farmers as of 2019, MKSP creates an opportunity for larger impact with and for women.

Women cannot benefit from schemes that do not target parts of the value chain in which women are involved to a large extent or support the transition of women to new areas of the value chain. Women mostly own micro-enterprises. So, they may not be able to absorb or qualify for large value grants unless it is staggered to help them build scale for their business. The schemes that offer finance for women have not focused on access to reliable energy or mechanisation in particular. In case of women reeling under severe time poverty, mechanisation of activities for women in self-employed jobs and businesses could act as an enabler of their economic empowerment, notwithstanding the implications of mechanisation on women in some sectors or specific kinds of occupations.

Sector-agnostic government schemes targeted at women



Schemes such as *Stand-Up India* offer financial assistance to those who, due to their disadvantaged status, face far greater challenges in accessing finance from the formal sector for setting up new enterprises (SEWA Bharat 2020). Not only does this scheme offer working capital and term loans to Scheduled Castes (SC) /Scheduled Tribes (STs) and women borrowers, it also has the provision of providing margin money up to 25 per cent in convergence with a state/central scheme, and borrower training through lead district manager or Small Industries Development Bank of India (SIDBI)/ National Bank for Agriculture and Rural Development (NABARD). Besides, in the union budget for FY 2021–22-margin money requirement has been reduced from 25 per cent to 15 per cent under the *Stand-Up India* scheme to facilitate credit flow for SCs, STs, and women borrowers. A range of funding opportunities could be explored for women's economic enterprises under NRETP, which focuses on increasing the household income for the SHG members through mobilisation and strengthening of women-led producer organisations and provides improved access to financial services for technological innovations and skill development.



Schemes that intersect both technology and gender, such as *Pradhan Mantri Credit Scheme for Power Loom Weavers*, could significantly impact women's ability to mechanise and adopt clean energy solutions in their business

For smaller businesses, schemes such as *Mahila Samridhhi Yojana* provide microfinance for female entrepreneurs for small and petty trade/business or other income-generating activities. *Trade-Related Entrepreneurship Assistance and Development (TREAD) Scheme for Women* offers credit, training, and counselling by eliciting information for promoting entrepreneurship among women. SIDBI has been implementing two special schemes for women: *Mahila Udyam Nidhi* and *Mahila Vikas Nidhi*. The former is an exclusive scheme for providing equity to women entrepreneurs, and the latter offers developmental assistance for pursuit of income-generating activities for women. It has also taken the initiative to set up an informal channel for credit needs on soft terms, especially for women. SIDBI also offers a grant for setting up a production unit under the Central Social Welfare Board's Socio-Economic Programme. However, equity-focused schemes do not necessarily benefit micro-entrepreneurs who need access to quick loans with easier repayment terms. Such schemes would need support at the demand side from partners and organisations that could facilitate women entrepreneur's access to documentation and application for such benefits.

Banks offer several loans for women such as *Bhartiya Mahila Business Bank Loan*, *Cent Kalyani Scheme*, and *Dena Shakti Scheme* that offer concessional interest rate or easy processing of loans. Schemes such as *Prime Minister Mudra Yojana* and *Prime Minister Employment Generation Programme* address very specific barriers by collateral-free loans or offering margin money subsidy, respectively. **Despite targeting women, the documentation needs of schemes offered by banks mean that women in the informal sector would not benefit from it. Most schemes focus on working capital loans, while productivity boost for women-owned enterprises would need asset-financing support.**

Cluster development schemes



Potentially, cluster development schemes could also help women set up units or access funding and infrastructure in a cost-efficient manner. Self-help groups or cooperatives are well placed to benefit from cluster development schemes such as *Micro & Small Enterprises—Cluster Development Programme* that offer infrastructure development, marketing hubs/exhibitions, common facility centres, and other thematic interventions. About 80–90 per cent of the project cost is covered by a grant for clusters in specific geographic areas or with more than 50 per cent women-owned, SC/ST units, or micro/village units. **Women-focused cluster development approaches by the state departments, civil society, and the private sector would enable access to finance and mechanisation for women.**

Clean energy access schemes



Ministries concerned with energy and livelihood have focused on integrating decentralised clean energy access with livelihood products to enhance mechanisation and reliable energy access for livelihoods. The *PM-KUSUM* scheme by the Ministry of New and Renewable Energy offers subsidies and other incentives like feed-in-tariffs to support the adoption of solar-powered irrigation systems for individual farmers, groups of farmers, cooperatives, *panchayats*, and farmer producer organisations. The Ministry of Micro, Small and Medium Enterprises through *Solar Charkha Mission* aims to create solar charkha clusters, which employ spinners, weavers, stitchers, and other skilled artisans. The *Solar Energy Scheme for Powerlooms* provides financial assistance and capital subsidy for installing on-grid solar photovoltaic plants by small power loom units.



Ministry of Agriculture and Farmers Welfare is the only ministry that has focused on gender-inclusive product design catering to women's needs in the design of the technology itself

Though some of these schemes have additional incentives for marginalised SC/ST communities or specific states considered to be needing support, women are not typically targeted for these schemes, which implies that the implementation process and the requirements for qualification remain the same for men and women. Although some of them such as *Solar Charkha Mission* could reach more women by virtue of targeting a sector or part of the value chain that engages many women. Further, the cost of energy products that women could use currently range from low to medium ticket size while the scale of funding provided by some of the schemes may be bigger.

Rebuilding women's livelihoods after COVID-19

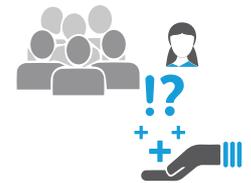


As part of the reform package to fight the economic challenges posed by COVID-19, the government announced INR 10,000 crore to provide credit-linked subsidy to micro food enterprises. In this measure, women in self-help groups can access credit for 35 per cent of the eligible project cost with a ceiling of INR 10 lakh. The extended moratorium on existing loans, including microfinance organisations, would also provide great support for women-owned businesses. However, government's measures for boosting the economy, such as the creation of a cold chain and post-harvest management infrastructure in the vicinity of farmgate, does not have specific provisions for women.

In the absence of a targeted focus on women, schemes meant for farmers are more likely to be accessed by men. Further, not all women may have similar access to the provision of these schemes. According to the Agricultural Census of 2015–16, Scheduled Castes (SC) own only less than 9 per cent of the total land holdings despite comprising 17 per cent of the population (Census 2011). The expanded definition of micro-enterprises is also likely to impact women negatively. Almost 80 per cent of the women-owned micro-enterprises would compete for loans with the much larger scale of revenues generated by men-owned enterprises in the category. Therefore, credit guarantee support offered to MSMEs for getting additional loans is less likely to reach women-led enterprises. The government has offered interest subvention on early repayment of *Shishu* loans under Micro Units Development and Refinance Agency (MUDRA) scheme. Most loans in this category have been availed by women. However, owing to the impact on revenue and sales, enterprises would benefit more from a greater infusion of working capital loans than incentives for repayment of existing loans.

Majority of micro-enterprises in the SEWA-CEEW survey (78 per cent) relied on their savings to manage their expenses during the lockdown. While 36 per cent relied on borrowing money from their family and friends (possibly and interest-free loan), less than 2 per cent of the enterprises borrowed from financial institutions to manage their expenses (SEWA Bharat 2020). The SEWA-CEEW survey data suggests that about 38 per cent of the micro-enterprises have received the government relief support during the COVID-19 lockdown under *Pradhan Mantri Garib Kalyan Yojana*. Yet, the COVID-19 Enterprise Response Research (Valenti et al. 2020) study suggests that although around 88 per cent of respondents were aware of at least one of the schemes, 59 per cent did not apply for any scheme. Given the difficult times, restrained movement, and social distancing, women's access to financial institutes could deteriorate further. The direct transfers through *Jan Dhan* accounts would be of limited help for getting back to livelihood activity.

In policies that are not necessarily targeted at women or parts of the value chain that women are involved in, it is difficult to measure the scale of the benefits accessed by women in the absence of sex-disaggregated data on scheme beneficiaries. **Most schemes also put women and other marginalised groups in the same category making it difficult to ascertain benefits to women.**



Most schemes also put women and other marginalised groups in the same category making it difficult to ascertain benefits to women

The PLFS 2018–19 reveals that the share of women-owned enterprises has gone up to 21.5 per cent from 13.8 per cent in 2014, which points to an increasing role of women entrepreneurs in the country's economic growth and employment generation. **Therefore, a targeted gender lens across policies and schemes to enable women's access to finance would prove to be timely and wise. Expanding the ambit and implementation of existing gender-responsive budgeting practice in India could be an effective way to include gender sensibilities into scheme design and implementation.**

Key takeaways



Energy sector policies have not targeted women's livelihoods, and few policies focused on women have integrated a strong mechanisation lens for women.



Clean energy product variants need to be integrated into core end-use sectors such as agriculture, textiles, and food processing.



Across sectors, the policy focus on women should be expanded beyond the parts of the value chain. Women are present in sufficient number to incentivise employment and entrepreneurship for them in new and non-traditional sectors such as electric mobility.



Schemes focusing on mechanisation should be complemented with skill upgradation for women to enable the transition from low-opportunity and low-paying jobs to better skilled and paid jobs.



Schemes should offer additional incentives for technology innovators to create women-friendly product designs keeping in mind the needs of women users.

4.3 State

Women-owned micro-enterprises have the opportunity to mechanise and scale by availing existing schemes and grants. Access to government support helps women navigate the market barriers and spot the window of opportunity to scale faster. In this section, we focus on the state-led interventions that have supported entrepreneurship and women, in particular, to access the market. The section also highlights challenges faced for accessing government schemes and policies and recommends solutions based on best practices of various actors.



Market transformation by the state



India has supported economic empowerment of women in multiple ways: **through social protection policies at the state and central level, through skill-building opportunities, and by the institutionalisation of collectives to enhance access to savings, credit and entrepreneurship for women.**

In 2018, NITI Aayog set up the Women Entrepreneurship Platform (WEP), a facilitation platform bringing the private sector and government actors together to offer various kinds of support services to women entrepreneurs across India.

DAY-NRLM is an example of how the state could use collectivisation to increase credit access and asset creation for women through micro-enterprises

Government support in the form of financial incentives can play an important role in bridging access to finance by women entrepreneurs for scaling their business. *DAY-NRLM* is an example of how the state could use collectivisation to increase credit access and asset creation for women through micro-enterprises.

Under *NRLM*, all states have mobilised poor rural households into effective SHGs across the village, cluster, and block to enhance credit access. The scheme also has provisions for technical and marketing services and builds capacity for entrepreneurial and business activity. The programme provides revolving fund support to SHGs that have operated for a minimum period of three to six months. It follows the norms of good SHG practice, that is, '*Panchasutra*'—regular meetings, regular savings, regular internal lending, regular recoveries, and maintenance of proper books of accounts (RBI 2020). While the SHGs also act as a source of credit for its members without a collateral, it has also enabled them to build a savings and credit history to avail bank loans for their business. The programme also provides interest subvention to cover the difference between the banks' lending rate and 7 per cent on all credit from the banks/ financial institutions availed by women SHGs for a maximum of INR 3 lakh per SHG (RBI 2020).

As per the ministry's guidelines, the additional financing extended to *NRLM* under *NRETP* focuses on increasing the household income for the SHG women through sustainable livelihood enhancements and improved access to financial services. The programme focuses on 'green opportunities' and value addition—a means through which DRE-powered and energy-efficient technologies could be introduced to SHG-run businesses to reduce women's drudgery and increase their incomes.

BOX 7

Collectivisation as an enabler for clean energy enterprises to reach more women end-users

Clean energy enterprises could leverage the existing institutional initiative of collectives by the *NRLM* and other civil society organisations to create a strong women-led workforce and access more women customers. We outline some benefits articulated by the energy enterprises who partner with women in collectives.

- Collectives have greater loan absorption capacity than individual borrowers. Banks are more willing to lend money for group-based models, especially for first-time borrowers, as these groups are known to contribute negligibly to non-performing assets (NPAs)²¹ through timely repayment of loans (Jha et al. 2020). Given the risk absorption capacity of collectives, banks can extend a larger amount of loans to these groups as their credit and savings history improves. SHGs and joint liability groups (JLGs) under *NRLM* have shown the ability to mitigate the risk of lending to individuals.
- Women, as part of the collectives, have already received financial and digital literacy training. In addition, some have received training on business functions such as marketing and sales, enabling clean energy enterprises to save costs on basic training if they can recruit women from collectives as vendors or sales agents. This allows them to focus on creating market linkages and strengthening sales.
- Women's collectives also engage with the household and community to create a more enabling environment for women's enterprises. This allows clean energy companies to work in more favourable circumstances within households and communities.



21. As per the Reserve Bank of India, a *non-performing asset (NPA)* is a loan or advance for which the principal or interest payment remained overdue for a period of 90 days.



JEEVIKA Women Initiative Renewable Energy and Solutions (WIRES) envisions setting up solar enterprises run by women SHG members — Good practice model 12

JEEVIKA Women Initiative Renewable Energy and Solutions (WIRES) is an initiative of BRLPS to promote solar off-grid home lighting systems in Bihar. Under this programme, BRLPS collaborates with industry stakeholders to promote rural SHG women as entrepreneurs across the value chain of solar appliance production and distribution. The project also envisions setting up solar enterprises run by women SHG members by providing them additional finance and training support at the village level. Additionally, the programme connects other women SHG enterprises with government schemes to leverage financial assistance to purchase solar products.

Despite the state's enabling role in supporting entrepreneurship for women, barriers exist around awareness and facilitation of access to schemes, documentation for access to schemes, and gender-unaware design of the policy/scheme that disadvantages women.

Awareness and facilitation of access to schemes



There is limited awareness about existing government policies, particularly for energy products and programmes, and how to avail them across women-owned enterprises. Only less than 30 per cent of women-led clean energy enterprises in the sector have accessed any of the financial schemes rolled out by the government or financial institutions. For micro-entrepreneurs, government support becomes crucial in financing the high upfront cost for procuring energy products or machine upgradation.

Clean energy entrepreneurs have primarily accessed government schemes across sectors or sector-agnostic schemes targeted at women. On the other hand, women-owned micro-enterprises have accessed social welfare schemes (like *Jan Dhan Yojana*) or schemes for recurring working capital (like Kisan Credit Card). Still, there is limited awareness of livelihood assistance schemes for asset acquisition like MUDRA, Khadi and Village Industries Commission (KVIC) schemes, and *Prime Minister Employment Generation Programme* or schemes specific to clean energy technologies like *Solar Charkha Mission*, *Solar Energy for Powerlooms* or *PM-KUSUM*. District industries centres (DICs) and district mission management units (DMMU) often support women in accessing schemes. But lack of adequate awareness of clean energy schemes among the bank managers or local district officers aggravates issues of access as entrepreneurs have to seek only these institutions for their financial needs.

The data from SEWA-CEEW survey with women-owned micro-enterprises suggests that about half of the respondents have accessed any government scheme. Primarily, they have accessed social protection schemes for pension, housing, and public distribution system. We find that unpleasant experiences or negative feedback from peers in accessing government schemes act as a significant deterrent for enterprises to apply for government schemes or encourage their customers' application process. Positive experiences of other women in their network may encourage entrepreneurs to apply for specific schemes.



Positive experiences of other women in their network may encourage entrepreneurs to apply for specific schemes

“We have a well-connected peer network of enterprises like ours where all of us keep sharing our experience with accessing government schemes. In general, none of us had a great experience when it comes to this because either we have applied, we have not got selected or something like that, or someone or the other has got stuck in the process of applying as such and or those who got selected it has not really benefited them.”

Baya Weaves, a handicraft enterprise

“If you go to the bank as someone who has read about a scheme in the newspaper that tells them you heard about a scheme on the radio, and I want to know more about the scheme and go to the nearest branch or nearest bank, to ask the managers there, they will have no idea about the scheme because it has not been communicated to the bank.”

Aseem Shakti, an all-women textile design venture



Women with relatively limited access to the internet may need to rely on others to access the policy information online

Background and documentation support to access to schemes



Beyond awareness of the schemes, knowledge around the process of application or required eligibility documents needs to be enhanced. Clean energy enterprises are aware of large-scale initiatives by the government (e.g., *Start-up India, Stand-up India, or MUDRA*). Still, they lack information about details for the application process, who to approach, or whether they meet the eligibility requirements. Even though the government has made efforts to make information about schemes available and accessible online, women with relatively limited access to the internet may need to rely on others to access the information.

“For funding, we know of some of the development banks such as NABARD that we could consider. However, the process is lengthy, bureaucratic and the eligibility criteria are not very much clear. As for obtaining capital subsidies on equipment such as solar pumps from the government, these are not available to private companies and only to individual farmers. Despite the subsidy, the upfront investment still leaves this solar technology out of many farmers’ reach. Widening the government’s eligibility criteria to include private companies could actually accelerate their adoption by millions more farmers.”

Oorja Development Solutions, a farming services enterprise that provides solar pumping as a service

“There is no one place where all schemes are put together. We have to go to the district office and ask for schemes. The lender is hesitant to look at these small loans. For confidently presenting your case, the proposal needs to be viable and the templated proposal does not work. It depends on the bank managers and your relationship with them.”

Aseem Shakti, an all-women textile design venture

Furthermore, the opportunity cost of waiting for the money from a scheme is unviable for small and growing businesses. They often do not have the capacity or time to look for the scheme to fulfil their requirements and the application process. This is further aggravated for women entrepreneurs who already face time poverty and mobility constraints in remote and rural areas.

The micro-enterprises that have received government support in the past have noted that they had to be persistent in their efforts, approach multiple officials, and the entire process took a lot of time and resources.

“The biggest problem is accessibility. For all the work you have to travel to the district or state capital. For women micro-entrepreneurs, it is difficult to leave their household care responsibilities and work. With already little cash travel to the centre, the scheme should be provided to people near their homes, and all the issues should be resolved then and there. These are people living in absolute poverty on hand-to-mouth existence they cannot leave their labour even for one day, and when things don’t work out, so people are demotivated to apply again.”

Ayang Trust, a non-profit organisation, working on improving tribal livelihoods using DRE

Gender-inclusive policy design



Government policies and schemes may be gender-inclusive by design, yet implementation procedures are gender unaware. The eligibility requirements of schemes entail collateral and margin money, preparation of registration documents, and presenting business proposals and projections, which are challenging to obtain for women entrepreneurs in rural areas. The informal nature of the women-owned micro-enterprises makes it ‘invisible’ to the formal system as they lack proper documentation, do not have GST and Udyog Aadhar registration, and have not filed income tax. Therefore, schemes like *MUDRA* and within it the *Shishu* loans, which relax many requirements for collaterals or formalisation, see a higher share of women borrowers (66 per cent of the accounts in *Shishu* category belonged to women) (*MUDRA 2020*).



75%

women micro-entrepreneurs have no assets in their name

Source: Authors’ analysis; Data: SEWA-CEEW survey

Skewed gender-balance among government staff and lack of sensitisation leads to the gendered bias against women-led enterprises. Like financial institutions, government offices have predominantly male staff who are not necessarily sensitised to work with a gender-inclusive approach, even at the senior levels. These biases stem from not only a lack of motivation to support women micro-entrepreneurs but also from a lack of exposure to tools and methods to integrate the needs of women into policy design and programme implementation and failing to take cognisance of the fact that needs of women could differ from needs of men.

The incentive structure of scheme implementation does not adequately account for pre-existing gender biases in the financial system. While flagship schemes of the government like *MUDRA* have relaxed requirements for women (and men) to access bank loans and provided low-cost credit without collaterals, the complex lending process, documentation effort, and the perceived risk of default limit the bankers’ incentive. For schemes like *Stand-Up India* (with a targeted focus on women and marginalised communities), bank officials have stipulated targets for such schemes at the district or branch level. Enterprises have found that bank officials have no incentive to extend support under these schemes once their targets are achieved.



The experience micro-entreprises in accessing policies suggests that the entire process took a lot of time and resources, including persistent efforts and approaching multiple officers



While flagship schemes like *MUDRA* have relaxed requirements for women, the complex lending process, documentation effort, and the perceived risk of default limit the bankers’ incentive

Recommended solutions to improve access to government support for women micro-entrepreneurs

a) EDPs can bridge information asymmetry and facilitate access to government schemes and policies for women entrepreneurs across the spectrum. They could partner with organisations that provide handholding support to enterprises in navigating through the process of business registration and accessing government support. EDPs could also play an important role in advocating for policies that create an enabling environment for female entrepreneurs. Organisations such as Zone Start-ups have convened diverse stakeholders connected to women's entrepreneurship to discuss some of these barriers, such as lack of accessible, affordable, and high-quality childcare.

The Women Entrepreneurship Programme (WEP) at NITI Aayog has created a knowledge bank of available policies and schemes for women-owned businesses. As an aggregator platform, WEP also hosts information and services relevant to women entrepreneurs and enables key partnerships to bring crucial content, workshops, campaigns, and other avenues of learning and growth to its users from trailblazers in the industry. We-Hub helps women entrepreneurs get the eligibility documents ready for bank loans or government policies and business registration. It also conducts training and awareness sessions with entrepreneurs on available schemes at the state and central level.

b) Ensuring that banking and other government services reach the doorstep of beneficiaries makes them easily accessible, especially for women who face additional societal constraints. Doorstep services and handholding support through banking correspondents help ease the process, particularly for women entrepreneurs in rural areas. Literature also suggests that steps like doorstep services, simplified approval process, reducing the number of visits, tie-ups with ground-level organisations to better understand the borrowers, and reducing dependence on male members can promote women's financial inclusion and economic participation (IFC 2014).

However, the gender balance needs to improve as 92 per cent of banking correspondents are men (Chatterjee, Khanna, and Srivastava 2018). Research shows that hiring women as financial intermediaries can serve the dual purpose of increasing women's usage of bank accounts on the one hand and their employment on the other (Jhabvala, Kapoor Mehta, and Sharma 2019). However, as an alternative, sensitisation of male banking correspondents in dealing with women and communicating products that could meet entrepreneurs' needs becomes necessary.



52%

women micro-entrepreneurs have an ongoing loan, source of the loan was banks for 88 per cent²²

Source: Authors' analysis; Data: SEWA-CEEW survey



Sensitisation of male banking correspondents in dealing with women and communicating products that could meet entrepreneurs' needs becomes necessary



Continuous engagement with ministries and implementation officials through gender training and capacity building to identify and integrate women's needs in the sector is needed to design gender-inclusive schemes and implementation

22. The average loan size is less than INR 1 lakh (INR 78,000). It is important to note that the SEWA Bharat network and the entrepreneur's family members played a key role in assisting them in accessing these loans.



Haqdarshak enables women to access government schemes through a door-to-door service model — Good practice model 13

[Haqdarshak](#) trains women from rural communities as agents who facilitate availing government schemes for other women (individual or group) in the village. They help women discover the right scheme and assist in the application process through a door-to-door service model. Since Haqdarshak agents are women from the same community, it is easier for women applicants to build a rapport with them to avail the benefits.

Currently, portals like Haqdarshak, focus on social protection and welfare policies. A larger focus on mechanisation, entrepreneurship, and livelihood policies that aid in the acquisition of capital assets and policies that support the adoption of clean energy technologies such as solar pumps, and solar charkha can be integrated into existing platforms. Haqdarshak has recently started working with MSMEs to help them access government welfare schemes for funding, subsidies, licensing, and registrations.



DeAsra Foundation provides handholding support to small businesses in availing government schemes and bank loans — Good practice model 14

[DeAsra Foundation](#) facilitates Udhgyo Aadhar and GST registrations, quick and hassle-free services for acquiring licenses, and legal compliances to small businesses for a nominal fee. The pertinent challenge for small businesses in availing loans from government banks is not knowing how to get the eligibility documents and create business proposals for the application process. DeAsra provides handholding support to businesses by helping them choose the right loan for their working capital needs and preparing funding proposals.

c) Energy sector policies are not gender-sensitive, and gender-specific policies do not necessarily have an energy lens; clean energy schemes are not integrated with core end-use sectors. Schemes targeting energy access for livelihoods such as the PM-KUSUM scheme do not necessarily target women users. *Faster Adoption and Manufacturing of (Hybrid & Electric Vehicles in India (FAME) II* for e-rickshaws has no special provision for women drivers. In contrast, MUDRA loans, which have an explicit focus on women, covers an extensive list of activities. Still, there is no specific mention of DRE or energy-efficient technologies (Jha et al. 2020).

d) Existing schemes on technology upgradation or capital subsidy support support should be designed factoring in the high upfront cost of clean energy appliances. When the price of energy products is higher than conventional machines, the challenges of accessing credit becomes greater for women. With no proven success of the technology, bankers fear default from customers, more so if the customer is a woman who depends on the machine's functioning to earn and repay the loan.

e) Gender sensitisation and capacity building of policymakers and implementation officials could help both in the present and the future design of policies. Most schemes remain gender-inclusive on paper, but implementation channels are not suitably modified or sensitised. As a result, pre-existing barriers in infrastructure and social biases exclude women even as the schemes intend to reach more women. Further, lack of a gender-responsive policy making and budgeting process fails to differentiate the impact of schemes on women in particular. Continuous engagement with ministries and implementation officials through gender training and capacity building to identify and integrate women's needs in the sector is needed to design gender-inclusive schemes and implementation.

Key recommendations: Enabling policy access for women micro-entrepreneurs

Key stakeholders	Recommendation
 Policy makers	<p>Build on existing livelihood and sectoral schemes to integrate DRE-powered mechanisation.</p> <p>Mainstream gender-inclusive policy targets and gender-responsive budgeting and design schemes that support clean energy technologies (especially in non-traditional sectors) with targeted support for women.</p> <p>Central and state agencies on women entrepreneurship to focus on bridging the information asymmetry.</p>
 Financial institutions, government agencies	<p>Ensuring that banking and other government services need to reach the beneficiaries' doorstep for easy accessibility for women beneficiaries. Investors and donors to invest in business models that engage in doorstep services.</p>
 Women's organisations and technical experts (supported by donors)	<p>Capacity building and training of policymakers and implementation officials through coordinated and continuous engagement with ministries and implementation officials.</p>

SPOTLIGHT IV

Gender-responsive budgeting in energy ministries



According to the Ministry of Women and Child Development, gender budgeting is a powerful tool for achieving gender mainstreaming to ensure that the benefits of development reach women as much as men. It entails earmarking a specific amount for women in budgets of ministries and states.

The budget circular requires ministries and departments to highlight "the quantum of public expenditure earmarked for (a) programmes with 100 per cent provision for women in Part A of the gender budgeting scheme (GBS), and (b) between 30 per cent and 99 per cent provision for women in Part B" (Kapur Mehta 2020).

Gender budgeting uses the budget as one of the avenues to correct gender gaps (Kapur Mehta 2020). It is not merely an accounting exercise. Instead, it presents an opportunity to integrate gender lens at all stages of planning and policymaking. It could also enable ministries to combine efforts, reduce duplication, and ensure that allocations across schemes are more efficient. The total expenditure incurred from the state budgets accounts for more than half of the country's total public expenditure. Gender budgeting practices must, therefore, be taken to sub-national planning.

The Government of India introduced gender budgeting in the budget of 2005–06, but it has remained under 5 per cent of the overall budget. However, the absolute value of allocations under gender budgeting has increased to INR 1,43,461 crore in 2020–21 budget estimates (at 4.72 per cent of the entire budget). When we analyse the budget estimates of 2020–21, we note that the top five heads of allocation under Part A as shown in Table 1.

Top five allocations in Part A		Percentage of allocation (%)
Ministry of Petroleum and Natural Gas	LPG connection to poor households (Pradhan Mantri Ujjwala Yojana)	4
Ministry of Rural Development	Rural housing (Pradhan Mantri Awaas Yojana)	68
Ministry of Rural Development	Indira Gandhi National Window Pension Scheme	7
Ministry of Women and Child Development	Pradhan Mantri Matru Vandana Yojana	9
Department of Police	Scheme for the safety of women (Nirbhaya fund)	3



Energy ministries have less than 0.05 per cent of the overall budget in Part B of the gender budget

Table 1

Pradhan Mantri Ujjwala Yojana is the only scheme from an energy ministry to report contribution under Part A of gender budgeting

Source: Authors' analysis, Ministry of Finance Expenditure Profile 2021-22

Under Part B, energy ministries have the following allocations, totalling less than 0.05 per cent of the overall budget. The proportion of the budget within the larger ministry budget is low.

Ministry	Budget head	% in Part B	% in Ministry
Ministry of New and Renewable Energy	Biogas Programme	0.04	1.04
Ministry of Petroleum and Natural Gas	Institutions and Centres of Excellence	0.01	0.02

Largest allocations under Part B are from the Department of Rural Development, Department of School Education and Literacy, Department of Health and Family Welfare, and Ministry of Women and Child Development. Despite having a large proportion of women in the sector, Ministry of Textile has allocated only INR 379 crore (0.3 per cent of the gender budget) towards women. In areas of technology upgradation under various ministries, no allocation has been made for women in Part A and B. Only 18 ministries/ departments have reported allocations in Part A and 28 in Part B in budget estimates 2020–21 (Kapur Mehta 2020), while the mandate to track spending towards women publicly was provided to 56 gender budgeting cells across ministries. These clearly point to the challenges of implementation and lack of capacity and understanding among implementers of the gender-responsive budget in policy design and implementation.

Ministry/Department	% of allocation
Department of Rural Development	19
Department of School Education and Literacy	15
Department of Health and Family Welfare	24
Ministry of Women and Child Development	15

Some challenges associated with gender budgeting are discussed below; most of them could be addressed through dedicated capacity building of ministries at the sub-national and national level.

1. Ministries are often unaware of what and how much to include under gender budgeting. For example, 100 per cent of some schemes like *Pradhan Mantri Awas Yojana* are considered women-specific though not all houses are in the name of both spouses (Kapur Mehta 2020). Similarly, under the Ministry of Petroleum and Natural Gas, LPG subsidies have not been included, while the subsidised connections under *Pradhan Mantri Ujjwala Yojana* have been added to gender budgeting.
2. Gender budgeting has remained under 5 per cent of the budget since its implementation, despite more schemes launched to include women. Translating that ambition into a systematic process at the sub-national and national level to ensure women can access the benefits as men and modify the implementation process accordingly is essential.
3. When schemes individually cannot map the proportion of women beneficiaries through sex-disaggregated data, there is a limited understanding of how gender-based challenges are being addressed and how spending translates into gender-based outcomes (Kapur Mehta 2020).

Further, allocations in many schemes have allocations for women that constitute less than 30 per cent of the provisioned amount. The budgetary allocations for girls and women should be based on a roadmap at the state and national levels, indicating how ministries/department plans meet women's needs and bridge existing gender gaps (Chakraborty 2013).

Table 2

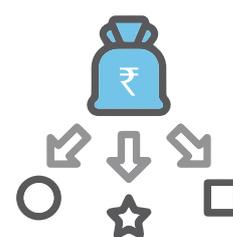
Energy ministries have less than one per cent of the overall budget share in Part B

Source: Authors' analysis, Ministry of Finance Expenditure Profile 2021-22

Table 3

Largest share of allocations by ministries under gender budgeting

Source: Authors' analysis, Ministry of Finance Expenditure Profile 2021-22



The budgetary allocations for girls and women should be based on a roadmap at the state and national levels, indicating how ministries/department plans meet women's needs and bridge existing gender gaps

Proposed recommendations for creating an effective gender-responsive budgeting framework are as follows:

1. Sex-disaggregated data on scheme beneficiaries across ministries could be the starting point to understand the existing policy impact on women and girls.
2. Gender-inclusive policy design could ensure that women's needs are integrated during the conceptualisation of policies and schemes—with respect to technology design, financing, documentation, social safety nets, and other economic support systems. It can happen through a representation of women's organisations or local women leaders in the process. Ministries and departments could also hire gender experts/consultants to integrate a focus on women and intersections of caste, age, and geography across all their schemes.
3. Beyond design, the capacity of implementation officers in government departments to work with a gender lens would be necessary. Regular training and capacity building to identify and respond to women's needs should be included within the ministry mandates.
4. Learning from our counterparts in Bangladesh and Nepal, a gender budget alongside the department budget should be encouraged for each ministry.
5. A roadmap for each ministry mandated by the budgeting process would be able to identify schemes and, therefore, the implementation process gaps. In such cases, the implementation modalities may need to be differentiated by gender, wherever needed, to empower women in accessing government schemes. Women's organisations and donors in the sector could allocate dedicated resources towards supporting such capacity-building initiatives within the government and the private sector to ensure inclusion of gender lens in the design and implementation of schemes.



Sex-disaggregated data on scheme beneficiaries across ministries could be the starting point to understand the existing policy impact on women and girls



Each ministry in Bangladesh has a gender budget report – Good Practice Model 15

Bangladesh is the best-performing country in South Asia, having closed 72.6 percent of its gender gap by 2020 (Global Gender Gap Report 2020). For 2019-20, the country proposed about 31 percent allocation of the national budget for development of women. Every year, the government presents a gender budget report before parliament, to explain the policies and strategies for the advancement of women, the activities of various ministries and divisions related to women's development, and the requisite budget allocation for these activities (Ratho 2020).

Conclusion



Image: Wase Khalid/CEEW

We acknowledge a variety of initiatives targeting women's livelihoods in the domain of society, market, and state, which have enabled clean energy enterprises and women-led micro-enterprises to achieve scale and impact. However, we note that barriers of financing, access to schemes, and policy design need well-targeted support to truly create gender-transformative impact through energy access for women founders of clean energy enterprises, women employees, and value chain partners and end users of energy products and services (women-led micro-enterprises).

Some interventions by clean energy enterprises have moved from being gender neutral to gender-sensitive. Still, there is an opportunity for them to become gender-transformative by investing in women and equalising gender relations in the long run. Current interventions by businesses, donors, policies, and financiers do not always aim to engage with the gender dynamics between women and men in ways that create sustained impact and avoid unintended consequences. While one could argue that it is not always possible for a business to engage deeply with gender relations, we have listed examples where businesses have engaged with barriers for women within households and communities through their marketing, sales or financing strategy, complemented by their local partners' efforts. To support this endeavour, government policies and schemes would need to be gender-sensitive in their design and implementation guidelines, and not just in sectors with greater livelihood opportunities for women but also in other sectors to encourage greater participation of women. Through more inclusive product design, financing support, scheme design and implementation, and social safety nets for women, the energy access for livelihoods sector would be able to achieve greater scale for themselves and depth of impact.

Closing the gender gap in the economy would entail better targeting of funding for women and integration of gender-inclusive strategies in all sectors, including the energy sector. As of 2017–18, the energy sector, despite being well funded, has had around 10 per cent of the total funding focused on gender equality over the past years. With an optimistic business case for the sector, there is an opportunity to better integrate a gender perspective in energy programmes, with the understanding that enhanced access to reliable and affordable modern energy is crucial for women and girls (OECD GENDERNET, 2020). In the current economic recovery context post COVID-19, it is important that governments, donors and investors work to improve productivity and reduce the drudgery for women-led micro-enterprises, which can contribute to the rebuilding of the economy through better incomes for the household and generation of employment.

We hope this report is able to shed light on the potential strategies that could be adopted and scaled in the energy sector to support women entrepreneurs across the value chain by addressing the barriers of financing and access to policies. We also hope that the recommendations listed in the document are able to guide key actors in the sector—clean energy enterprises, donors, financiers, accelerators and incubators, policymakers, and entrepreneurs themselves across all stages of growth—to accelerate the pace and scale of interventions that could impact and improve productivity as well as incomes for women's micro-enterprises in India.



Policies need to have gender-sensitive design and implementation guidelines in both traditional and non-traditional livelihood sectors for women

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Annexures

Annexure 1

List of enterprises and stakeholders interviewed

A. List of clean energy enterprises

S. No.	Name of the organisation	States of operation
1.	Alto Precision	Karnataka
2.	Aseem Shakti	Maharashtra
3.	Ayang trust	Assam
4.	Bakdil	Meghalaya
5.	Baya Weaves	Maharashtra
6.	Cellerite	Pan India, but at present, the orders are from Bihar, Maharashtra, Delhi, Karnataka, Maharashtra
7.	Cool Crop	Pan India
8.	CYDEE	Karnataka, Andhra Pradesh, Telangana
9.	Dakti Craft	Meghalaya, Maharashtra
10.	Dd Bio Solution Technology Pvt Ltd	Odisha
11.	Devidayal Solar Solutions	Pan India
12.	Dharma Life	14 states but specific information not available
13.	Durga Energy	Rajasthan
14.	Gtarang Energy Solutions	Maharashtra
15.	Koyakal	Pan India
16.	Loans4SME	Pan India, but 80 per cent of the business happens in 5 states - Delhi, Karnataka, Tamil Nadu, Maharashtra, Andhra Pradesh
17.	Nisarga	Karnataka
18.	Oorja	Uttar Pradesh, Assam
19.	Orora Global	Tamil Nadu
20.	Ahuja Green Technologies Pvt. Ltd.	Pan India
21.	Pushan Renewable Energy	Madhya Pradesh
22.	Rural Tech	Uttar Pradesh
23.	S4S Technologies	Maharashtra, Odisha, Tamil Nadu
24.	SMV Green Solutions	Eastern UP, Bihar, Delhi
25.	Taru Naturals	Ten states – Maharashtra, Karnataka, Assam, Uttar Pradesh, Rajasthan, Chhattisgarh, West Bengal, Tamil Nadu, Kerala, Uttarakhand
26.	Upcyclers's Lab	Pan India
27.	Vilvah	Odisha

B. List of micro-entrepreneurs

Occupation	Number of micro-entrepreneurs	Organisation	States of operation
Silk thread spinning	4	Eco Tasar, Resham Sutra	Bihar, Jharkhand, Chhattisgarh
E-rickshaw drivers	4	SMV Green Solutions	Uttar Pradesh
Polishing jewels	1	Individual	Rajasthan
Street vendors	1	Pink Foundation	Gujarat
Handicraft (design and sales)	11	TATA trusts, Deoria Design	Maharashtra, Gujarat, Rajasthan, Uttar Pradesh
Agriculture and Allied (food processing)	4	Rajlaxmi Foods, Mahalaxmi Swabiman Kendra, Sahas Mahila Sangathan	Maharashtra, Gujarat
Printing Press	1	Dhyaas Foundation	Maharashtra
Recycling (temple waste, paper)	2	Sai Aggarbatti, Dhyaas Foundation	Maharashtra

C. List of ecosystem stakeholders

S. No.	Name	Type	States of operation
1.	GIZ Her&Now	Donor/Implementer	Rajasthan, Telangana, North East region
2.	UN Women	Donor/Implementer	Pan India
3.	DeAsra	Enablers and Incubators	Maharashtra
4.	Haqdarshak	Enablers and Incubators	14 states
5.	Sauramandala foundation	Enablers and Incubators	Jammu and Kashmir, Karnataka, Assam, Meghalaya, Manipur
6.	SEWA Bharat	Enablers and Incubators	New Delhi, Madhya Pradesh, Bihar, Uttarakhand, West Bengal, Kerala, Gujarat, Rajasthan
7.	Social Alpha	Enablers and Incubators	New Delhi, Maharashtra, Karnataka
8.	Women on Wings	Enablers and Incubators	Pan India
9.	WE Hub, Telangana	Enablers and Incubators	Telangana
10.	Friends of Women's World Banking (FWWB)	Financial Institution	17 states
11.	Mann Deshi Foundation	Financial Institution	Maharashtra, Karnataka
12.	Svakarma	Financial Institution	Tamil Nadu, Maharashtra, Gujarat
13.	Upaya Social Ventures	Financial Institution	New Delhi, Karnataka, Tamil Nadu, Uttar Pradesh, Bihar, Odisha, Maharashtra, Sikkim, Assam, West Bengal
14.	Jeevika, Bihar, SRLM	Government organisation	Bihar
15.	Kudumbashree, Kerala, SRLM	Government organisation	Kerala
16.	Mahila Arthik Vikas Mahamandal (MAVIM), Maharashtra	Government organisation	Maharashtra
17.	Women Entrepreneurship Platform (WEP), NITI Aayog	Government organisation	Pan India
18.	Initiative for What Works to Advance Women and Girls in the Economy (IWWAGE)	Research organisation	Pan India
19.	International Center for Research on Women (ICRW)	Research organisation	Pan India
20.	Leveraging Evidence for Access and Development (IFMR LEAD)	Research organisation	Pan India
21.	BAIF Development Research Foundation	Value chain partners	Pan India
22.	Eco Tassar	Value chain partners	New Delhi, Bihar, Jharkhand
23.	Gram Shree	Value chain partners	New Delhi, Rajasthan
24.	Spudnik Farms	Value chain partners	Karnataka
25.	Sheroes	Entrepreneur	Pan India



Closing the gender gap in the economy would entail better targeting of funding for women and integration of gender-inclusive strategies in all sectors, including the energy sector.





COUNCIL ON ENERGY, ENVIRONMENT AND WATER (CEEW)

Sanskrit Bhawan, A-10, Qutab Institutional Area
Aruna Asaf Ali Marg, New Delhi - 110067, India
T: +91 (0) 11 4073 3300

info@ceew.in | ceew.in | [@CEEWIndia](https://twitter.com/CEEWIndia) | [Instagram](https://www.instagram.com/ceewindia) ceewindia