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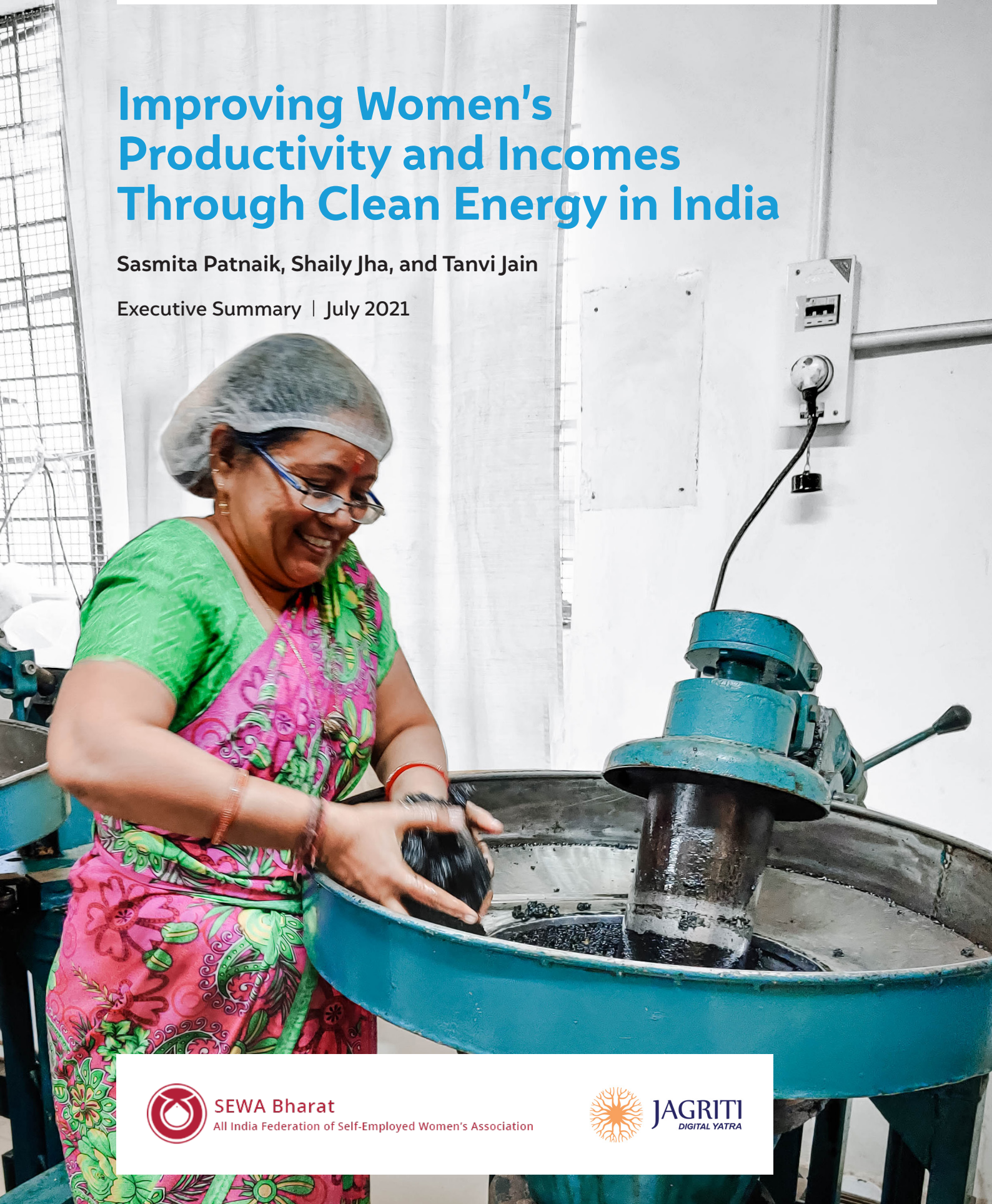
Improving Women's Productivity and Incomes Through Clean Energy in India

Sasmita Patnaik, Shaily Jha, and Tanvi Jain

Executive Summary | July 2021



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

JAGRITI
DIGITAL YATRA

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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About CEEW

The Council on Energy, Environment and Water (CEEW) is one of Asia's leading not-for-profit policy research institutions. **The Council uses data, integrated analysis, and strategic outreach to explain — and change — the use, reuse, and misuse of resources.** The Council addresses pressing global challenges through an integrated and internationally focused approach. It prides itself on the independence of its high-quality research, develops partnerships with public and private institutions, and engages with the wider public.

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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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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.

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"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."

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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)."

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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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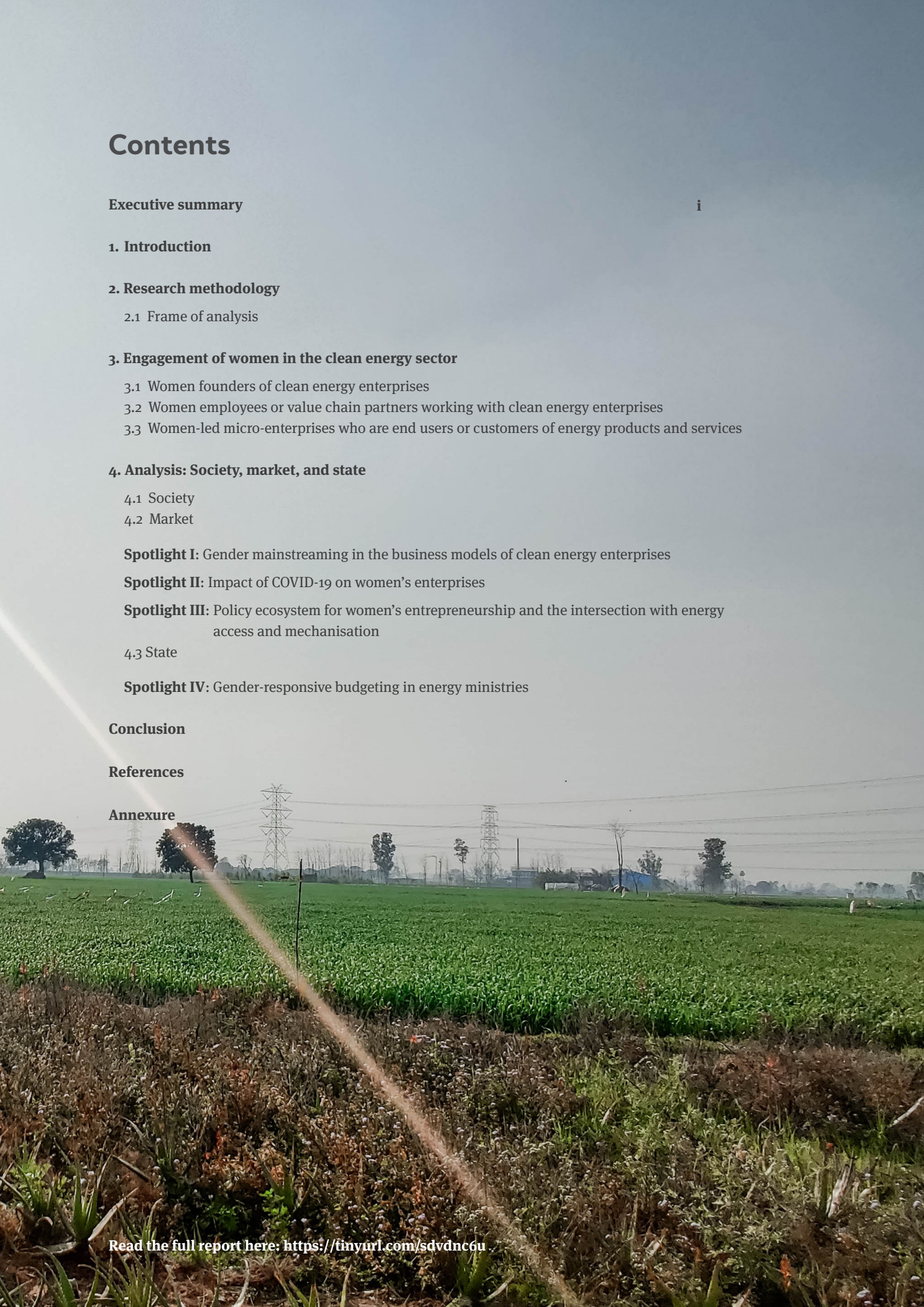


Read the full report here: https://tinyurl.com/sdvdnc6u

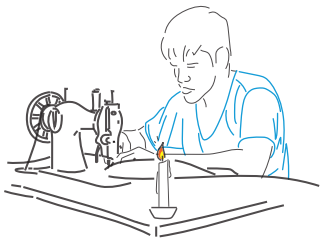
Improving women's productivity and incomes through reliable and affordable access to energy for economic activities could directly contribute to achieving Sustainable Development Goals 5, 7, and 8.

Image: Abhishek Jain/CEEW

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 stakeholders[2].
- 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.

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

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 enterprises[3] 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.

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.

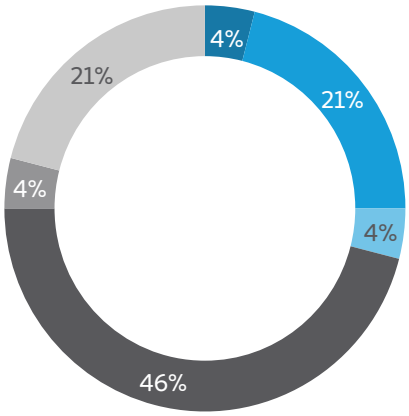


Figure ES2
Loans are the most prominent source of finance for procuring for the machine

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

Sample size: 28

For
43%
enterprises, the business is the primary income source for the household[4]

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

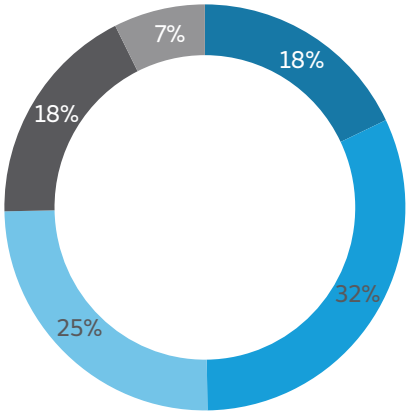


Figure ES3
Loans and clean energy enterprises are the primary source of financing to use DRE-powered products

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.

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

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.

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

Barriers and opportunities for women-led micro-enterprises

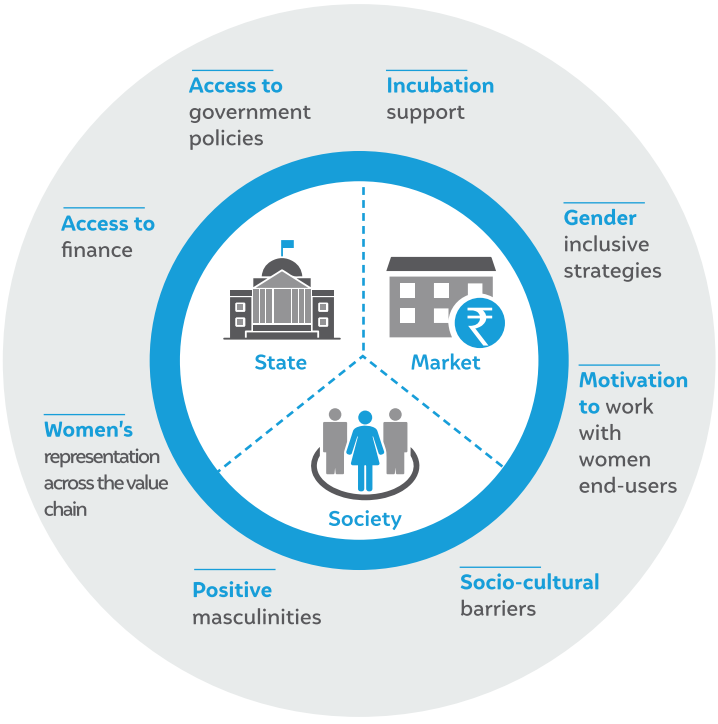


Figure ES1
Society, market and state: Barriers to scale and opportunities for women micro-entrepreneurs

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 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.

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

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.

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.

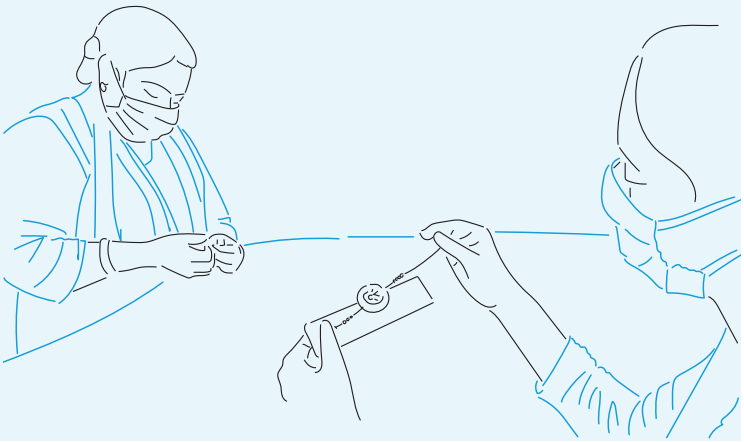
With low asset ownership and registration of business, women find it challenging to access available schemes. Therefore, schemes like MUDRA and the *Shishu* loans that relax collaterals or formalisation requirements see a higher share of women borrowers (66 per cent of the accounts in *Shishu* category 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
 Policymakers	Government policies need to value women's care work to families and provide support for it. 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.
 Investors and donors	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.
 EDPs (supported by donors and NGO partners)	Beyond skills, mainstream legal rights and awareness training into enterprise development programmes will help women negotiate their space in the household and economic sphere. *Examples: GIZ Her&Now programme, Mann Deshi's MBA programme.*
 Clean energy enterprises (along with NGO partners)	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. Create community-level gender champions among youth and men. Positive masculinities could enable support for women-owned enterprises with clearly demarcated roles and responsibilities.

Market mechanisms to enable financial access for women micro-entrepreneurs

Key stakeholders	Recommendation
 Clean energy enterprises (and their partners)	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: • 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)	Enabling credit through incentives, alternate credit assessment methods, and leveraging the micro finance institutions (MFIs) and collectives' credit history. A separate segment within MFIs like 'entrepreneurship loan' to women for asset acquisition where ticket size is larger than the usual MFI loans. Customise loan products accounting for women's needs and focused on lending to women in partnership with women's organisations. Increase the pipeline of women customers along with improvement in gender ratio and sensitisation of staff.
 Donors and financiers	Pilot alternative credit assessment methods with financial institutions. Harnessing alternative data can enable lenders to make reliable predictions about the creditworthiness of potential borrowers. 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.

Role of Entrepreneurship development programmes (EDPs)

Key stakeholders	Recommendation
 Donors (along with EDPs)	Mainstream gender lens in EDP support services and cohort design. Training and capacity building of entrepreneurs to identify and address gendered challenges in the entrepreneurial ecosystem. Mainstream gender lens in business for clean energy enterprises to expand their reach to women-led micro-enterprises as customers. Programmes for micro-entrepreneurs need to adopt a decentralised approach through customised focus for specific states or regions; focus on rural areas.
 EDPs (supported by technical experts, NGOs and women's organisations)	Targeted handholding support is needed for women-led micro-enterprises for services such as registration, documentation, and access to credit. Bridge information asymmetry and facilitate access to government schemes and policies for women entrepreneurs as per growth stage of the business. Facilitate sessions for women micro-entrepreneurs through mentors on navigating the process of accessing various kinds of support, including access to government schemes. *Examples: Women Entrepreneurship Programme at NITI Aayog, Telangana Government's We Hub, Zone Startups.*

Enabling policy access for women micro-entrepreneurs	
Key stakeholders	**Recommendation**
 Policymakers	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. Mainstream gender-inclusive policy targets and gender-responsive budgeting for clean energy access. Have schemes supporting clean energy technologies (especially in non-traditional sectors) with targeted support for women.
 Women's organisations and technical experts (supported by donors)	Support and build capacity of policymakers and implementation officials to design and implement schemes with a gender lens.

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:

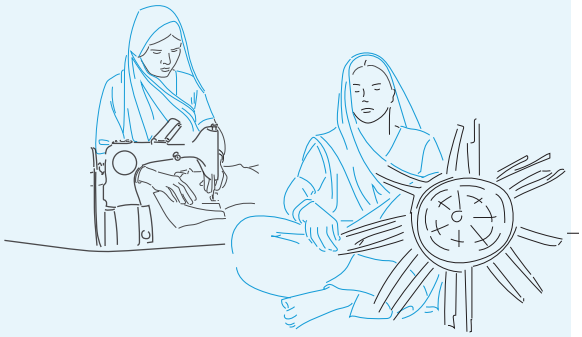
1. Sector-specific government schemes
2. Sector-agnostic government schemes targeted at women
3. Cluster development schemes
4. Energy access schemes

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

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

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.

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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.

Image: Abhishek Jain/CEEW

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