

## SESSION II

# Enhancing Livelihoods of Vulnerable Groups: An Overview of ADB Energy Initiatives

11 December 2024 • Chennai



# Enhancing livelihood and electricity access for India's largely rural and agrarian population is crucial for inclusive and equitable growth

**65%** of the population reside in rural areas

**52%** of the population belongs to vulnerable communities<sup>1</sup>

**42%** of the population is dependent on agriculture for livelihood

Agriculture contributes to **18%** of the country's GDP

**Government's emphasis is on improving the quality of life of vulnerable communities to ensure more equitable and inclusive development through livelihood programs**

Source: Economic Survey 2022-23; Economic Survey 2023-24; 1 Scheduled Caste, Scheduled Tribe, Below Poverty Line; Vulnerable Community Statistics ([Link](#))



## Supportive policy and regulatory environment

1968

SHG movement started by Mysore Resettlement and Development Agency to promote livelihood activities and improve health and education status

1978

Launch of Integrated Rural Development Program (IRDP) for generating and strengthening self-employment in rural areas

1999

IRDP restructured to Swarnajayanti Grameen Swarozgar Yojana (SGSY) to focus on promoting self-employment

2005

Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) came into force for providing minimum 100 days of guaranteed wage employment

2011

Launch of Deendayal Antyodaya Yojna-National Rural Livelihood Mission (DAY-NRLM) for rapid increase in coverage of rural poor households under self-employment

2019

Launch of PM-KUSUM for solarization of agriculture sector

2024

Launch of PM-Surya Ghar Muft Bijli Yojana for providing low-cost electricity to residential households



# Despite favorable policies, several challenges hinder the growth of sustainable livelihoods

## Key challenges

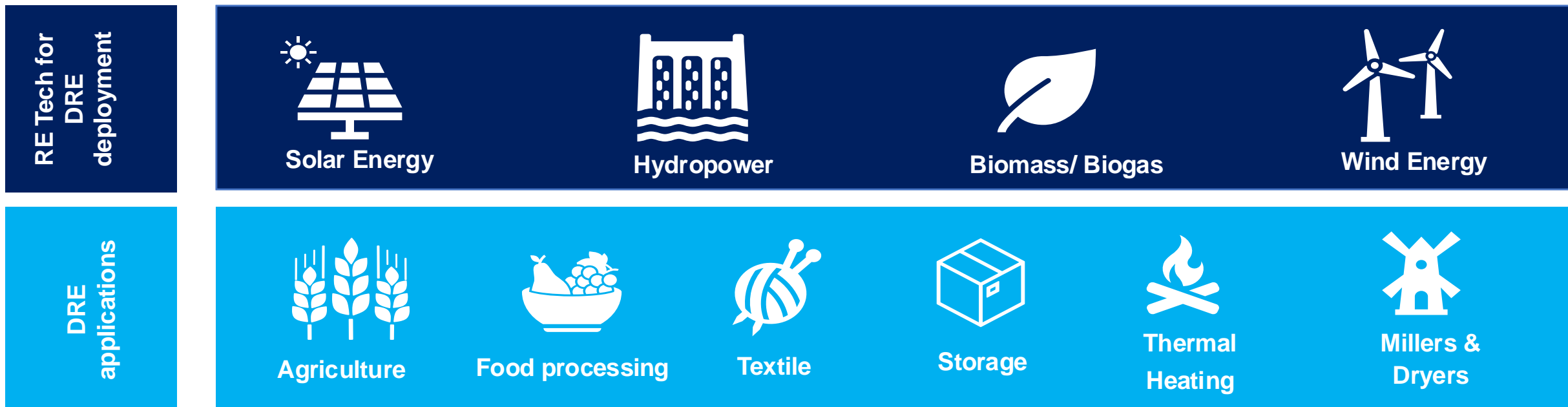
- **Financing:** Lack of financing due to **lack of creditworthiness** of target population and **lack of targeted financing products**
- **Approach:** **Lack of holistic approach** that is **regardless of finer details and local aspirations**, resulting in less social mobilization and economic empowerment
- **Capacity Building:** **Lack of skilling trainings** that are contextual and demographically relevant
- **Multiple programs** with similar aims and objectives which can be clubbed together for synergies for targeted implementation
- **Market linkages:** **Lack of end to end market linkages**, both backward (raw material) and forward (to sell the final product) result in rise of middlemen and hence reduced opportunities
- **Reliable electricity:** **Lack of access to reliable electricity** that hampers the business as usual

## Benefits of adopting Distributed Renewable Energy (DRE) technologies

**Adopting Distributed Renewable Energy (DRE) technologies can provide last mile electricity access and sustainable livelihood solutions owing to its localized and modular nature. The benefits of DRE include:**

- **Lower cost** of DRE technologies make livelihood applications **more accessible** for rural and vulnerable population
- DRE technologies can provide **reliable and continuous electricity supply despite non-availability of grid**
- The diverse DRE technologies **can cater to variety of sectors and applications**
- **Variety of business models, either individual or community based, can be adopted** resulting in **flexibility of usage**

# DRE is a broad ranging sector with multiple use cases and huge impact



# India's DRE capacity has huge potential and productive end use DRE applications can have a significant impact on rural livelihoods

- Since 2010, **improvements in solar technology and falling solar module prices led to a rapid rise in both on-grid and off-grid solar installations**
- **Solar**, through solar rooftop and distributed capacity, now **has a dominant share of all DRE installations**
- Biopower and small hydro installation growth has slowed recently, indicating that solar is the preferred technology for DRE deployment
- **DRE can enable standalone appliances for various productive end uses** beyond simple electrification
- Deploying such appliances can **enable income generation for users in remote and rural regions**

## USD 9.4 Billion

Estimated financing requirement for solar rooftop by residential consumers through a mix of debt/equity for PM Surya Ghar Yojana

## USD 50 Billion

Estimated market for DRE productive end use appliances in India

## USD 15 Billion

Addressable market of off-grid refrigerator for farm-gate

## USD 811 Million

Estimated market for off-grid solar vaccine refrigeration in India

India has released a Framework for Promoting DRE Livelihood Applications, covering

Demand Assessments

Access to finance

Research and Development and Standardization

Skill development and capacity building

Pilot and Up-scaling

Public information and awareness

Implementation agencies and cell

Relevant programmes of other ministries



# The Gender- Energy Nexus: Women as Consumers of Renewable Energy products

- Approximately 119 million farmers in India are constrained by unreliable electricity access
- At 75.7%, agriculture accounts for the largest share of women's employment
- Women are generally marginal and homestead farmers with energy needs accordingly
- Approx. 34 million micro-enterprises in the Indian rural economy are constrained by unreliable electricity access
- By 2030 an estimated 30 million women-owned MSMEs are expected to flourish in India, most of them micro or small enterprises
- < 80% of women-led enterprises in the country are single-worker firms, run out of home or in the vicinity of home, having different energy needs
- Self-employed rural women with access to energy earn more than twice as much as their counterparts without access to energy
- Reducing women's **"time poverty"** requires **affordable energy solutions**; which are critical to enable her to engage in paid livelihood activities and decent work
- Household electrification in rural India helps increase women's non-farm self-employment as well as productivity of women farmers



**USD 50 Billion**  
Estimated market for DRE productive end use appliances in India



# The Gender- Energy Nexus: Women as Producers and Suppliers of Renewable Energy

1.02 Million Jobs in India's Renewable Sector in 2023 (Expected to increase further)



## Key Facts: India

- Women constitute only 11.0% workforce in the solar rooftop companies, globally 32% of RE workforce is women)
- Women's participation in senior leadership roles has marginally increased from 16.6% in 2016 to 18.3% in 2024
- Women's representation in different phases
  - ❖ 18.0% in design and 34.0% in pre-construction and corporate segment
  - ❖ 3.0% in construction & commissioning phase
  - ❖ 1.0% in operation & maintenance phase



# Key Challenges to women's participation in the energy sector

## As Consumers

- Research in RE technology (more often) based on product efficiency and environmental impacts rather than user suitability
- Lack/Limited analysis of **differentiated energy needs for men and women**, across social and economic groups, resulting in limited customization and thereby suitability of products
- Paucity of **gender-disaggregated data** on users and beneficiaries of government schemes limits understanding of challenges faced by women
- **Awareness among women** on DRE products is limited, although they have often shown greater tenacity to adopt these products
- DRE products need financing but **gender-focused collaterals** rather than product specific are required to reach out to more women end-users
- **Gender imbalance in workforce** across levels but more so as last mile suppliers restricts access to women as consumers

## As Producers and Suppliers

- In India, women's participation in STEM is over 40% (higher than the global average of 28.2%), but **women lack industry-aligned education** to meet the demands of the energy sector
- Most new and renewable energy firms are start-ups with high capital investments; thus, it is **challenging for them to invest in women's training** to encourage women's participation
- Women are **concentrated in human resource, finance, corporate affairs** and support departments with minimal representation in technical units
- Women **opt out of on-site roles located in rural and remote areas** due to safety concerns, inadequate connectivity, lack of gender-responsive infrastructure and family constraints
- Women rely on **personal resources** for initial investment, with very few accessing available government schemes, posing barriers to women-led clean enterprises



# Opportunities: Government of India initiatives to encourage women's participation

1. Rural Electrification Policy (2006) acknowledged women's burden and drudgery due to the use of traditional energy sources
2. Draft National Energy Policy (2017) aims at electrification of households and increasing access to clean cooking fuel
3. Unnat Jyoti by Affordable LEDs for All (UJALA, 2015) promotes efficient lighting through LED bulbs and enhances awareness among consumers including women to reduce electricity bills
4. Pradhan Mantri Ujjwala Yojana (PMUY, 2016) promotes women's access to clean cooking fuel (LPG)
5. Pradhan Mantri Sahaj Bijli Har Ghar Yojana (2017) '*Saubhagya*' enhances women's safety in public spaces and boosts opportunities for women's education and income generation
6. **Suryamitra skill development program** encourages women candidates to develop skills in installation, O&M and to become entrepreneurs in the growing solar energy sector
7. **Skill Council for Green Jobs** provides skills to professionals and young graduates and midcareer professionals and engineers in the energy sector

# ADB's Country Partnership Strategy (2023-2027)

ADB's India Country Partnership Strategy (CPS) 2023-2027 is aligned with India's national development priorities to be achieved by 2047

CPS supports **gender equality and social inclusion (GESI) responsive just transition** to increase access to reliable, affordable, clean and sustainable energy

1

Promotes Skills & livelihood enhancement of vulnerable populations

2

Enhances energy security by reducing women's time poverty and drudgery

3

Integrates women to shape clean energy transition and climate action

4

Supports RE capacity building on newer technologies

Currently ADB is supporting nine projects across eight states in India



# ADB's Strategies for GESI mainstreaming in the Energy/RE sector

INSTITUTIONAL

Facilitating Poverty Social Assessments and gender assessments at institutional and community level

Build/Strengthen capacities and competencies of staff

Institutionalize GESI mainstreaming within public and private sector agencies

COMMUNITY

Focus on community awareness and skill building

Support Technology transfer and entrepreneurship promotion

Targeted funding for GESI mainstreaming

ADB



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# Gender mainstreaming elements in the ADB energy projects (Institutional level)

1

A GESI Strategy/policy for the Departments and/or utilities

2

Creating GESI responsive workplace measures and/or employment practices

3

Strengthening institutional capacity on GESI issues to ensure vulnerable populations incl. women benefit equitably from investments in energy sector

4

Enhancing women staff's representation in decision making structures and participation in training and leadership programs

5

Creating and enabling ecosystem through active engagements and capacity building of staff and contractors

6

Targeted funding and CSR collaboration



# Gender mainstreaming elements in the ADB energy projects (Community level)

1

## Active community engagement leads to increased knowledge and usage

Awareness campaigns led to enhanced women's knowledge of electricity use and energy conservation practices

Women reported increased use of safe and efficient use of electricity and energy conservation practices

**Uttar Pradesh Power Distribution Improvement Project**

3

## Livelihood opportunities increased by installing RE systems in women-owned businesses

Around 600 women upgraded existing businesses using energy-based technologies or started new non-conventional trades (bulb assembling, bangle making, disposable utensils making)

**MP Energy Efficiency Improvement Investment Program**

5

## Strengthened skills for income generation

Women SHGs received training on after-sales of solar home lighting systems  
**Rajasthan Renewable Energy Transmission Investment Program**

Women SHGs (Solar Mart Didi) associated with BRLM trained on repair of BLDC (energy efficient) fans

Women trained as commercial drivers with almost 80% obtaining a driving license (prioritized SC, ST and OBC women)  
**Scaling Up Demand-Side Energy Efficiency Sector Project**

Female-headed and poor households acquired skills in mobile phone repair, construction of smokeless cook stoves, energy audit and conservation

Gender-inclusive vocational training for 100% women students in ITI, Harij  
**Gujarat Solar Power Transmission Project**

2

## Improved quality of life

Female-headed and vulnerable households prioritized for new connections; led to 30% of time savings for women, more study hours for rural children especially girls

**MP Energy Efficiency Improvement Investment Program**

Distribution of Solar Home Lighting Systems (SHLS) to BPL households in the absence of electricity connections

**Rajasthan Renewable Energy Transmission Investment Program**

4

## Direct engagement in workforce related to electricity department

SHGs/ 'vidyut sakhis' capacitated on new bill collection methods and as mobile customer-care centers. Employment of trained SHGs and agents with UPPCL and DISCOMs for collecting electricity bills

**Uttar Pradesh Power Distribution Improvement Project**

Local women were employed in semi-skilled and unskilled (temporary) jobs

**Gujarat Solar Power Transmission Project**

# Emerging Areas Requiring Additional Focus

## STEM education

Experiential learning and interest in STEM subjects, energy and power sector promoted among school children and youth (particularly youths and girls)

## Professional experience

Internship program introduced to provide hands-on experience to women (particularly from disadvantaged/vulnerable groups) in the energy sector

## Evidence generation

Identification of skills through feasibility studies and needs assessments and collection of sex-disaggregated data through surveys

## Gender-responsive procurement

In the sustainable energy sector-Include a quota for procurement of energy related products and services to be sourced from women-owned MSMEs

## Diversification of local economy

Women's employment (especially from poor and tribal communities) promoted in green energy, i.e., women trained in technical skills for the operation of solar photovoltaic systems and agricultural processing units; engage existing women end-users as sales/pre-sales agent

## Active Technology Transfer

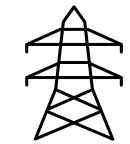
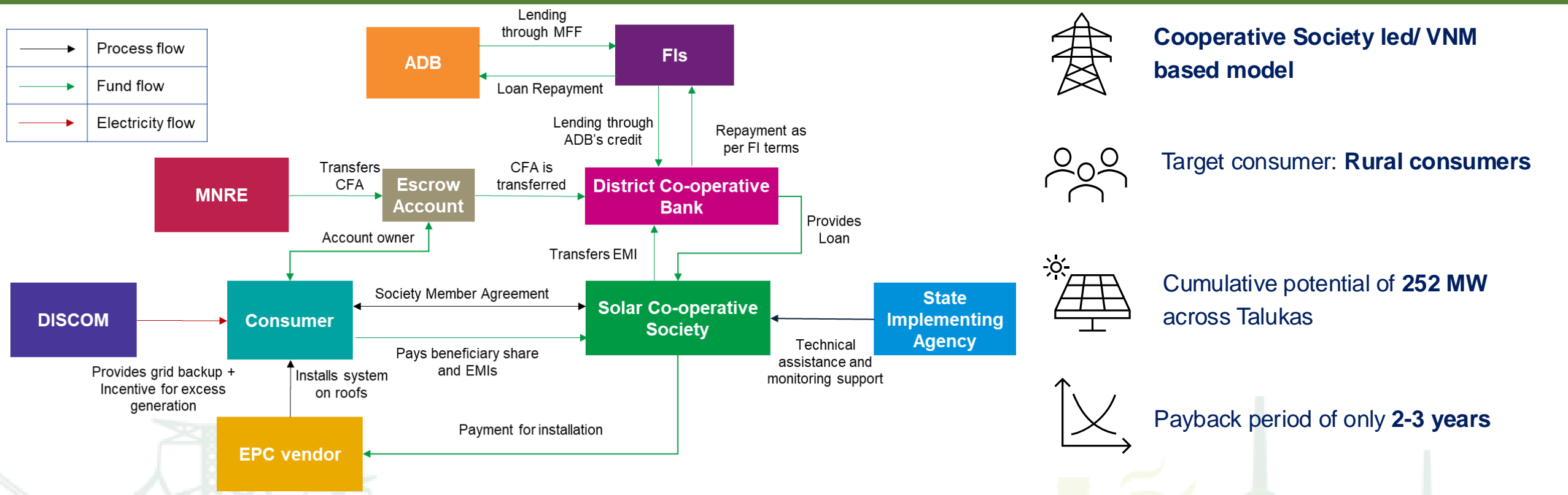
Identification of suitable technology for women through participatory modes and promotion of livelihood opportunities through increased use of RE technologies in women-owned businesses; technology for women farmers and for reduction of domestic care work

## Developing financial products

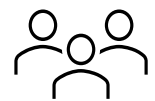
Work with financial institutions to create gender-responsive collaterals for enabling women entrepreneurs to access RE products



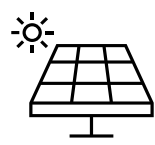
# Adopting Cooperative Society Model for Village Solarization in Gujarat



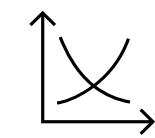
**Cooperative Society led/ VNM based model**



Target consumer: **Rural consumers**



Cumulative potential of **252 MW** across Talukas



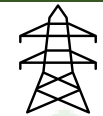
Payback period of only **2-3 years**

## Benefits to stakeholders



**End consumer**

Savings in electricity bill, additional income generation and access to finance at affordable lending terms



**DISCOM**

Increased uptake of SRT amongst rural consumers, meeting RPO targets



**Government**

Accelerating deployment of SRT in rural areas



**Banks/FIs**

Reduced financing risk due to consumer demand aggregation; shorter loan tenure



**Co-op Societies**

Empowerment of rural communities and social and economic development



# Thank you

