Workshop on Smart Grid Technologies and Implications for Inclusive Development in Sri Lanka

3-4 April 2018 • Galle, Sri Lanka

Session 2 – Gender and Social Inclusion Energy Linkages: Policies, strategies and practices

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Francesco Tornieri

Principal Social Development Specialist

Office of the Director General, ADB (South Asia Department)

A. ***Gender Equality and Social Inclusion (GESI) framework*** **in energy sector (South Asia)**
   - History - Definitions

B. **Mainstreaming GESI in ADB -financed projects**
   - ADB Gender Categorization system - Energy sub-sectors – GESI Action Areas - Portfolio

C. **Energy transition and smart grids: enter the *prosumer***
   - Definitions and *prosumer*

D. **Integrating GESI perspective in smart and RE grids**
   - Benefits & Opportunities – Promising Practice

E. **Way Forward**

A. GESI framework in energy sector (South Asia)

History

I. Increasing women and socially excluded groups' access to affordable and clean energy resources and energy-based livelihoods [Focus: energy sub-sectors to meet ADB Gender Corporate Targets (50%)]

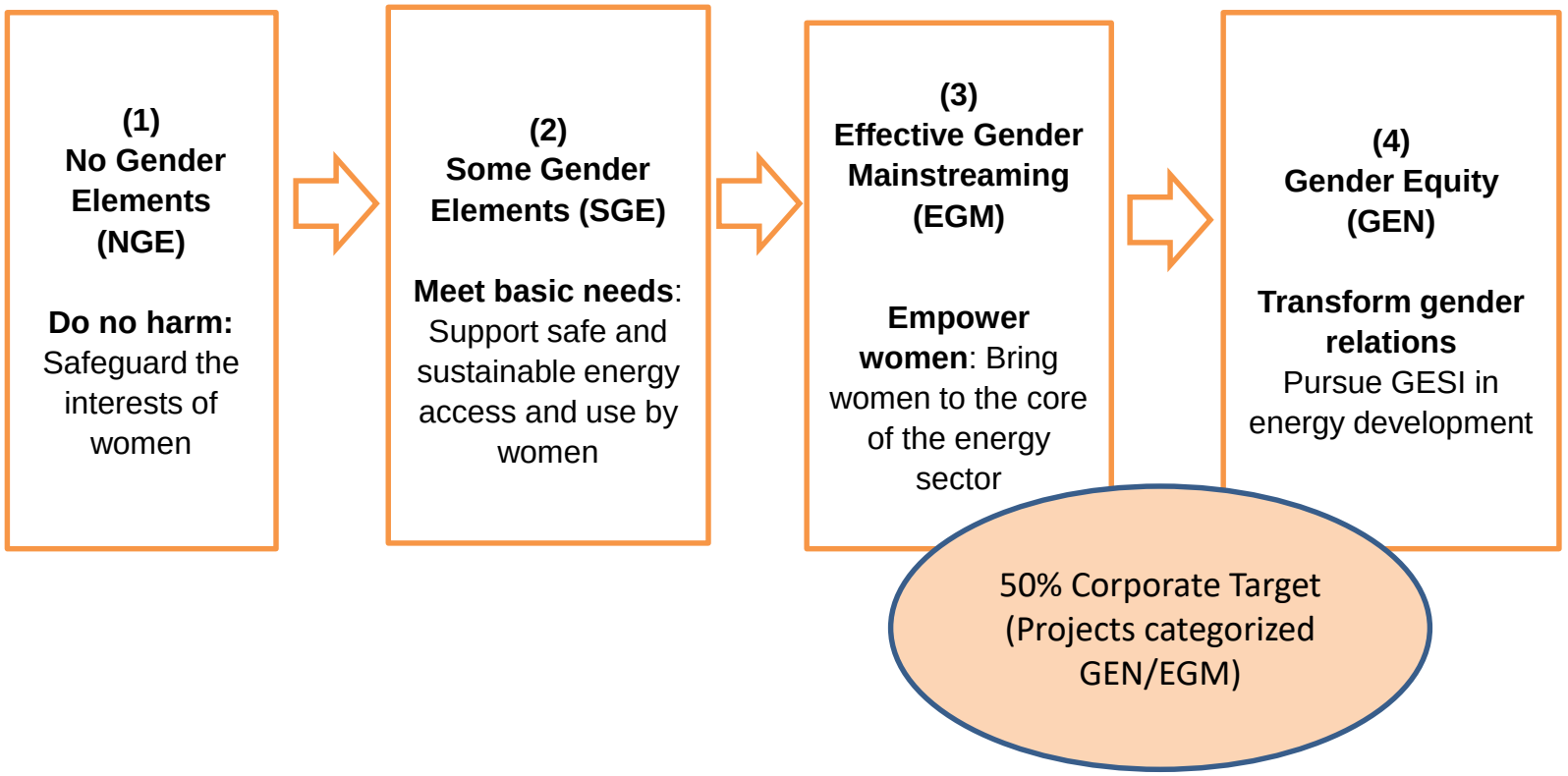
II. Ensuring women and socially excluded groups' participation in the ongoing energy transition, with role played by *smart grid and decentralized community energy systems based on renewable energy sources* [Focus: energy system(s) ► HLT (advanced) technologies; skills/employment development; and engagement with energy sector agencies]

Definitions

Energy Poverty: absence of sufficient choice in accessing adequate, affordable, reliable, high-quality, safe, and environmentally benign energy services to support economic and human development	
Gender Equality: equal enjoyment by women and men of socially valued goods, opportunities, resources and rewards and equal participation in decision making.	***Women's empowerment*** key in achieving gender equality [► process by which women gain *power* and control over their own lives and acquire the ability to make strategic choices]
Social Inclusion: removal of institutional barriers and enhancement of incentives to increase the access of diverse individual and groups to development opportunities.	***GESI perspective:*** process of assessing the implications for women and men of varied social groups of any planned action, including legislation, policies, institutions or programs, in any area and at all levels

B. Mainstreaming GESI in ADB-financed energy projects

ADB Gender Categorization System



Energy Sub-Sectors Entry Points

Entry Points	
(a) POWER GENERATION AND TRANSMISSION	
(b) DISTRIBUTION (e.g. rural electrification)	
(i) Increase in number of electrified below-poverty-line households including all FHHs (ii) Institutional electrification for schools and hospitals, including street lighting (iii) Strengthen women's participation and leadership in community-managed decentralised distribution systems (iv) Maximize opportunities for energy-based livelihoods and employment opportunities; (v) Gender-sensitive user education programs (vi) Capacity building for local women's organizations	End-user interface, direct energy access **<u>Good to Very Good</u>** **[Effective Gender Mainstreaming (EGM)]**

Source: Gender Tool Kit: Energy Going Beyond the Meter, ADB: 2012

Energy Sub-Sector entry points

Entry Points		
(c) RENEWABLE ENERGY		
(i) As in (b) (ii) Women's employment in developing a skilled national/local labour force for RE development (iii) Promote women as service providers in RE systems and technologies (iv) Promote targeted investments in RE technologies to maximize impacts on gender equality and women's empowerment (v) Promote gender issues in climate mitigation financing schemes	Off-grid, distributed decentralized generation systems	End-user interface, direct energy access **Very good (EGM)** (usually with various types of climate funds, especially CIF/SREP)
	Utility scale power generation	**Fair to good (SGE to EGM)**
(d) ENERGY EFFICIENCY		

Source: Gender Tool Kit: Energy Going Beyond the Meter, ADB: 2012

GESI Action Areas

To provide a framework for mainstreaming Gender Equality + Social Inclusion (GESI) in ADB SARD energy sector portfolio, three GESI action areas, namely: **R**esults, **E**nablers, and **Y**ardstick.

(1) GESI RESULTS
This refers to the contributions of an energy program/project to GESI

(2) GESI ENABLERS
This refers to factors that facilitate the achievement of GESI results

(3) GESI YARDSTICK
This refers to the measurement of the relevance, effectiveness and efficiency of Enablers, and the extent of achievement of GESI Results

FIRST ACTION AREA: GESI RESULTS

An energy program or project contributes to GESI if it aims at responding to the empowerment needs of poor households, esp. poor women by increasing:

- Energy **accessibility**;
- **Affordability** of energy sources;
- Opportunities for **energy-based livelihood(s);**
- **Efficiency of energy for health and safety;**
- **Employment opportunities for women** in the energy sector.

SECOND ACTION AREA: GESI ENABLERS

- Partnership b/in energy service providers and users can be strengthened through:

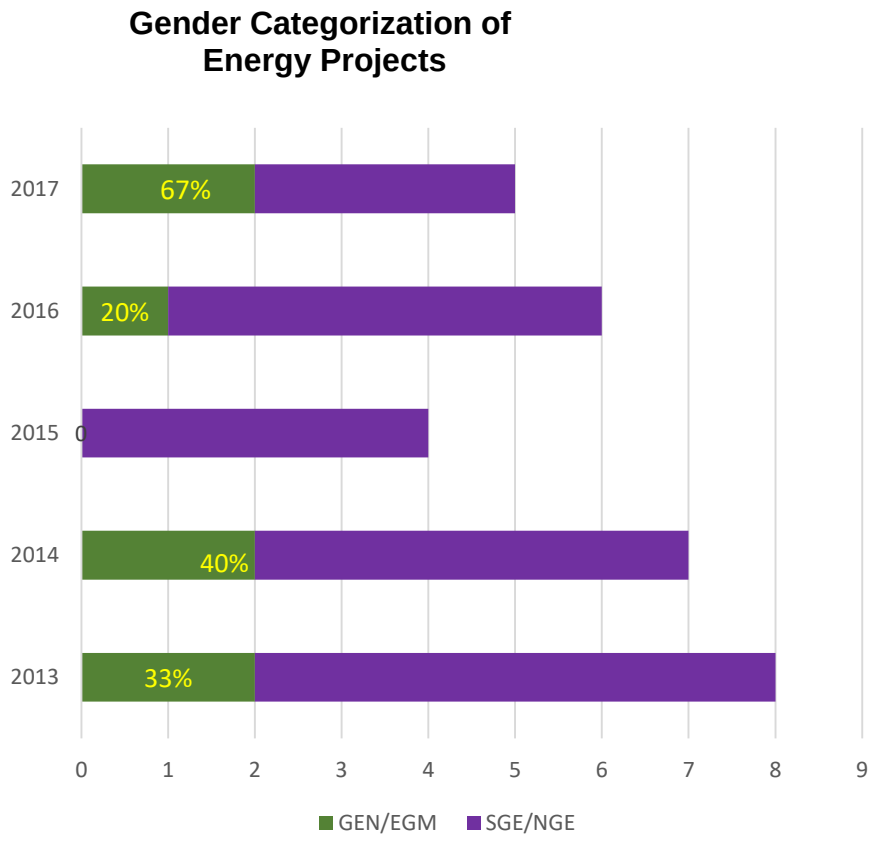
Service Providers (Supply Side)	**Service Users (Demand Side)**
• Formulating supportive laws/policies • Promoting the entry of more females in energy-related careers and jobs. • Capacity development of management and staff in GESI mainstreaming • Training of community women as para-electrical technicians • Developing and implementing enabling programs, projects, and technologies • Designation of a Gender Focal Point • Allocation of a gender budget for GESI mainstreaming activities	• Raising awareness on the equal worth and rights of women/girls and men/boys • Ensuring equitable representation of women and men in energy user structures and in decision-making • Developing capacities of women and marginalized groups in using energy resources safely and productively • Improving access to finance for energy access and energy-based livelihood

THIRD ACTION AREA: GESI YARDSTICK

- The following features should be integrated in the energy program/project monitoring and evaluation framework:

- Disaggregation of data (e.g., participants, electrical engineers, community technicians, project managers and staff, beneficiaries, etc.) by sex and marginalized groups;
- GESI performance indicators related to the GESI results and enablers;
- Analysis of sex-disaggregated data and GESI performance indicators in project progress and completion reports.

2013-2017 SARD portfolio



GEN/EGM Energy Sector Projects

2013
- IND MFF: Rajasthan Renewable Energy Transmission Investment Program (Tranche 1)
- NEP Tanahu Hydropower Project

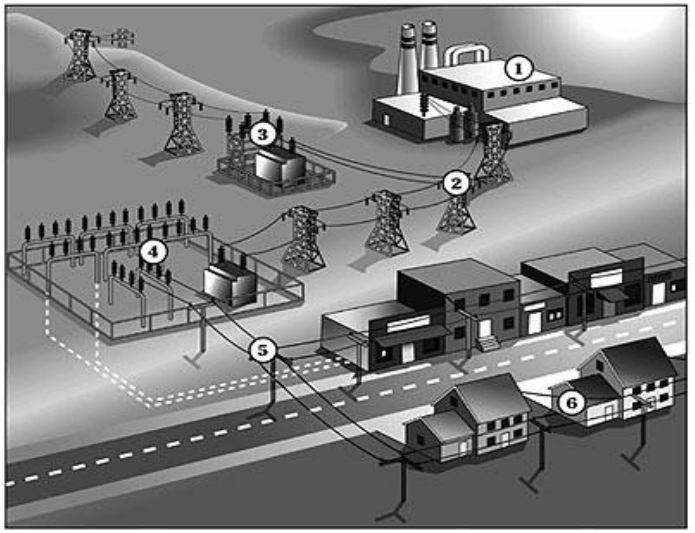
2014
- MLD Preparing Outer Islands for Sustainable Electricity Development Project
- NEP SASEC Power System Expansion

2016
- SRI Supporting Electricity Supply Reliability Improvement Project

2017
- BAN Bangladesh Power System Enhancement and Efficiency Improvement Project
- NEP Power Transmission and Distribution Efficiency Enhancement Project

C. Energy Transition and Smart Grids
Definitions

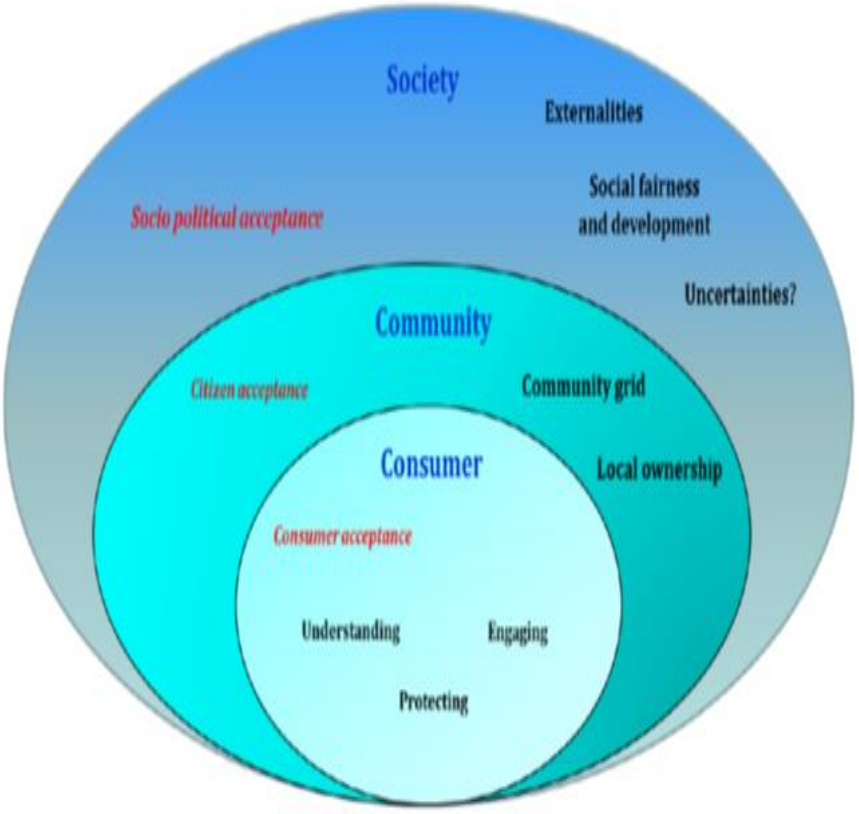
- **Energy transition** [► long-term structural change in *energy systems toward smart grids and renewable energy systems)*
- **Smart Grid [►** electrical grid which includes a variety of operational and energy measures: *net meters* (smart meter), *smart appliances, renewable energy* and *energy efficient resources*.



Source: European Commission, JRC, Institute for Energy and Transport (2013)

C. Energy Transition and Smart Grids
The Prosumer

- Smart grids bring in a new paradigm of active distribution that can change the role of the ***consumer***, ***communities*** and ***society***, transforming "passive" users into "active" players – both as producers and consumers (► prosumers)
- Unprecedented opportunities for energy industry to move into a new era of reliability, availability, and efficiency contributing to greater benefits/impacts for ***consumer, communities*** and ***society*** ► consumer needs, preferences, and goals, regulations, and the technical requirements of a reliable power supply system.



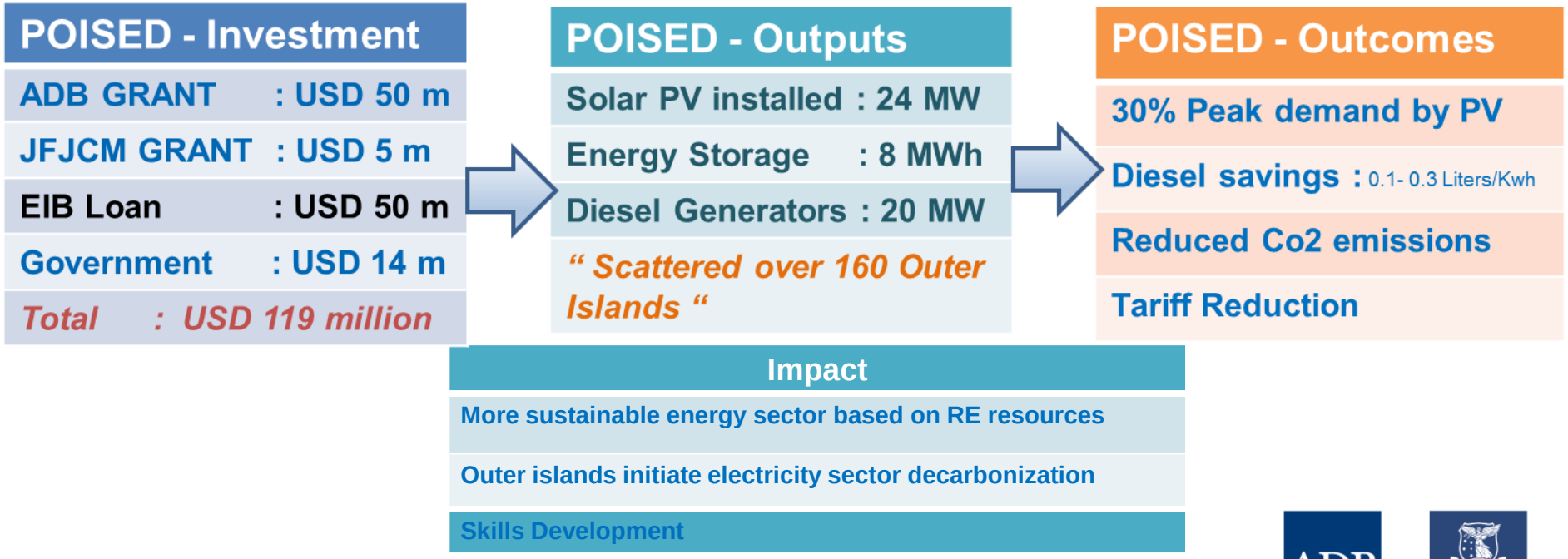
D. Integrating GESI perspective in smart and RE grids
Benefits & Opportunities

BENEFITS	OPPORTUNITIES
• Improving access; both HLT and household electrification rates • Enhanced environmental sustainability • More control • Lower electricity bills • Increased resilience and therefore safety (reduction of hazard exposure, fewer emergency workers)	• Leapfrogging; HLT to simultaneously solve the technology and social inclusion gaps & technology and modern energy access problem • Greater empowerment of end-user households and communities *Decentralisation provides greater opportunities for diversity and inclusion in management/participation* • Employment generation, income generation through energy sales • Reduce vulnerability of 'energy poor' (pre-paid meters and energy displays).

D. Integrating GESI perspective in smart and RE grids
Promising practice – MLD (POISED), 2014

MLD ***Preparing Outer Islands for Sustainable Energy Development*** (POISED) – with focus on *mini-grids* and *support to HLT-based community energy systems*- aimed to*:*

1. Transform distributed energy resources by replacing old and inefficient diesel generation sets with solar PV-diesel hybrid systems;
2. Involve local communities through users' education on RE; energy efficiency; routine O&M;
3. Provide excess energy capacity for local economic development – along the model of new technology-mini grid based community energy systems.



Community inclusion (POISED)

Stage 1: Engagement activities for Local Communities in Renewable Energy (RE) and Energy Efficiency Programs

- Conducted meeting and workshops in Islands at Various levels in Outer Islands
  - Island Councils
  - Women Development Councils (WDC's), current and former members
  - Active islands' women leaders (e.g. Government officials & NGOs)
  - Island Youth Organizations

Stage 2 :

- **Sensitization for Island and Women Development Councils**
  - Importance of WDCs in Outer Islands
  - Women's role in energy sector
  - Workshops on RE systems
- **Promoting RE career path for students**
  - Encourage students to take internships with utilities (FENAKA/STELCO)
  - Organize field visits for students on project sites

Community inclusion (POISED)

Engaging NGO's & Govt Staffs

Engaging WDC's

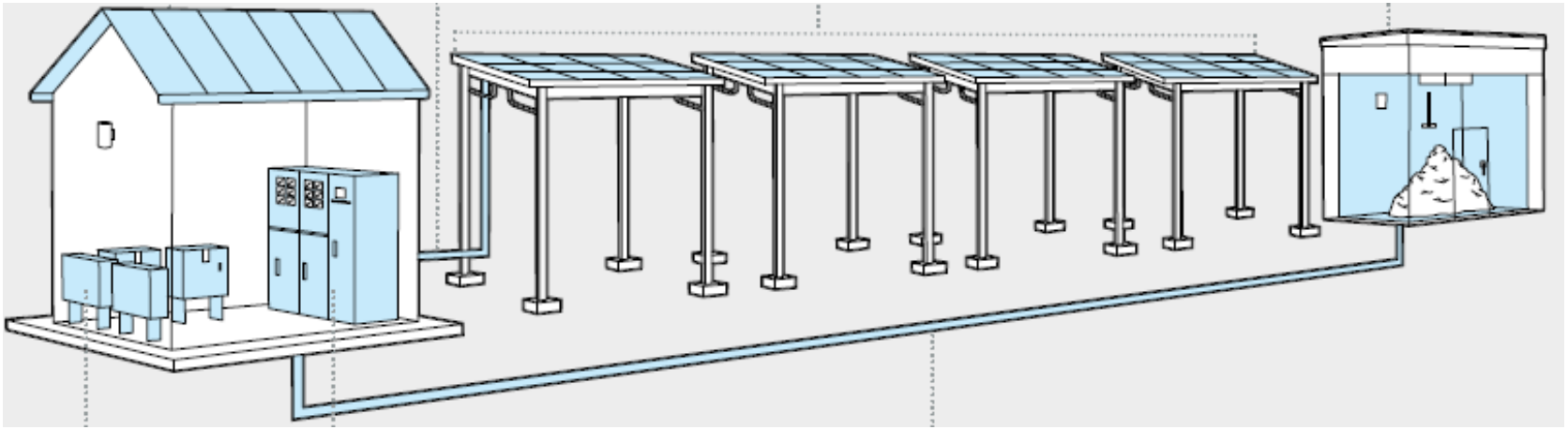
Workshop for Youth councils

Dhiffushi Solar Ice Project

Project in a Nutshell

- **40kW grid-connected solar photovoltaic system(10kWx4)**
- **Power Conditioners (10kWx4)**
- **System controllers**
- **Ice making Machines**

Population - 1200 Nos
Peak Demand – 225kW



Community Inclusion

- **Solar PV system – Owned by Utilies**
- **Ice Making Machine – Owned by Island Community**

- **Local residents use Ice to preserve fish – supporting the main economic activity**
- **Save fuel for Fishermen**
- **Generate Revenue for Island Council**
- **Create Ownership among Community**

- **365 Tons of Ice**
- **~ 320000 MVR**

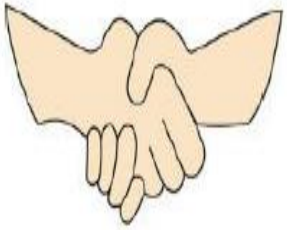
" Not just a sustainable development but also a reliable business model "

Dhiffushi Solar Ice project

Technology

Meets

Connected by grid



Community

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E. Way Forward

- **Keep maximizing GESI mainstreaming in energy sector lending** [► SARD commitment to: (a) GESI mainstreaming in distribution (last mile connection) and RE technologies; (b) Moving beyond project- to agency-level and (c) Deepen the engagement with Melbourne School of Engineering (MSE) on the MSE lateral learning template through collaboration/partnership with South Asia centers of excellence.
- **Continue Energy Technology Innovation in South Asia: Implications for Gender Equality and Social Inclusion**:
  - Energy systems modelling to integrate GESI considerations within the 'social pillar' aspects of system design;
  - Decentralized distribution and smart grid systems;
  - Policy and planning frameworks for integrating GESI in smart grid.
  - SARD GESI mainstreamed in HLT Strategy
- **Assess commercial viability of (identified) time-saving RE-based technologies for productive energy use** [e.g. mini-solar spinning units; solar power looms units, solar applications in garment industries].
- **Engage global networks on knowledge solutions applicable to South Asia [►** US-based Institute of Electrical and Electronics Engineer (IEEE), Society on Social Implications of Technology (SSIT)] for greater access and synergy to Europe and Japan-based networks and centers of excellence.
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