

An aerial photograph of a school rooftop. The roof is covered with several large, blue solar panels mounted on metal frames. In the center of the roof, there is a white statue on a pedestal. To the right of the statue, there are two large, cylindrical water tanks. The surrounding area includes other school buildings and lush green trees.

Microgrids for urban energy communities

Singapore Nov 2nd 2022

Zaixing Wang



INTERNATIONAL
Microgrid
SYMPOSIUMS

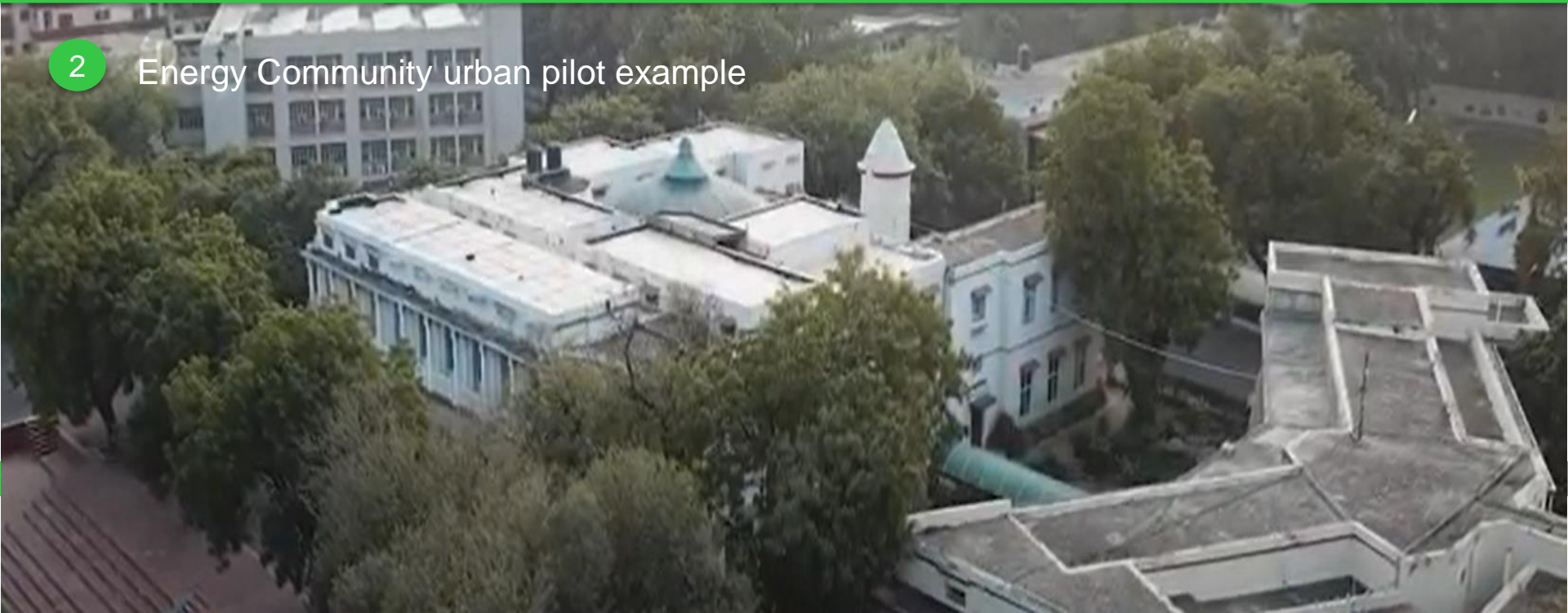
ST. XAVIER'S SCHOOL

Content



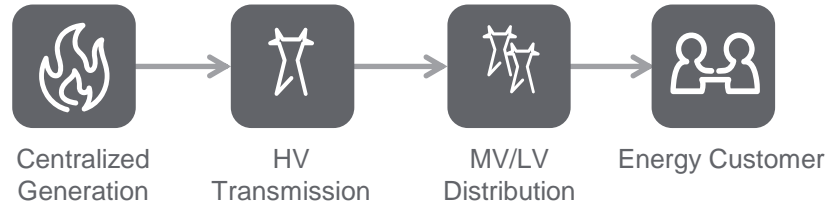
1 Energy Communities

2 Energy Community urban pilot example

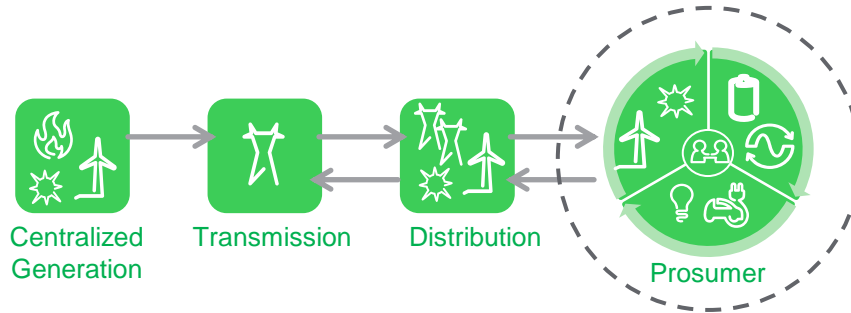


The new energy landscape

Historical Energy Value Chain



The New Value Chain



Decentralized

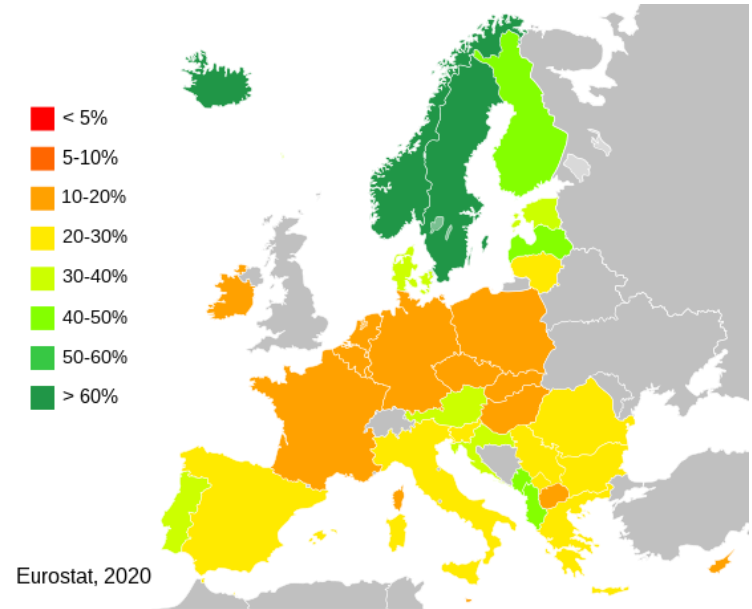
Flexible

Connected

Consumer morphing in prosumer

Europe : global politic and target

- Binding target of **32%** final energy consumption from renewable sources by **2030**
- **Targets** were set for every **individual** member state
- Local Energy Communities is a one of the way to increase renewable resources deployment



Energy communities motivation

1 Financial

Save or earn money from lower fuel bills and government incentives Increase the value of my home

2 Environmental

Help improve the environment

3 Security of supply

Protect against future higher energy costs & protect the household against power cuts

4 Hedonism

Improve the feeling or atmosphere within my home, show my environmental commitment to others, use an innovative system



Content

An aerial photograph of a building with a flat roof. A large array of blue solar panels is installed on the roof. The building is surrounded by trees and other structures. In the top right corner, a paved area with several parked motorcycles is visible.

1 Energy Transition

2 Energy Community urban pilot example

An aerial photograph of a larger building complex. Multiple arrays of blue solar panels are installed on the flat roofs of several buildings. The complex is surrounded by lush green trees and a paved area. A white car is parked on the right side, and a person is visible near it. The overall scene depicts an urban pilot project for an energy community.

European project



Indian and European Local Energy Communities for Renewable Integration and the Energy Transition

42 months
10.7 M€

IElectrix Consortium

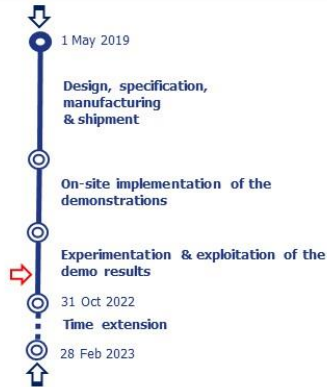
15 European partners
1 Indian partner

Coordinator **ENEDIS**
L'ÉLECTRICITÉ EN RÉSEAU

Technical Director: **e-on** | Hálózati

DSO-coordinated real-scale demonstrators implementing embedded electric island systems and microgrid

5 Demonstrations
4 countries



Co-funded by
The European Commission

Life Is On



An Urban LV Microgrid with islanding capability



Socomec BESS
200kW/274kWh



Community engagement and energy awareness



LV Energy Control Center Switchboard



Monitoring & control system (SCADA & PMS)



Renovated secondary substation



Energy Management System (EMS)



MV/LV Smart transformer with OLTC



PV Panels

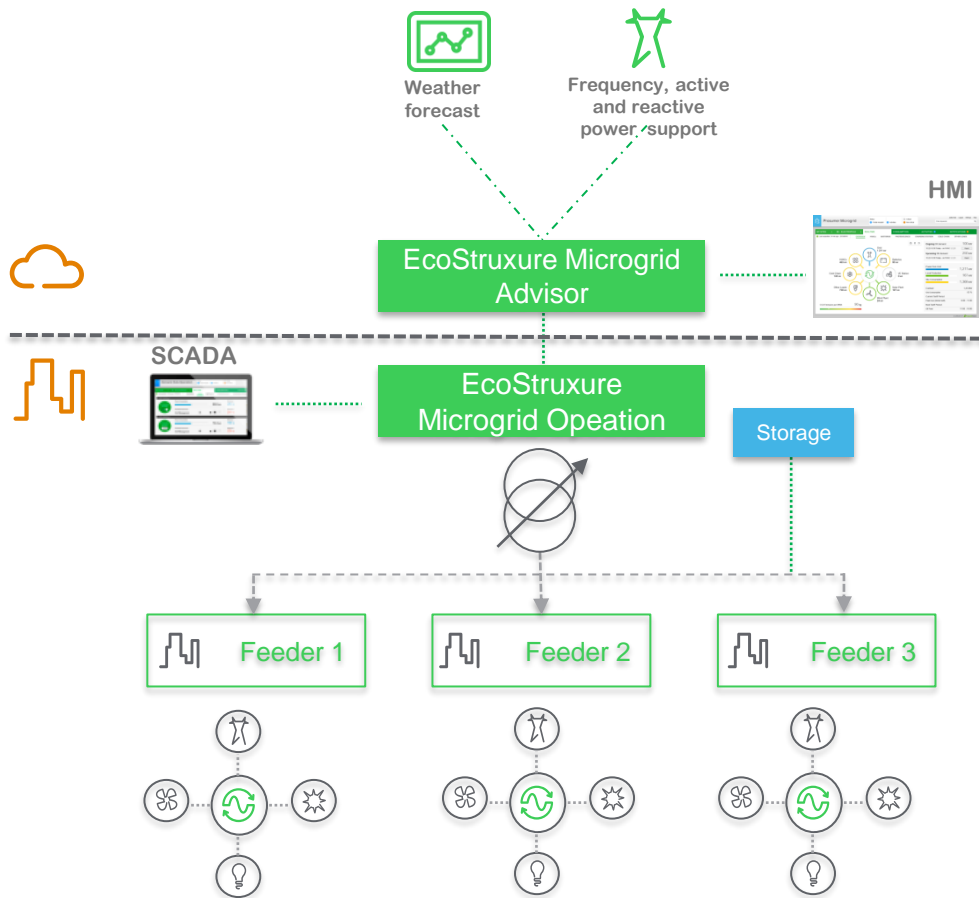


Smart meters



LV grid digitization software

Solution Architecture



Energy Management System

Forecast and manage self consumption + frequency support

Power Management System

Manage island mode and SoO

Minera SGrid Transformer

Eliminates the impact of voltage fluctuation

EMS functions

Remote monitoring & forecasting

Monitoring Power / Energy and other KPI for each DER using a web access

Self consumption

Control energy storage and PV system for maximizing the energy consumption from PV system

Frequency Regulation

Control local generation and BESS to support frequency regulation

Off grid mode preparation

Control DER for anticipating on future off grid events

D/R needs

Forecast the necessary curtailment or over consumption requirements

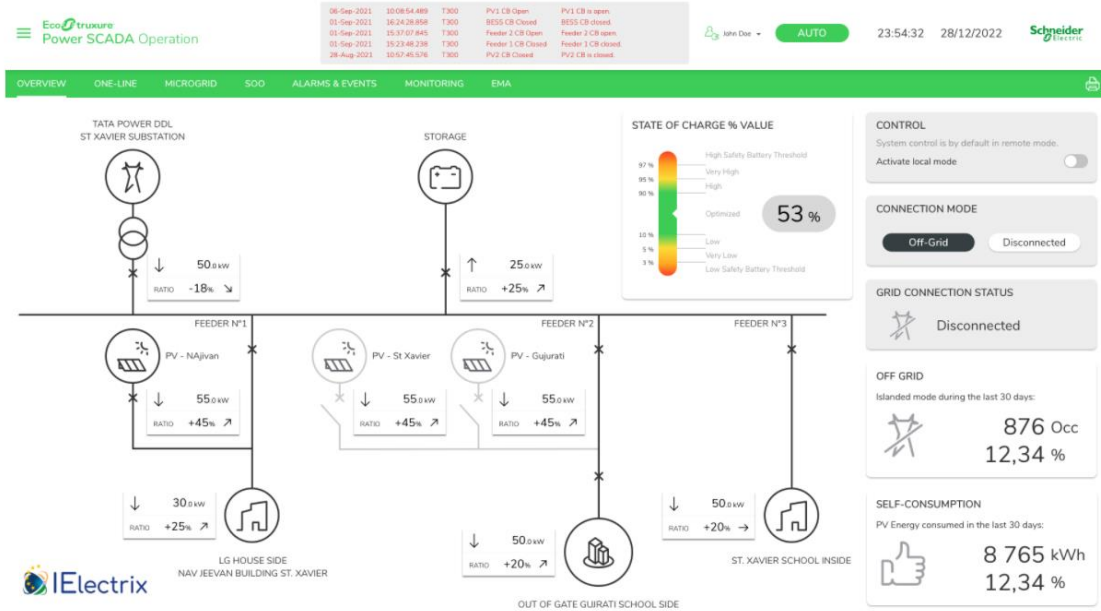


Life Is On

Schneider Electric

PMS functions

Local monitoring	Monitoring Power / Energy and other KPI for each DER using a local HMI
Grid connection management	Automatically manages connection / disconnection from the grid
Load shedding	Cut-off non-priority loads when the production can not reach the consumption
Protection relay and earthing scheme management	Manage the protection relays and if needed the global system protection when islanded



Life Is On



Schneider
Electric