



# Aggregated Prosumers and Energy Communities

Luigi Lanuzza

22 April 2021



# Evolution of the energy sector



## Decarbonization



*Renewable energy will represent 78% of new capacity generation in 2050*

## Electrification



*Global Electricity demand will increase of 60% before 2040*

## Digitalization



*Global digital technology investment rise up of 55% before 2025 (Fossil fuel excluded)*

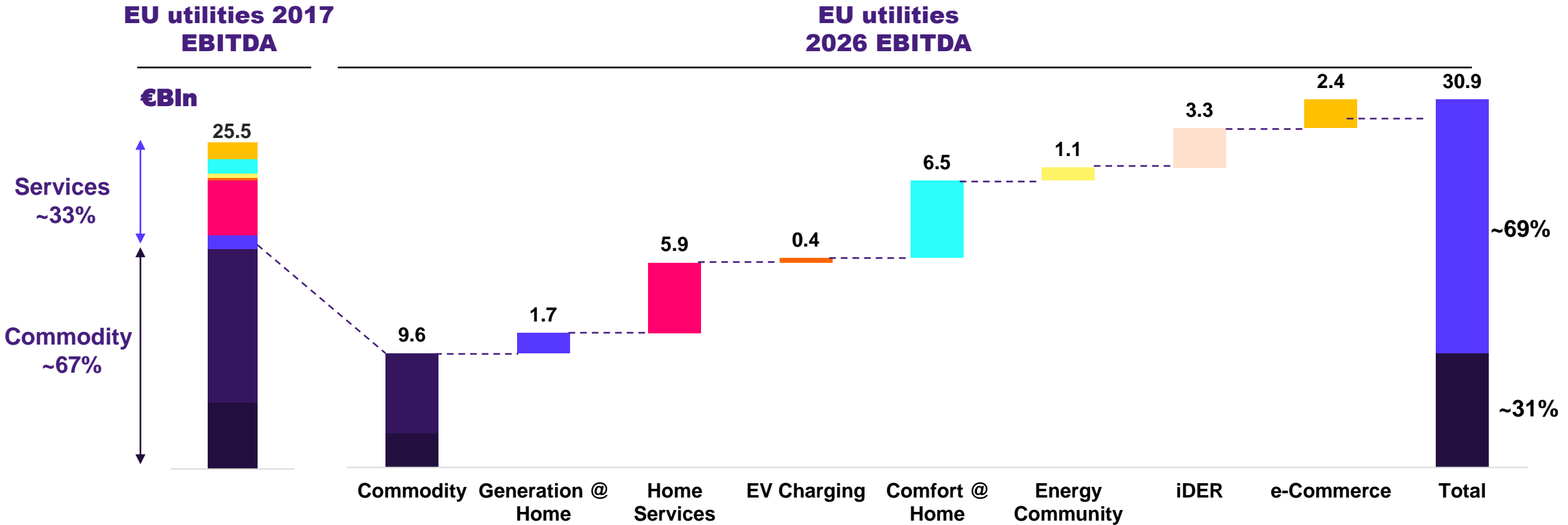
## Customer new needs



*Customer needs more and more personalized services*

## A transformation triggered by global trends and digital technology

# Value is moving from commodity to services...



...and energy communities are a key factor for electric services growth

# Enel X Mission

---

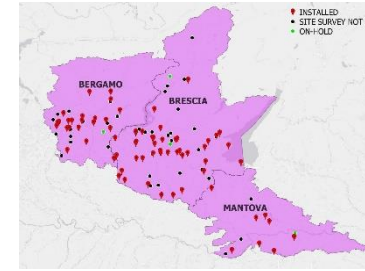
- ✘ Supporting customers to **electrify their energy uses**
- ✘ Assist customers in **decarbonisation and use energy more efficiently**
- ✘ **Extract new value from Enel's assets** by offering new products and services



The image features a futuristic digital interface set against a dark blue background with glowing light effects. In the center-left, there is a computer monitor displaying a circular gauge and several data points. To the left of the monitor is a 3D bar chart with four bars of varying heights. Below the monitor is a keyboard. To the right of the monitor, there are several floating icons, including a sun, a cloud, and a gear, along with horizontal lines representing data. The entire scene is framed by a large, circular, dashed-line graphic that resembles a stylized 'C' or a data path. The overall aesthetic is clean, modern, and high-tech.

# Residential Aggregation

# Distributed Energy Resources (DER): Residential Aggregation in Lombardia



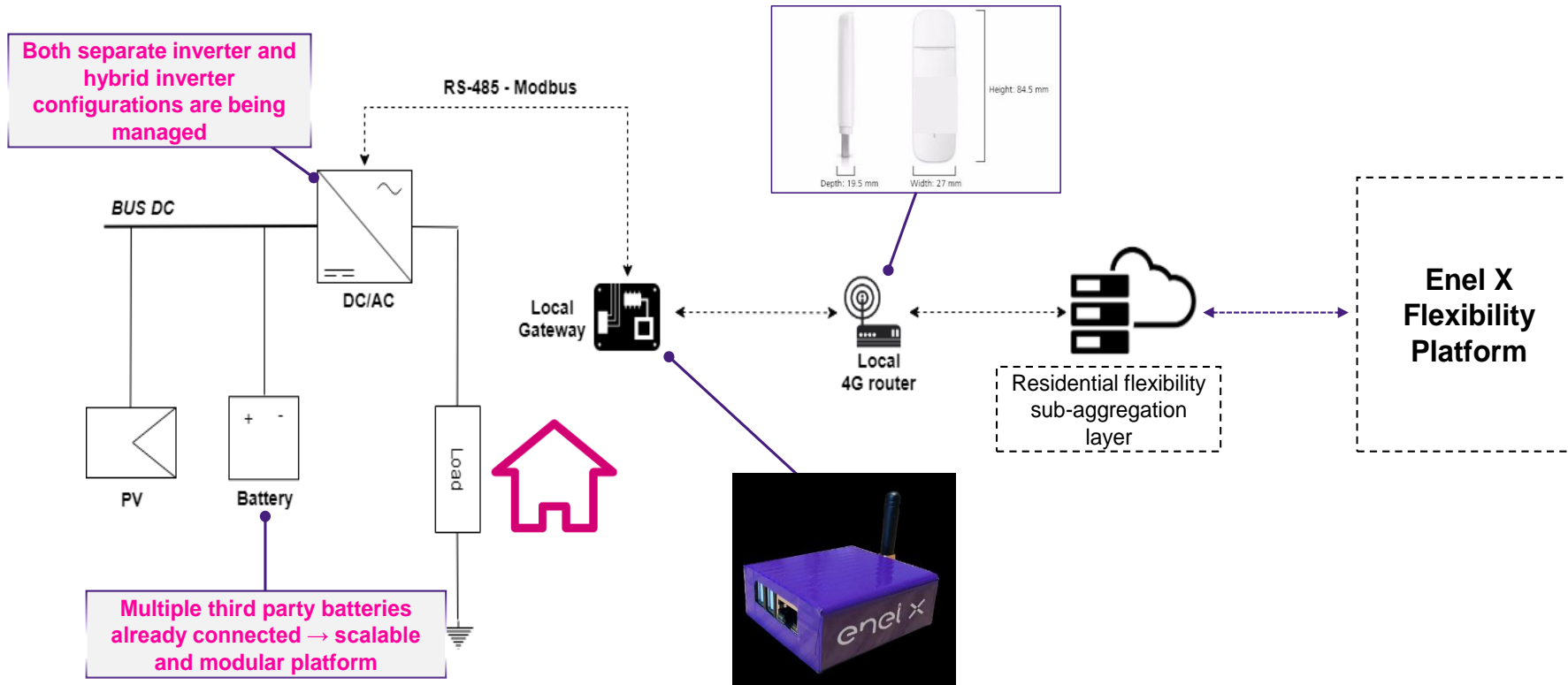
## WHY

- **Market:** it is growing exponentially and about **1 PV plant out of 2** is sold in Italy jointly with residential storage: **Expected ~12GW res. storage by 2024 globally (0,5GW in Italy)**
- **Regulation:** Italy is looking for **regulatory developments** to make DER active resources for grid balancing.
- **Competition and technology:** DR framework for residential has to be developed now, ensuring **interoperability**

## WHAT

- **Project:**
  - **Aggregated 100+ storage** batteries owned by residential customers in Lombardia, in order to apply to **UVAM (DR)**
  - **RETROFIT:** Enel X to setup **connection layer** among batteries/inverters and its own DR platform
- **Partners:**
  - **RSE** provided contacts from Regione Lombardia of customers who want to participate, and is analysing results together with Enel X and another company participating to the pilot, in view of dissemination and provision of data for regulators evaluation

# Modular and scalable platform for a massive retrofitting..



Interoperability as key element for unlocking potential of aggregated residential batteries, with high complexity and limited remuneration

...of **real** customers assets



Call Center first contact



SMS Campaign on prospects no answering



E-Mail Campaign to provide more detail about the experimental project



On site interview on future technological development



Calls and on-site support to customers



Web ADV Campaign



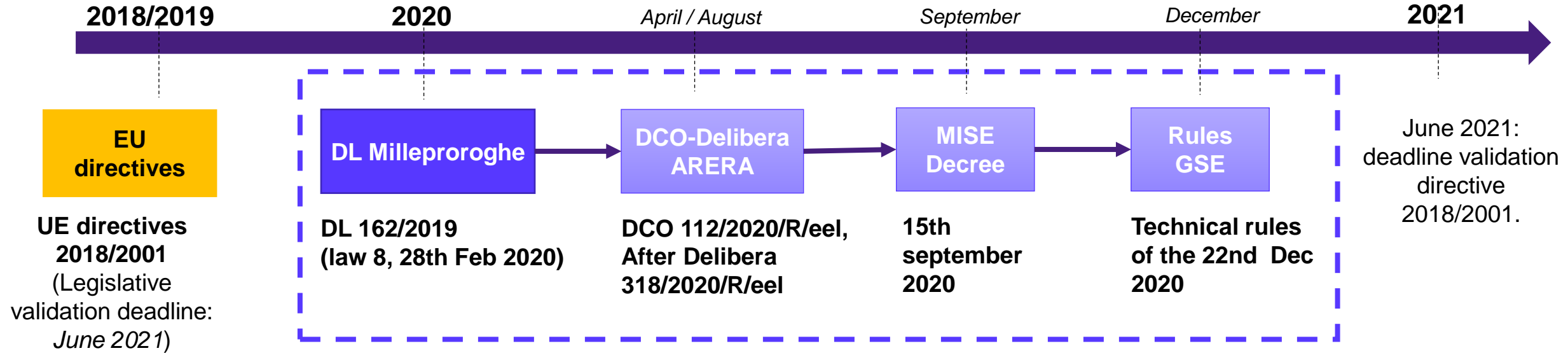
Press release on local newspapers



An aerial view of a city with a blue overlay and glowing network lines. The lines are white and blue, forming a complex web of connections over the city. The text "Energy Communities" is centered in the middle of the image.

# Energy Communities

# Roadmap of the Normatives



Regulatory advance of Milleproroghe 2019, valid up to 60 days after the transposition of the EU RED2 legislation

Country	REC	CEC	Entry into force	Law
Austria	✓	✗	Jan 2020	Erneuerbaren Ausbau Gesetz 2020
Belgium	✓	✗	May 2019	Decree of Gouvernement Wallon
France	✓	✓	Nov 2019	Loi 1147-2019
Portugal	✓	✗	Oct 2019	Lei-Decree n.162/2019
Italy	✓	✗	Feb 2020	Decreto Milleproroghe

# Main Configurations...

enel x

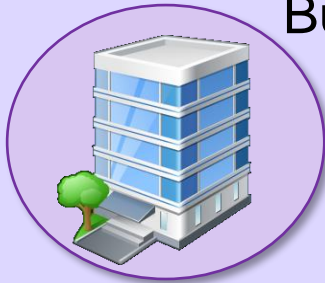
AC

Perimeter

Incentives

Power

Legal entity



Buildings or Condominium



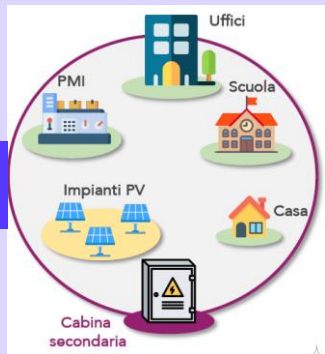
Incentive value: € 100 / MWh  
 Arera reimbursement: 8 € / MWh  
 Energy component reimbursement: 50 € / MWh



Optional

Mandatory

REC



Cabinet MV/LV



Incentive value: 110 € / MWh  
 Arera reimbursement: 7 € / MWh  
 Energy component reimbursement: 50 € / MWh



200kW

- Limitation in maximum power and in the physical perimeter (secondary substation) represent barrier for a fast deployment and involvement of ESCOs
- On the other hand, explicit incentives enable consumers awareness and easiness of choice, aggregated settlement simplifies EC management and ESCOs can own powerplants

# ...in a fragmented market

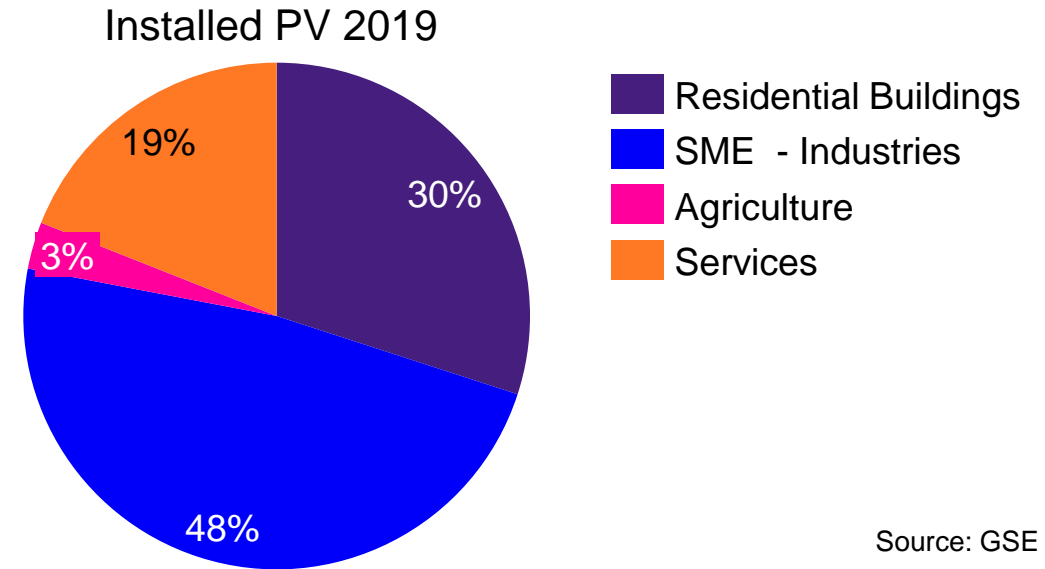
Industry  
(SME)

Tertiary  
(PA, Services)



Agriculture

Residential  
Buildings



Source: GSE

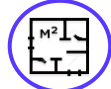
	Cumulated Installations @ 2019		Installed in 2019		AV. [kW]
	N°	MW	N°	MW	
Agriculture	29.421	2.548	805	25	31
Residential	721.112	3.434	51.117	226	4
SME	35.838	10.274	2.010	361	180
Services	93.719	4.610	4.258	139	33
<b>TOT</b>	<b>880.090</b>	<b>20.865,30</b>	<b>58.190</b>	<b>751</b>	

- REC should be extended to all the typologies of consumers (currently only SMEs, citizens, PA)
- Coexistence of net metering (SSP) can limit diffusion of Energy Communities and batteries (incentive is on virtually self-consumed energy thus enabling further diffusion of storage)

# ...and with a pilot already in operation



## Condominium



48 apartments



6 buildings



54 Smart Meter installed



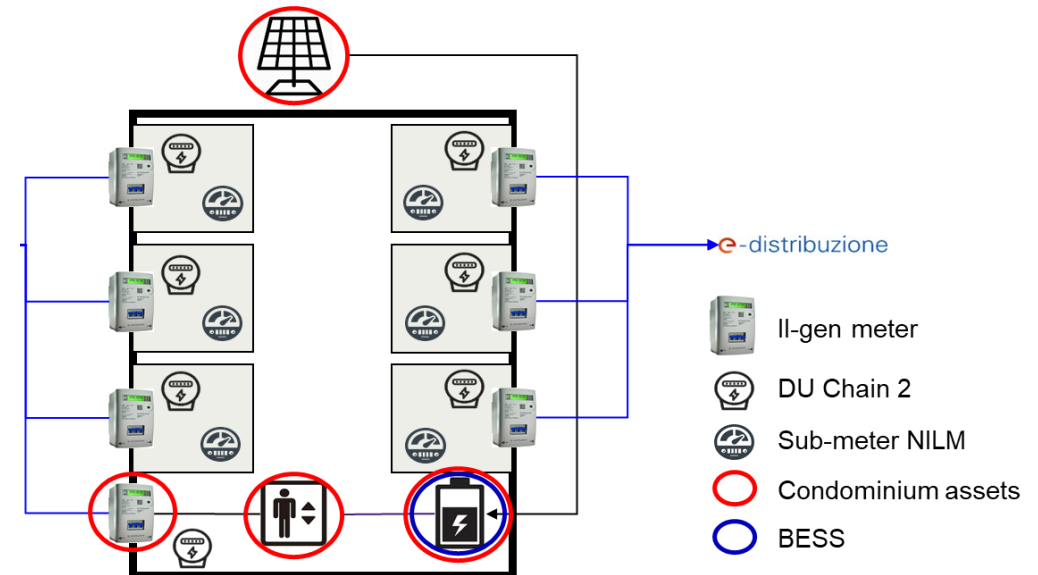
6 x10 kW PV to be installed



12 x9,6 kWh Storage to be installed

## AIM

- Monitoring of electricity consumption through NILM and DU Chain2 devices installed near the PODs (single and condominium);
- Elaboration of the energy model of the condominium and its validation through real production / consumption data
- Use of the model for the simulation of a virtual network of collective self-consumption;
- Use of the model and consumption / production data collected for the distribution of incentives between condominiums



**Thank you**

[luigi.lanuzza@enel.com](mailto:luigi.lanuzza@enel.com)

