



**Agenzia nazionale per le nuove tecnologie,  
l'energia e lo sviluppo economico sostenibile**

# The Renewable Energy Communities in Italy

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# An introduction to CEP: key elements

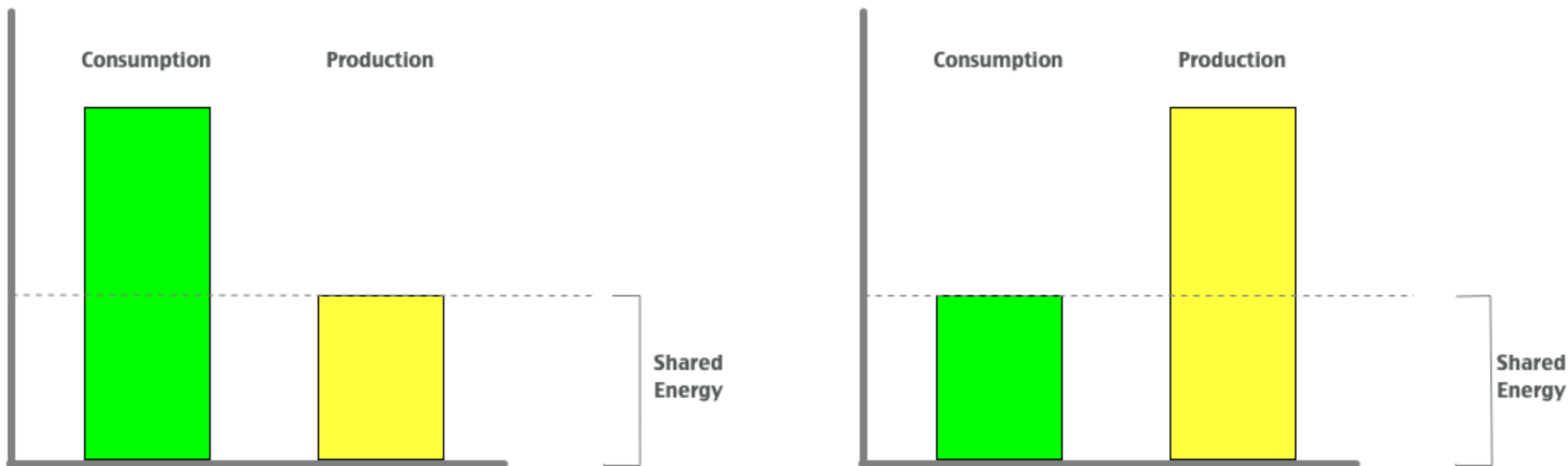
The **Clean Energy Package for all Europeans (CEP)** is a collection of directives from the European Communities introducing several key elements for the reduction of the global warming:

- The **Renewable Energy Communities (REC)**: legal entities that allow the sharing of energy, produced by renewable sources, among participants;
- The **Citizens Energy Communities (CEC)**: legal entities that allow the sharing of energy, even if produced from fossil fuels;
- **Shared energy**: the amount of energy exchanged among the participants in the same community;
- **Energy exchange**: the possibility, for a **prosumer**, to sell energy to a consumer directly;
- The main directives, regarding the Energy Communities are:
  - Renewable Energy Directive II (RED II) – 2018/2001 that focus on opportunities for REC;
  - Energy Market Directive II (EMD II) – 2019/944 that focus on CEC and renovation in the European energy market

# The essential concept: the shared energy

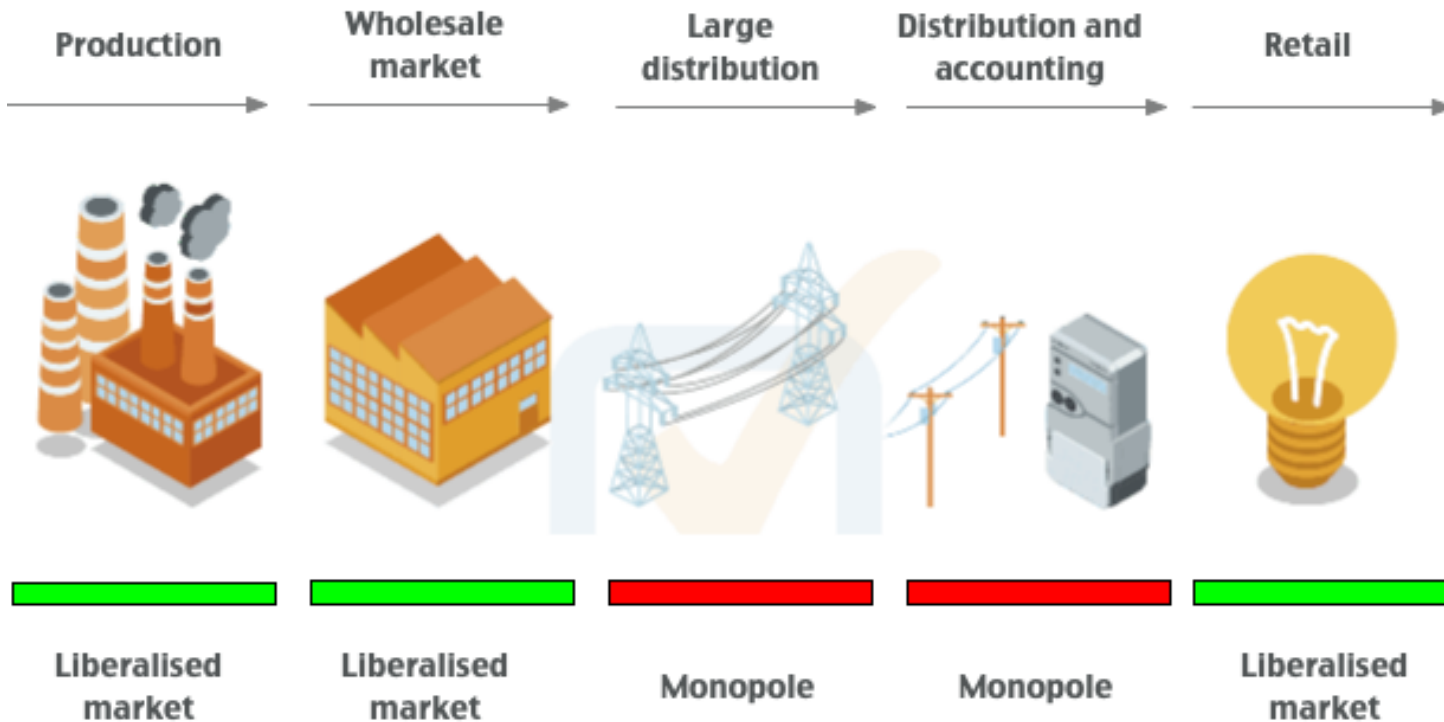
Currently, the concept of **shared energy** is essential to illustrate how the REC can work in Italy.

The shared energy is defined as **the minimum between the amount of energy produced by sources and the amount of energy consumed by the whole community, at the same time**



# The Italian Energy market

In Italy, the energy market is **partially** open, as shown in the following image.



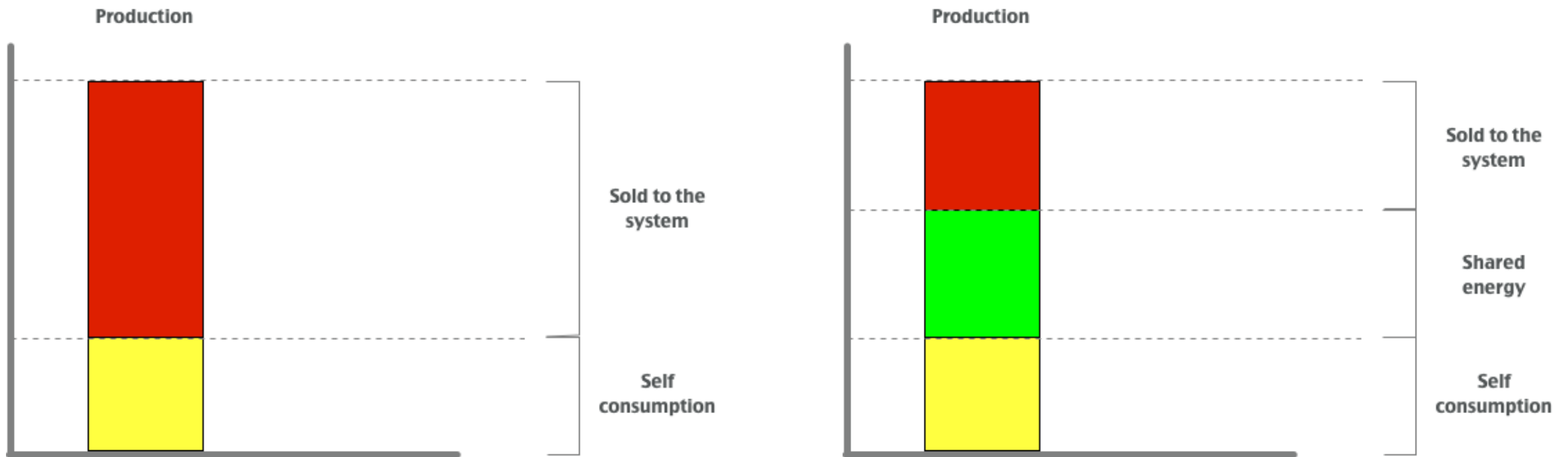
Basically, **production and buy&sell** parts are open to the market, while the large infrastructure, as high-voltage network and local distribution parts are under the control of the government by national companies.

**However**, the market is not (yet) open to citizens or **prosumers**.

In this scenario, small producers can sell energy only to the network manager (**GSE**) and not to other citizens.

# The Italian Energy market

Given the daily production of energy, in the past (left) the producer can use a part of the energy as **self consumption** and sell to the system the other part. With energy communities, it can also **share** its energy with the others and can receive an economic incentive from the system (reimbursement).



Without EC, the producer can only sell the surplus energy to the system

With EC, it can share energy with the community having an **economic benefit**

# The Italian laws – first experimentation

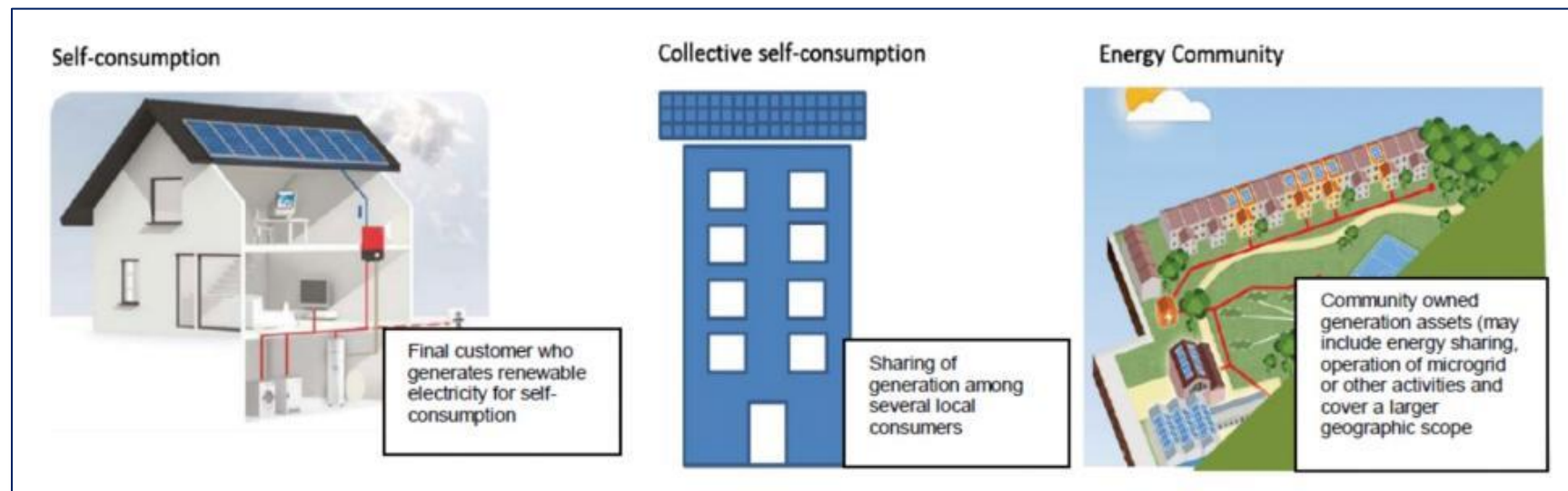
In Italy, adoption of the CEP required 2 steps:

1. With law nr. 8 28<sup>th</sup> February 2020 a first **experimental phase** has been started with a lot of **limitations**:
  - **Renewable sources** with a limit of 200 KW of peak power;
  - **EC Geographical dimension** under to the same building or under the same Medium to Low voltage cabin;

**Collective self consumption** under the same building or condominium

**Energy Community** under the same MB/TB cabin

**Reimbursement rate** depends on the different configurations, and it is larger (about 18 € MWh) for the collective self-consumption





# The Italian laws – first experimentation

These limitations forced the creation of **very small, localised Ecs**, often led by public entities, as Municipalities.

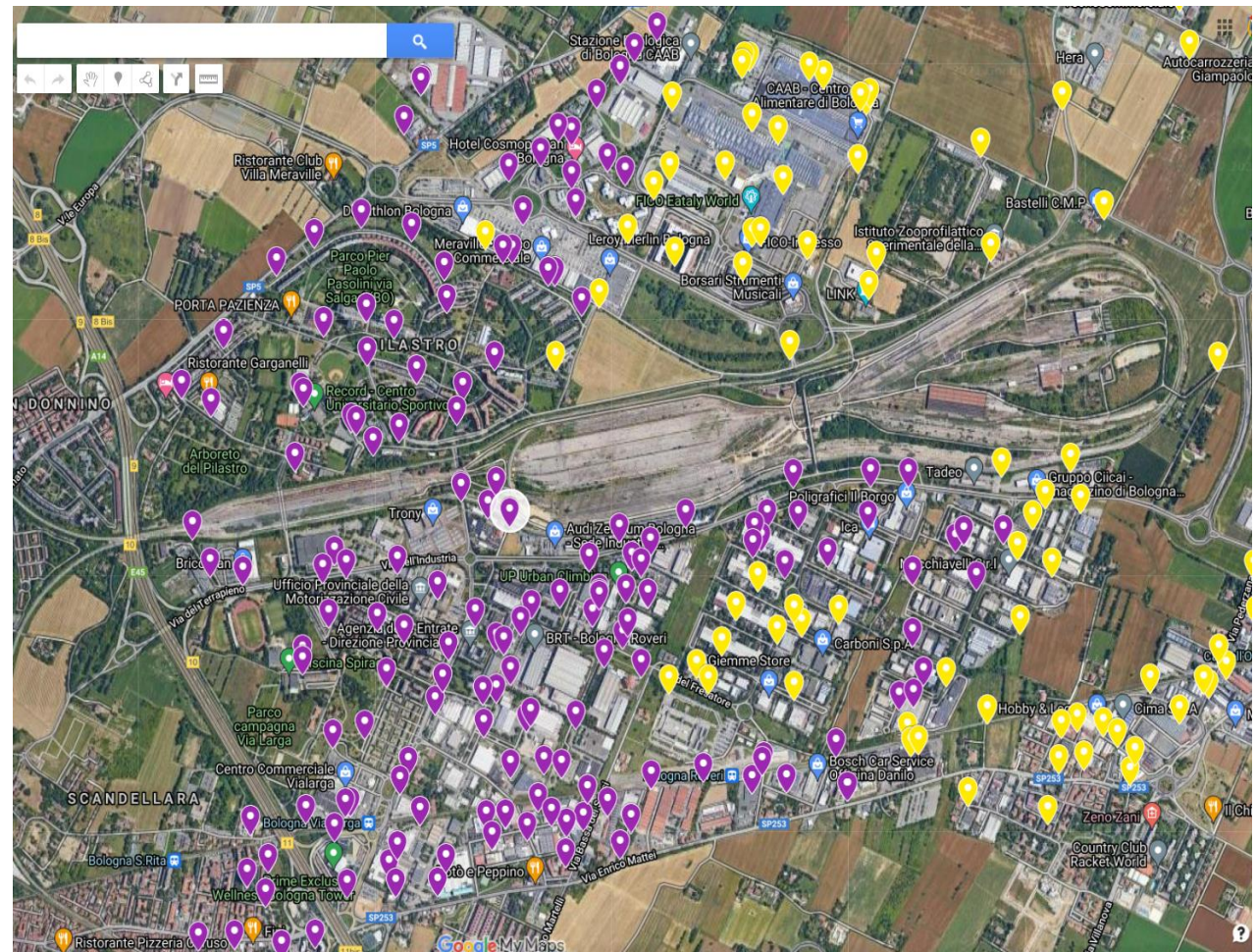
The image shows the situations in an experimental area for the GECCO project: each point is a MT/LT cabin, while the colour indicates that the cabin is controlled by a different High Voltage cabin.

Instead of two communities, the law forces the creation of tens of communities.

This impact strongly both the management and the economic behaviour of the single community.

For example, a smaller and localised EC contains, probably, consumers having the same consumption profile, reducing, by this way, the whole shared energy.

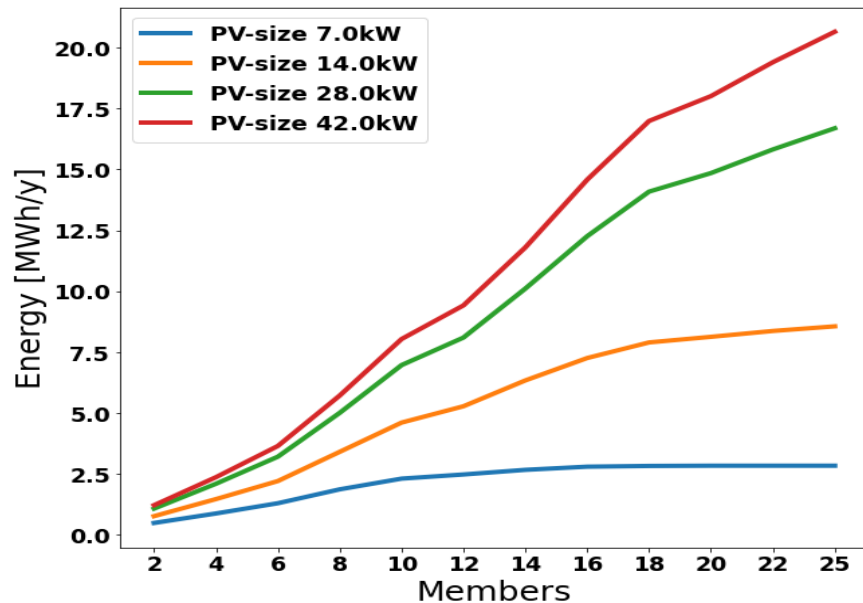
Also, for small communities, costs related to management can be simply too large.



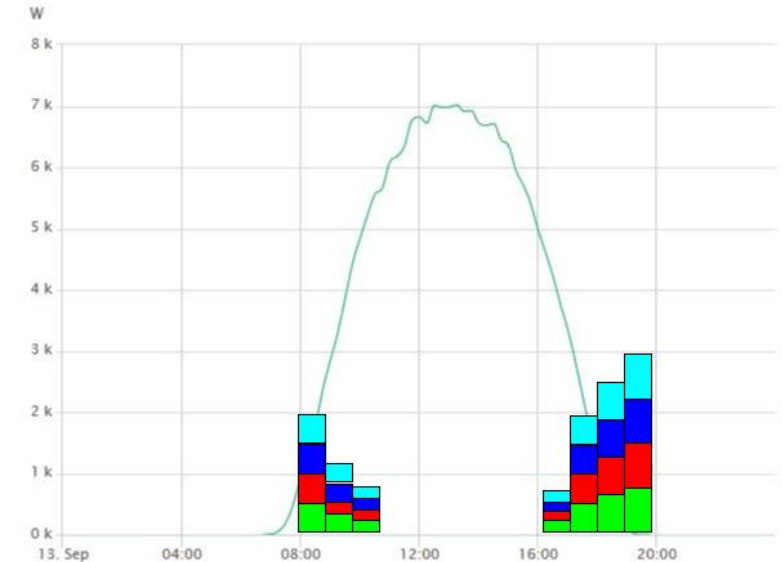
# The Italian laws – first experimentation

The initial analysis shows that, in small communities with users having the same consumption profile, the number of participants is very limited.

For example, as image on the right, 4 different consumers use the whole energy produced only during several moments in the day, while the largest part of the production is not used directly but sold to the market with a less income.



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For example, as image on the left, the shared energy is not increased when the number of the participant increases consistently.



# The Italian laws – first experimentation

In the first experimentation, the direct selling of energy among a prosumer and a consumer is **forbidden**: energy is piped into the electric network.

Each EC must declare itself to the GSE, indicate the relevant data of the participants and individuate a **reference person, a manager**, for the EC itself that interact with GSE.

The GSE entity oversees the measuring process for the shared energy (that requires the measurement of the production and the consumption) and **calculates the reimbursement rate** upon these measures.

The total amount is charged to the manager that must distribute the different incomes to the other participants, following the **internal rules** stated by the EC itself.

The consumers pay their electric bill, based on their consumption and the contract with the energy provider and, after about 3 months, the GSE returns the incentives calculated for the period under analysis.

# The Italian laws – second phase

The new law, dlgs 199 8<sup>th</sup> November 2021, modifies partially the previous law, adopting the CEP.

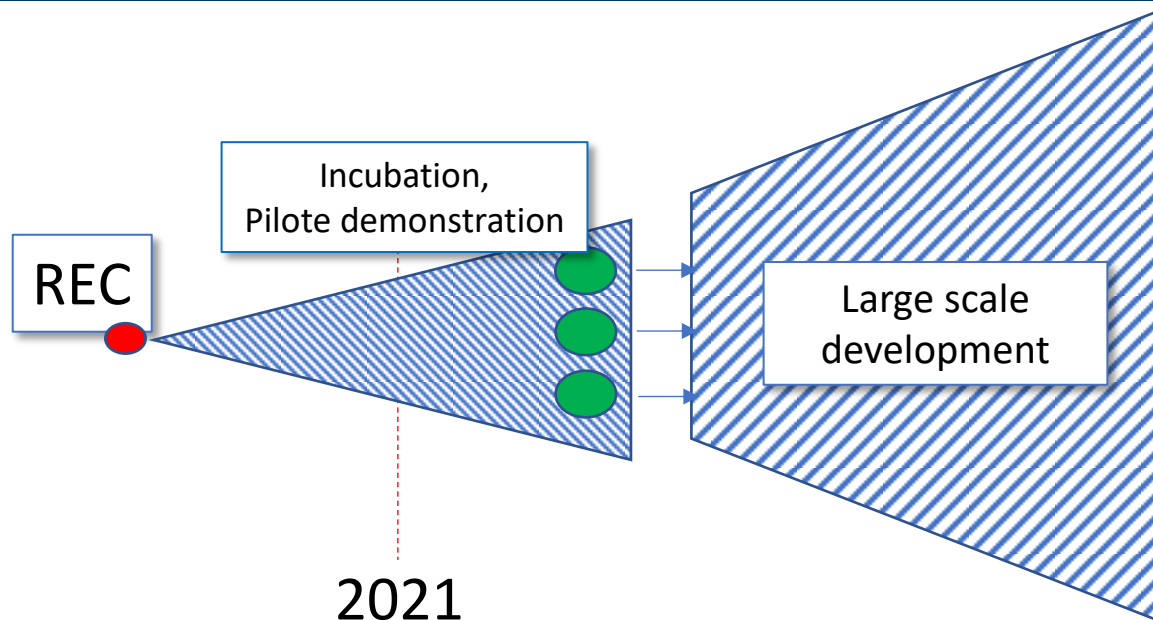
In particular:

- The **geographical dimension** is extended to the high voltage cabin, leading to larger and complex communities;
- The **maximum installed power**, for each power plants, is increased **to 1MW peak**;
- Each community can have **more than a power plant** but each respecting the previous limitation;
- **Direct energy sell** is allowed (prosumer to consumer);

However, the **technical rules** are not already available. This means that is not possible to further analyse possible contexts or economical scenarios with these new rules.

In any case, it is expected that, enlarging the communities and empowering the citizens, the impact of these new EC will be greater.

# The ENEA vision for the further development of ECs in Italy



Information



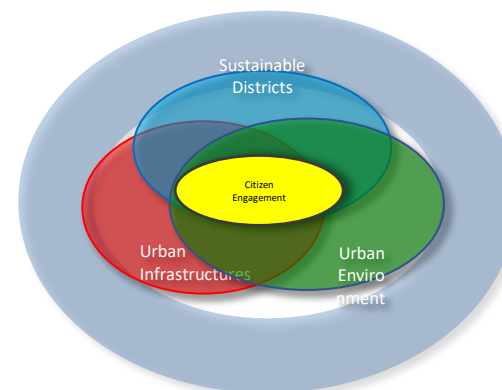
Dissemination



New policies



Juridical models



Enabling technologies



Business Models

# Some experiences in Italy

**GECO** – [www.gecocommunity.it](http://www.gecocommunity.it) (only in Italian) I funded by EIT-Climate KIC and wants to create a large EC in the area of Pilastro/Roveri in Bologna (northern Italy). The area is quite large (see image before) and includes both residential and industrial zones. On the territory, there are 2 large high voltage cabins, allowing the creation of two large communities. At the moment, the involvement of **local stakeholders** is the most demanding activity, because the scenario (legal and economic) is not clear. During the experimentation phases, different feasibility studies have been realised by the partners, but the dimension was too small to allow a possible external investment for energy plants installation. These studies will be adapted to the new scenarios when the new regulations will be published by authorities.

**Magliano Alpi** – <https://cermaglianoalpi.it/> is an initiative **led by the Municipality** (Magliano is a small town in Piedmont Region) that creates the first EC in Italy. The main idea is to use some photovoltaic sources, installed on some public buildings, to support citizens living in the near area. Most of flats in the selected zone are social housing and the support aids directly families suffering of energy poverty, exploiting one of the most relevant aspect of the Ecs, the help to citizens and the creation of a community.

One of the most interesting aspects of this community is the approach to the replicability that the different organisation involved adopted: the idea was not only building a community but also share the knowledge with other municipalities and support artisans in creating new business models related to EC.

# Some experiences in Italy

**San Giovanni a Teduccio (Naples, southern Italy)** – It is the first EC with a clear objective of supporting families living in an area with large social problems and inequalities. In the past, this was an industrial area with a lot of families leaving nearby. During the last 40 years, the industries moved away creating a critical situations for people living in the area. The project uses these industrial areas for upgrading the buildings. The CER will support directly more than 40 families living in the area.

**Berchidda & Benetutti** are two small towns in the Sardinia Region that want to become energy-independent in the next future by adopting different technologies for production, management and storage of energy. Even if the model may not be replicable in other areas, because the energy independence is not possible, it is the first essay for approaching a centralised system for managing energy demand and production, supported by storage, that will become of primary relevance in the next future.



**Dr. Gianluca D'Agosta** is working on ENEA since 1999 and, in the last two years, has focused his interest on developing tools for supporting the cycle of life of Energy Communities in Italy.

This activity started with the GECO project and will continue with different initiatives, at national and European level.

In the past, he made experiences on different European projects, since the 7<sup>th</sup> Research Framework Programme.

At now, he is responsible for ENEA on the implementation of different research projects.

**THANK YOU for your attention!**

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