innovazione
ambiente
finanza

HUB green PROJECT

AI-driven platform for peer-to-peer renewable energy exchange

By Hub Project Italia srl – Energy Services Company

Problem 1 vs. Solution

Counteracting CO2

From 2016:

- +90% city dwellers: breathed unhealthy air
- 4,2 : millions of deaths due to pollution
- +50% : global urban population exposed to pollution levels +2.5 the safety limit.
- 60% global greenhouse gas emissions: generated by energy.

Cities occupy only 3% of the Earth's territory, but they represent:

- 60-80% : of energy consumption
- 75% : of carbon emissions

Goal 11 Agenda 2030

Make cities and human settlements inclusive, safe, durable and sustainable

New energy models

- We propose new energy models that allow the creation of widespread RECs and large-area VPPs
- Sustainable mobility through public charging stations
- Fintech at the service of energy

Source: Department of Public Information, United Nations

Problem 2 vs. Solution

Need for renewable and accessible energy

2021:
- +35%: cost of electricity for families compared to the previous year
- +41%: gas price

2022:
- +200% electricity and gas prices during the year.
- +0,5% energy poverty in Italy.

(Sourse: Oipe)

Goal 7 Agenda 2030

Ensure access to affordable, reliable, sustainable and modern energy systems for all

Autonomous generation of renewable energy

- Turnkey solutions for the production of energy from RES plants
- Energy requalification and consumption efficiency – ESCo

- Through the promotion of self-production and sharing, with the creation of CERs, we bring benefits both in environmental and socio-economic terms.
- With our innovative solutions, energy costs are reduced, promoting the use of renewable energy and encouraging interaction and cooperation between citizens.

The three paradigms **of the Green Deal**

Digitization

Creation of Smart Grids and use of IoT, to optimize energy distribution, avoiding waste and maximizing safety.

Decentralization

With RECs, transform the role of the final consumer from passive user to energy producer (prosumer), attentive to energy autonomy.

Decarbonization

The public push towards this objective favors openness to digitalisation and decentralization with many benefits for the environment.

What we **propose**

Construction of RES plants

The aim of the project is to create widespread renewable energy source systems and a platform to facilitate the aggregation, establishment and management of RECs.

Blockchain technology

Blockchain to guarantee reliability, security, transparency and traceability of data, distributed across multiple IT nodes.

Secondary marketplace

It is possible to sell or purchase energy quotas (shares) of shared systems through the secondary marketplace.

Investiments &micro trading

We promote P2P energy exchange in network environments and investments in Green Finance through crowdfunding in the circular economy

01

cVPP Comunity virtual power plan

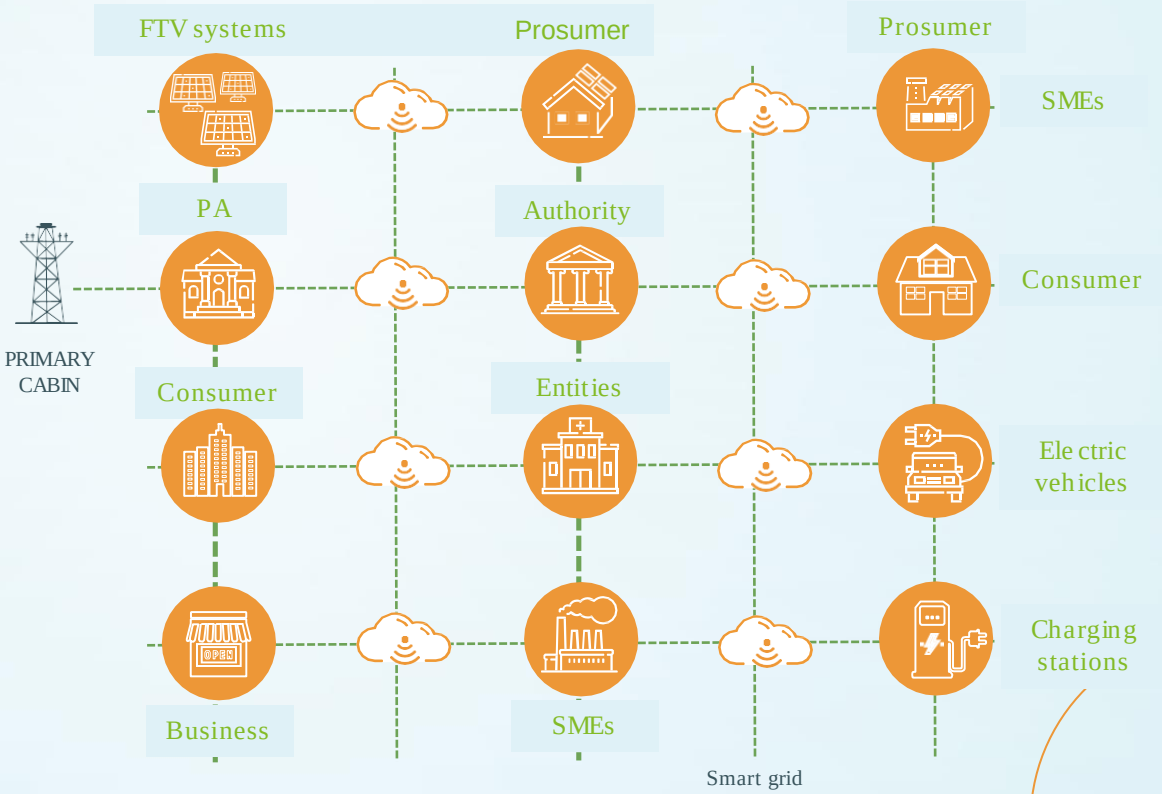
a new model of self-generation of energy

VcPP , virtual community energy plants

We create an intelligent ICT platform, which aggregates distributed energy resources in a coordinated and managed portfolio, which allows sharing of the electricity produced.

The VVP acts as a single entity similar to a conventional power plant, enabling better integration of distributed generation into the existing energy system

It is possible within the platform that manages the VVP:
1. Schedule energy consumption
2. Allow access to distributed DER
3. Promote energy supply and demand with more effective management of grid voltage



Benefits of **VPP**

Environmental

- Reduction of CO2 emissions and reduction of waste
- Diffusion of renewable sources

Social

- Social aggregation
-Increase in the culture of sustainability
-Fight against energy poverty

Economical

- Incentives, reduction of energy costs,
- Revenues from the sale of excess energy produced

02

The digital **fintech platform**

360° RECs management, from creation to development with technological finance

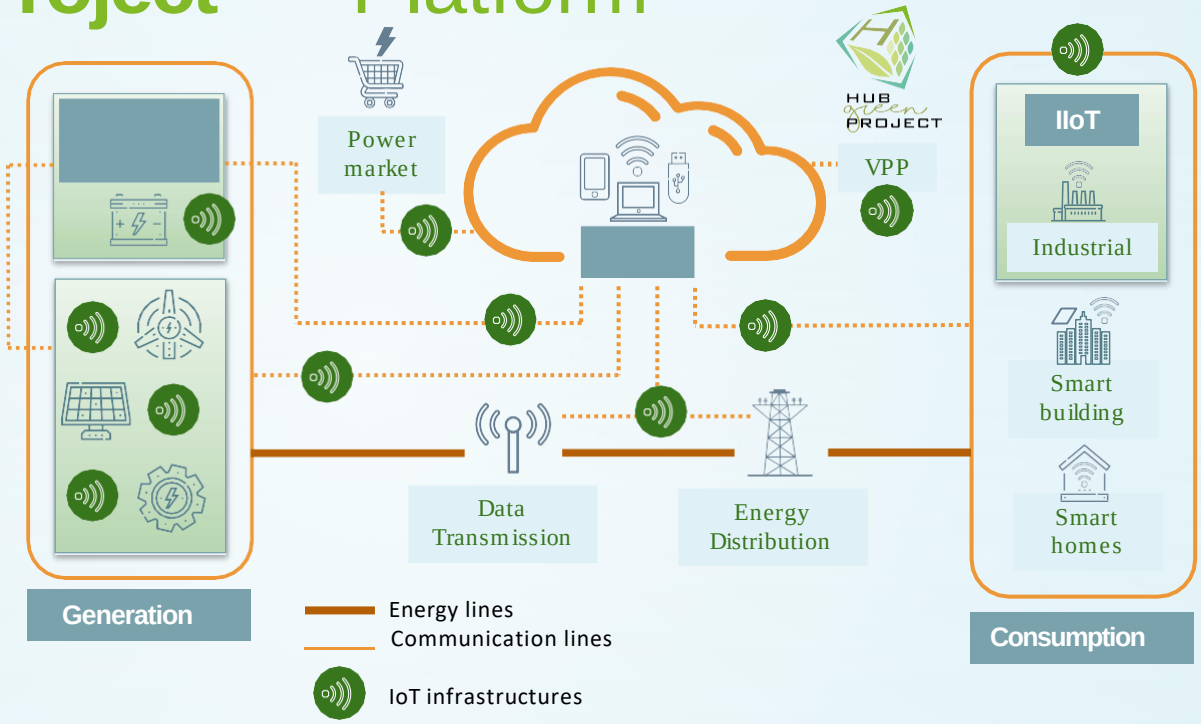
Hub green Project Platform

SMART GRID

Through the Smart Grid (intelligent network), we use pre-existing electricity networks renewed and enhanced with IoT information and communication technologies

Digital technology is used to monitor and manage the transportation of electricity from all generation sources.

Networks transform from unidirectional to bidirectional to meet the needs of end users.



OPTIMIZE resource use and operation
MINIMIZE costs and environmental impacts
MAXIMIZE network reliability/stability/resilience

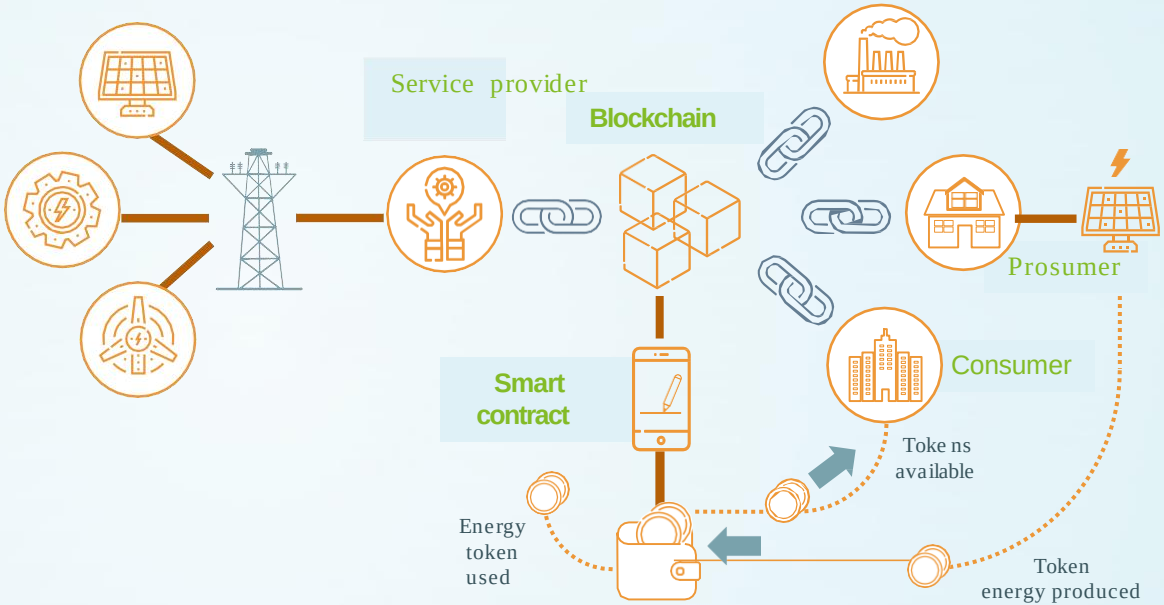
Hub green Project Platform

TOOLS

Blockchain: practical application of DLT* with the creation of an Internet of Value, a digital network of nodes that transfer value through cryptographic algorithms and rules. It ensures immutability, traceability, verifiability and disintermediation.

Smart contracts (SMART CONTRACT) are computer protocols that on a blockchain facilitate, verify or enforce the negotiation or execution of a contract. Being self-executing, they save time and money

*DLT = Distributed Ledger Technology



DECENTRALIZE: overcome the intermediary towards a distributed system
INCREASE SECURITY: share both energy and information, in a transparent way with a guarantee of authenticity
GENERATE TRUST: they facilitate the delegation of authority between interested parties without the supervision of a third party

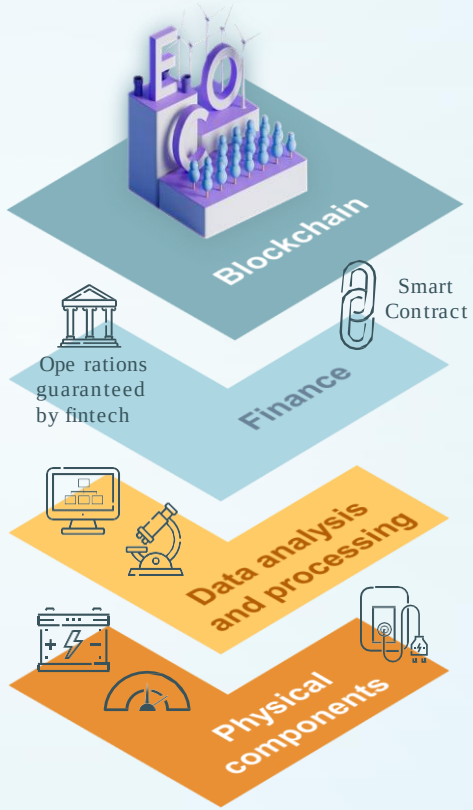
Platform **Structure** - Levels

Finance. The architecture of our platform realizes a marketplace in which prosumers' electricity supply meets consumer demand.

Data analysis. Through our service the consumer will have the opportunity to generate his own energy supply plan, selecting the right mix of energy produced by utilities and/or prosumers present in the local area.

Blockchain. The platform has a blockchain layer preparatory to recording data relating to energy generation and consumption.

- Distribution of proceeds
- Exchange between members of the currency earned from the production and sale of energy
- Investments by members or external parties in REC plants



-Technological layer for enabling P2P energy sales
-Generation and notarization of data and money transactions

- Formulation of algorithms
- Processing
- Measurements
- Data management
- Trend analysis

- RES systems
- Counters and sensory devices

Platform **benefits** for the community

Smart contract

- Security and reliability in contracts without intermediaries.
- Possibility to define exchange rules in the CER

Energy management

- Record energy production and distribution
- Allow energy exchanges between RECs members
- Allow the RECs to exchange energy externally

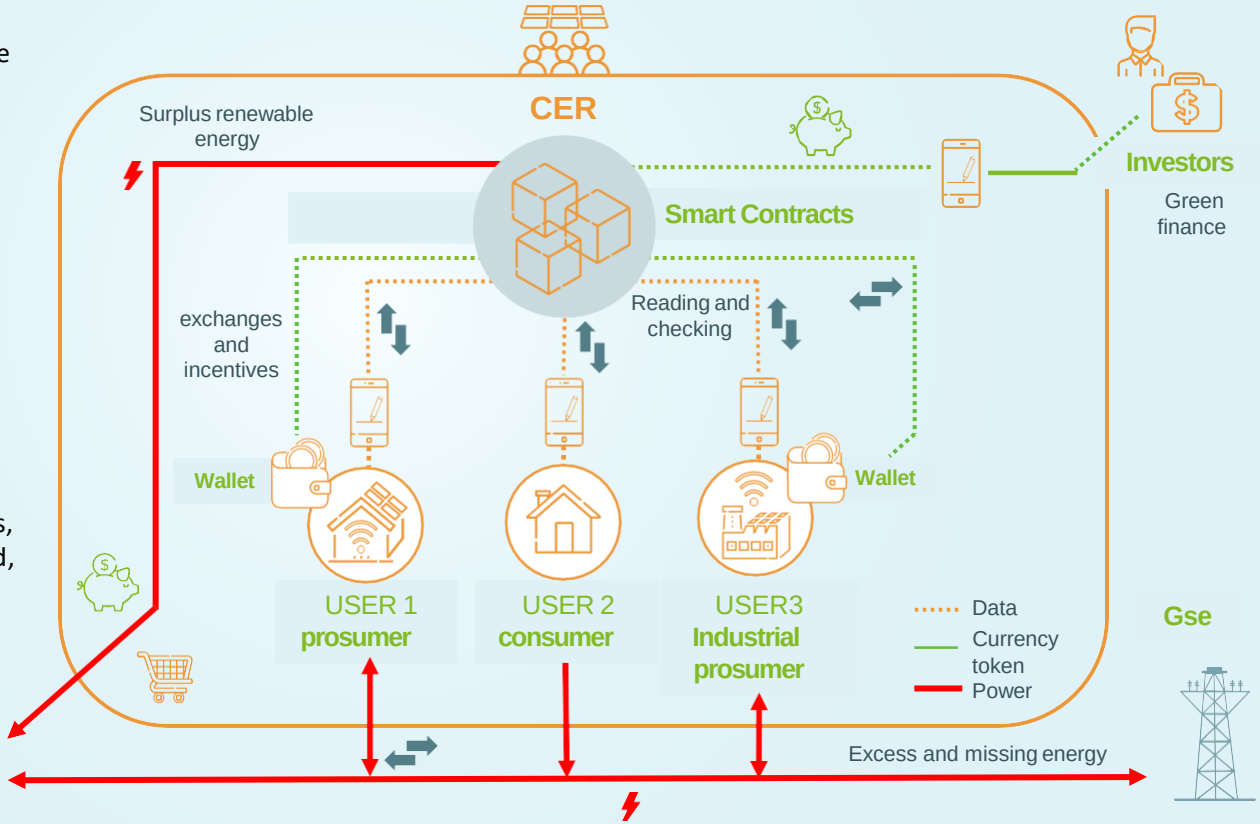
Financial management

- Manage economic transactions securely and transparently between community members
- Allow secondary market
- Allow investments in RECs

The Platform serving communities

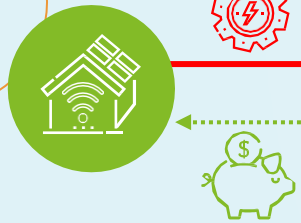
The platform can support the electricity system by helping to reduce overloads and inefficiencies resulting from the injection of energy into the grid by prosumers that is not consumed locally.

- The quantity of energy generated by the Prosumer and the relative price that the same undertakes to apply for the sale are written in Blockchain.
- On the Consumer side, the supply plan will be entered to certify the energy mix selected by the customer.
- Through the use of Smart Contracts, invoicing operations are automated, remunerating all the actors involved.



How we create **the marketplace**

PROSUMER



MARKETPLACE

Governance

UTILITY
To match the energy supply of prosumers with the energy demand of consumers

Attività

Record prosumer contribution and pricing

Record consumer supply plan

Allocate compensation to Prosumers

SOLUTION

1. Distributed blockchain

It allows the creation of a trusted space in which to record all data relating to energy generation and consumption

2. Definition of commercial rules

To regulate prosumer and consumer access to the marketplace and to establish pricing/usability limits of the service

3. Smart Contract

Automation of contractual clauses. The contract will be automatically executed via data entry into the blockchain, on both sides of the marketplace

4. IoT data and consumption management

Possibility of receiving data relating to energy consumption and making it available in near-real-time from utilities

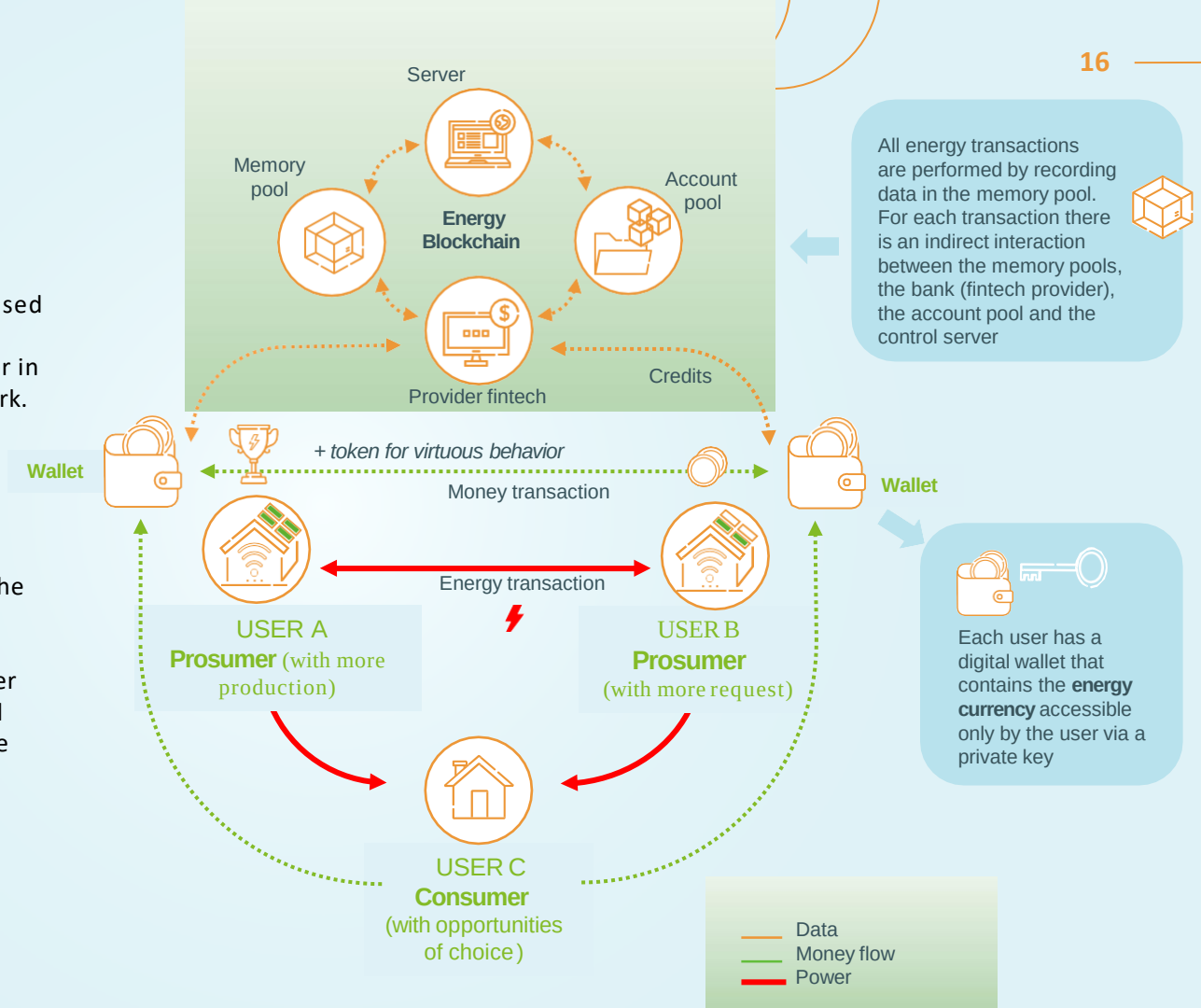
Peer to peer

Internal secondary marketplace

Prosumers can become sellers or buyers based on energy supply and demand respectively.
USER A: the prosumer records the sales offer in the blockchain and shares it with the network.

Those who self-consume the most green energy are immediately rewarded through a token system.
USER B: submits an energy purchase offer, notarized in blockchain and shared within the network.

Automatic match between the purchase offer and the sale offer, the transaction is carried out and the requested value recorded in the blockchain is paid.
USER C: the consumer purchases energy at prices lower than the national market and deposits the energy costs in the seller's wallet in the form of currency/euro.



All energy transactions are performed by recording data in the memory pool. For each transaction there is an indirect interaction between the memory pools, the bank (fintech provider), the account pool and the control server

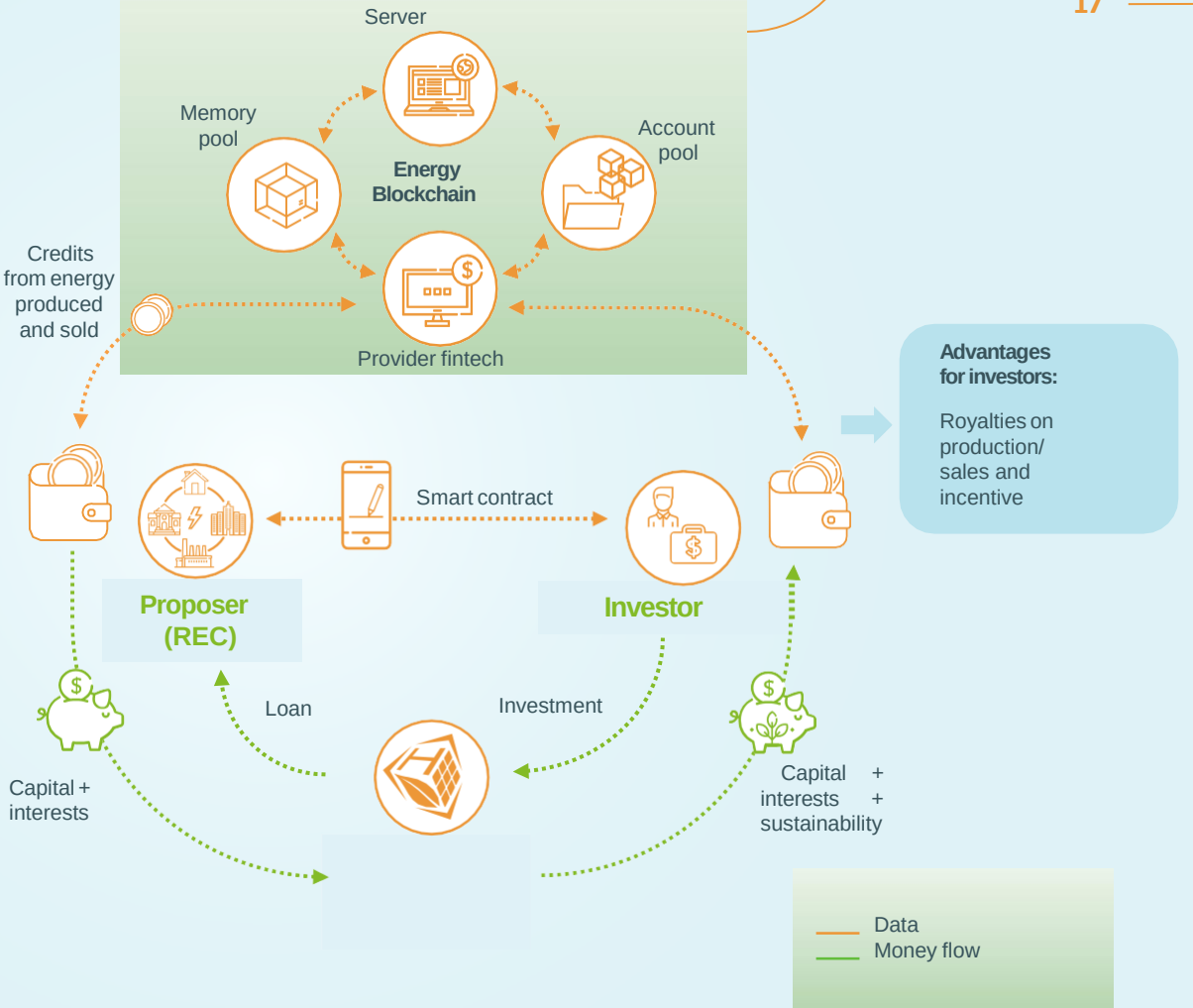
Each user has a digital wallet that contains the **energy currency** accessible only by the user via a private key

Crowdfunding

Third party investor opportunities

Equity crowdfunding, widespread ownership and community energy projects are playing an ever-increasing role in the energy transition.

The return for investors (6-9%) is also attractive due to the relatively low risk of the investment (in most cases business plans guaranteed by incentives), as well as the ethical value.



Italian Energy Market

Numbers

24,258,000

Number of residential users

580,000

Prosumers number

0.206 €/kWh

Gross energy price

2,500 kWh

Estimated annual domestic user consumption

5,000 kWh

Estimated annual prosumer consumption

5,300 kWh

Estimated annual prosumer production

Analyses: Politecnico di Milano / management engineering department (2018-2022)

Economic benefits of the subjects involved

Consumer

30% / 40%

Savings on the invoice

Prosumer

+ 60% / 80%

Annual savings from access to the service

Platform

+ 10%

Incremental revenue from Fee for new service

Additional benefits for the subjects involved

- Control over your consumption
- Green satisfaction

- Attractiveness of the circular economy

- Sale of additional services created thanks to the blockchain

Analyses: Politecnico di Milano / management engineering department (2018-2022)

03

What the **platform** looks like

some images of the prototype

The digital platform

It is a digital infrastructure capable of connecting different systems to each other and exposing them to users through simplified and integrated interfaces (mobile app/website).

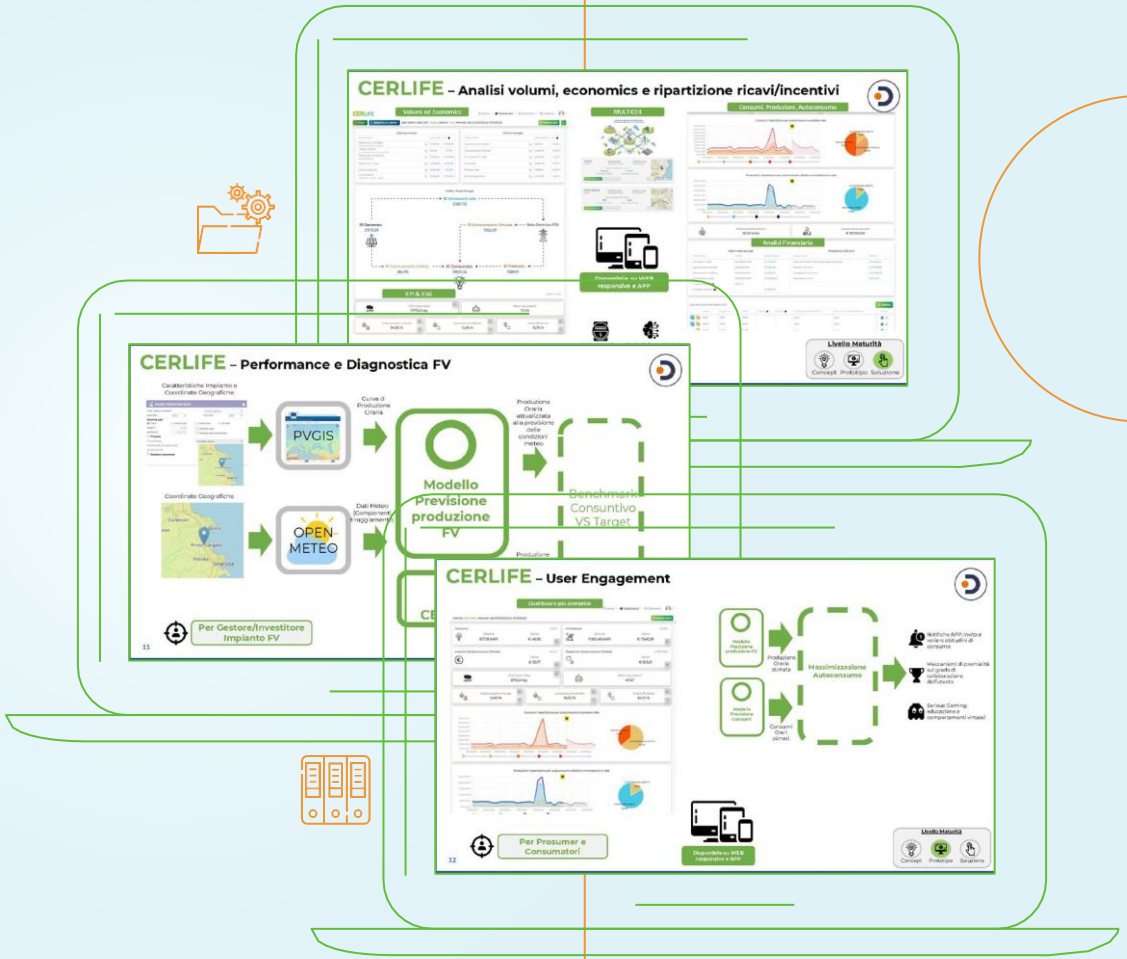
The platform ensures access to contact and contextual information needed to support the Energy Community in the production, management and use of energy.

The platform is dedicated to people without a specific skill in the energy or management field and reduces the gap that users suffer in accessing REC services.

Supporting **diagnostic tools**

Hub Green Project uses advanced performance and diagnostic tools to collect and process the data necessary for CER.

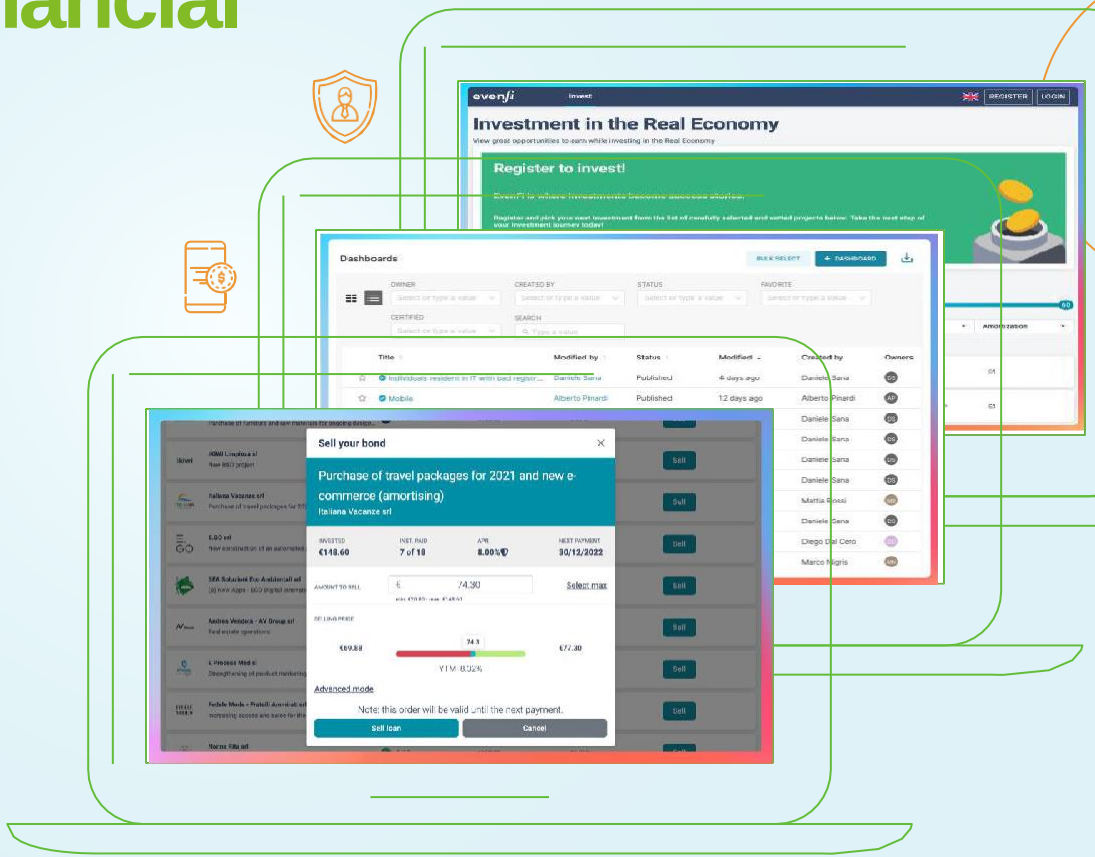
Our platform through user engagement technology allows user involvement in innovative processes to support the energy and digital transition.



Supporting **financial instruments**

Hub Green Project uses fintech technology to enable financial transactions within the platform

Our SaaS platform based on banking and financial APIs fosters financial innovation, accelerates time to market, reduces cost barriers and enables the growth and development of Ecosystems, such as RECs.



Thanks!

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