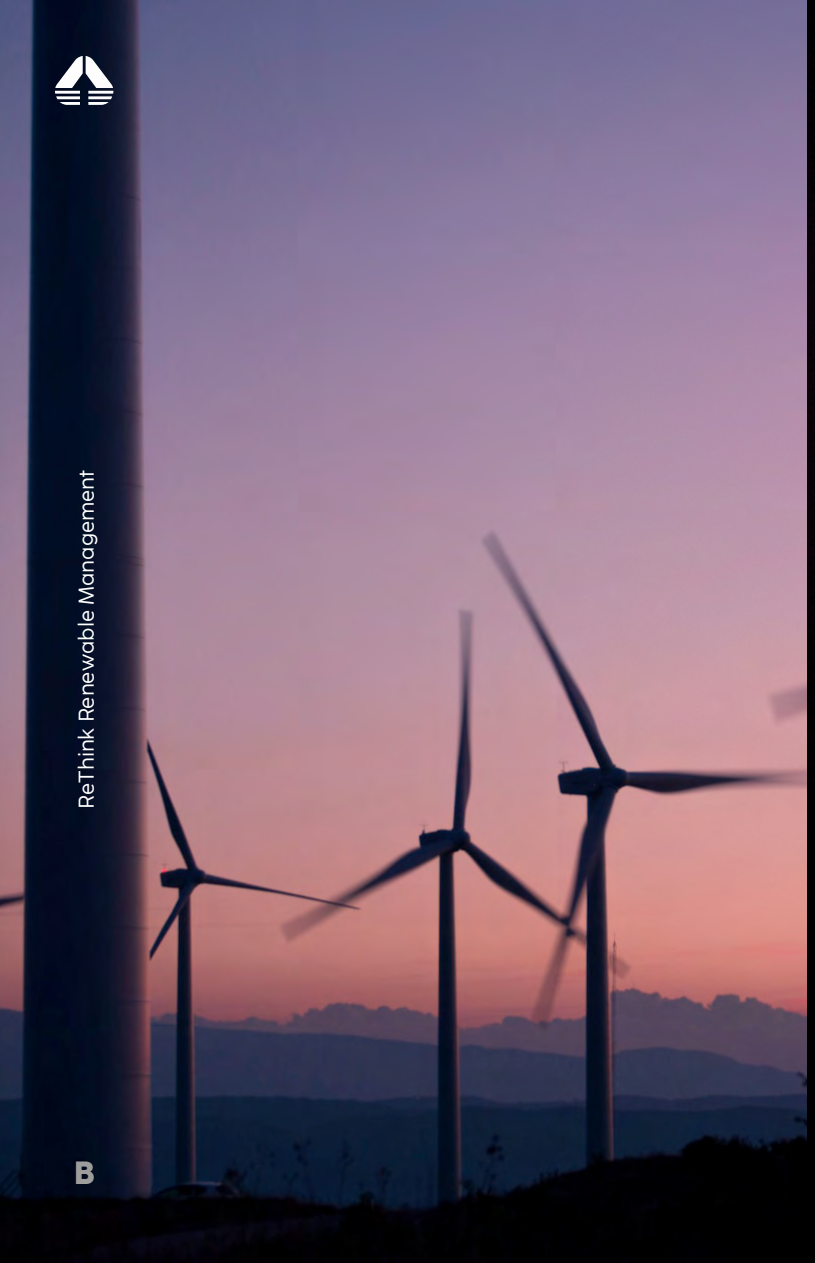
APPENDIX

Renewable Management



1 The Renewables

- The Integrated National Energy and Climate Plan 2030 (**NIPEC**) marks the beginning of a **major shift in our country's energy and environmental policy** towards decarbonisation.
- In 2022, **renewable energy sources** were utilized across all sectors - electricity, heat, and transport - covering approximately **19%** of the total **energy consumption**.
- **Renewable Energy Communities** (RECs) are an effective tool for addressing climate change issues and promoting the adoption of sustainable energy sources.

2 Investments in Italy

- According to the GSE Quarterly Energy and Climate Report published in May 2023, **21 renewable energy communities** and **forty-six collective self-consumption configurations** with a **total capacity of 1.4 MW** were active at the end of 2022.
- The National Recovery and Resilience Plan (PNRR), specifically under measure (M2C2 Inv. 1.2), allocates a non-repayable investment of 2.2 billion euros to promote CERs in municipalities with fewer than 5,000 inhabitants, enhancing their development in alignment with environmental sustainability goals.
- The goal is to arrive by June 2026 with **15,000 Energy Communities**, at least **2000 MW** of installed renewable **capacity** and **a production of 2500 GWh**.

The challenges

Power generation from renewable energy sources (RES) allows prosumers to play a key role in the deployment of Energy Communities and the achievement of energy transition goals.

The challenges will be about:

- the **construction of plants** included in energy communities, collective self-consumption systems and individual self-consumption systems, favouring the dynamics of plant realisation with **participatory processes of the districts**;
- the **increase of energy production from RES sources**, with positive impacts on the optimisation of energy costs by members, thanks also to the incentive mechanisms provided and the possibility of redistributing the energy saving;
- the **centrality of the role of Energy Communities** within the investments foreseen in the Regional Energy Plans, with awareness raising on the local realities also through **promotion and communication processes**;
- the increase of the **culture of urban sustainability**, involving the segments of the population in a growing path of **awareness of respect for the environment**, promoting the dissemination of CERs also through consumer awareness of the importance of resources, **enhancing virtuous behaviour** that can also combat **energy shortage**.

Pending the approval of the incentive scheme by the EU Commission, the MASE has provided for economic resources **to produce 5 Gigawatts** of power that can be delivered by 2026, in addition to those for the Energy Communities that can be implemented under the PNRR measure.

The decree provides for the incentivisation of shared energy among community users, **with access to incentives** granted to both new plants and the upgrading of existing ones.

In the case of CERs realised in municipalities with less than 5,000 inhabitants, in addition to the incentive tariff provided by the GSE as a reimbursement, it will be possible to **access non-repayable incentives to cover 40% of the costs of building** plants and storage systems.

Our Approach

A Composable Platform for Utilities Infrastructure Management

Achieving the targets and measures set at national level requires a system capable of achieving different objectives:

- the ability to support the energy production process with an informed approach and reward mechanisms for community members;
- an overall governance of the consumer-prosumer ecosystem able to guarantee an informative return to stakeholders, to highlight the results achieved in terms of service quality and operational efficiency.

To support the management of infrastructures impacted by the PNRR investment lines in Heating, Water, **Power&Gas**, Waste, we have developed the **Neta Open Platform**: Engineering's answer to the management of **digital ecosystems** with established and emerging business assets and market technologies, centring value on the business needs of customers for the various market sectors.

What is it?

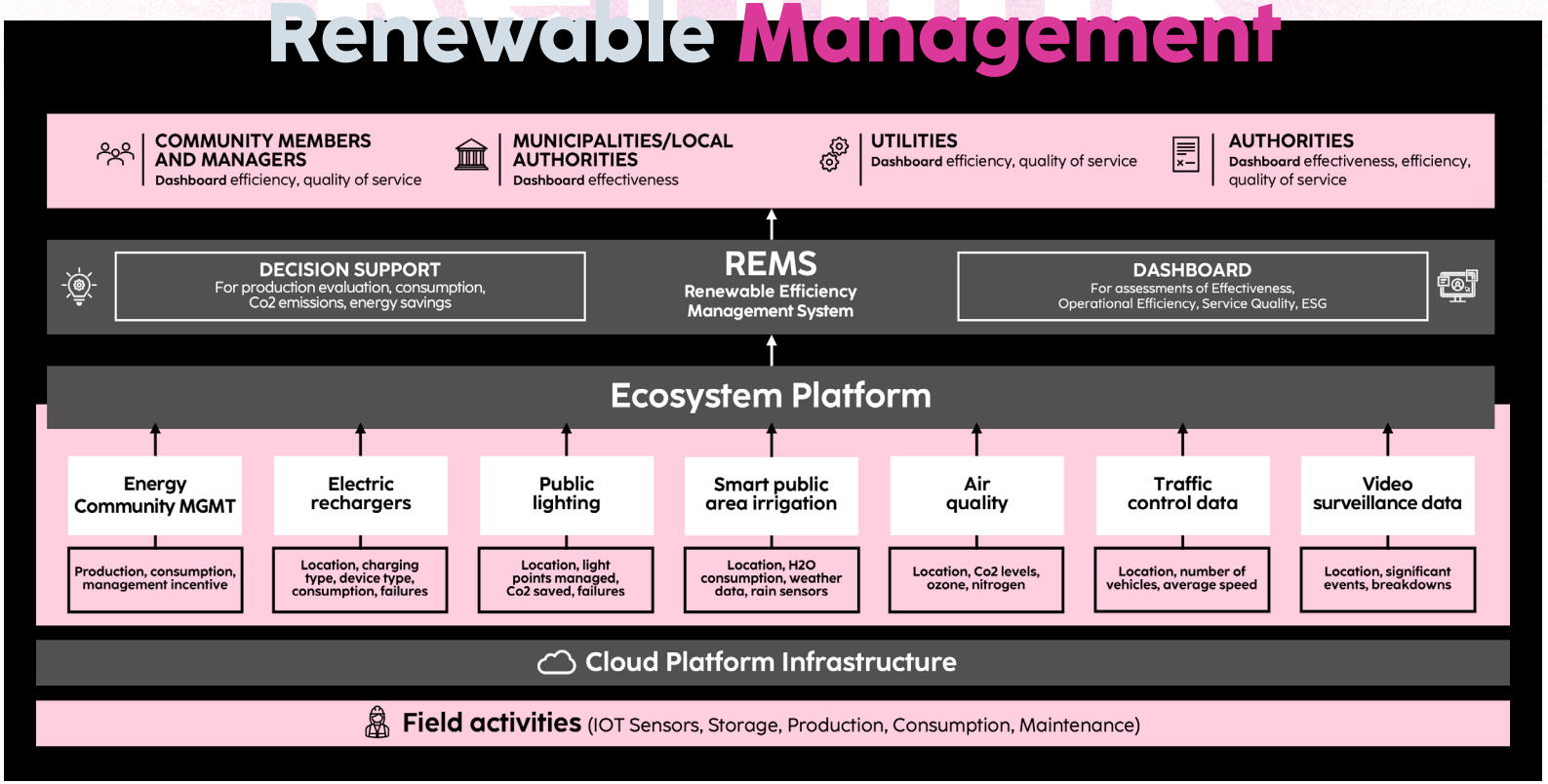
Renewable Efficiency Management System (REMS) is Engineering's vertical response for the management of Energy Communities within a broader **consumer-prosumer digital ecosystem**: created to support the activities of Energy Community members with an **end-to-end approach** applied to the business processes and operational activities envisaged for the production, distribution and consumption of energy from renewable sources, it contributes to the management of **a governance of the whole digital ecosystem**.

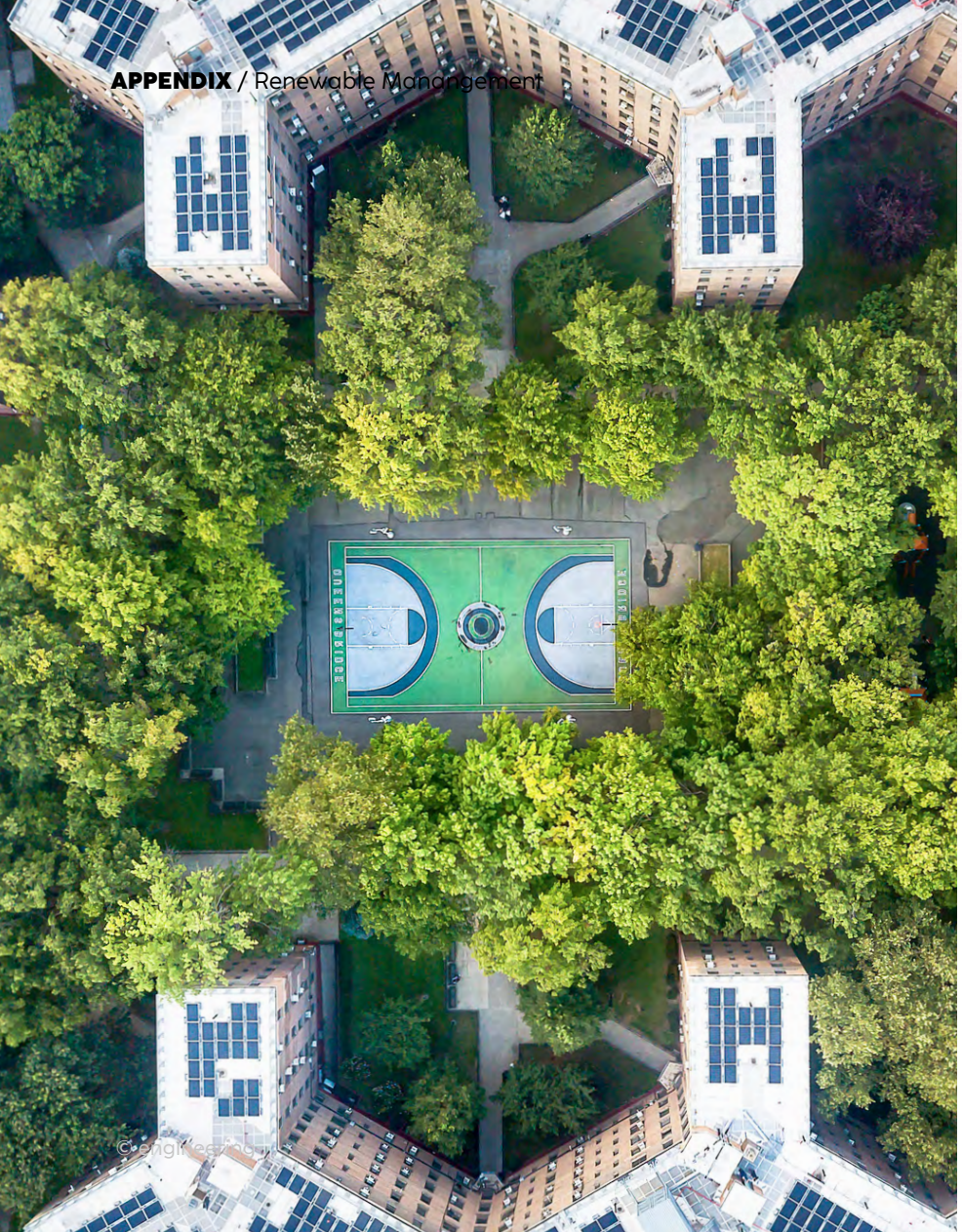
The REMS solution includes an Energy Community management module based on the **Neta Open Suite** called **EC - Energy Community**, capable of:

- enable **engagement procedures** for setting up communities and raising awareness of the best use of the energy produced at the best time;
- have dashboards to support the entire life cycle of the CER (establishment and configuration, operational management during operation, management of **incentives provided by the GSE**);
- evaluate the **trend of production**, individual and collective consumption, supporting the Manager through **indicators** that are also useful for the valorisation of the SDG-Sustainable Development Goals;
- **maximising user loyalty** to the Manager's services by valuing the most virtuous community participants.

Using a **Data Driven approach** and an integration architecture capable of enhancing the informative heritage of data, the Platform enables the constitution of a **Governance / Decision Support System** level which, operating through data mashup activities, guarantees a single access point for the observation of phenomena related to the consumer and energy consumer ecosystem (data from urban traffic control units, public lighting systems, air quality, ...), enabling an 'informed' approach for the various stakeholders involved.

Renewable Management





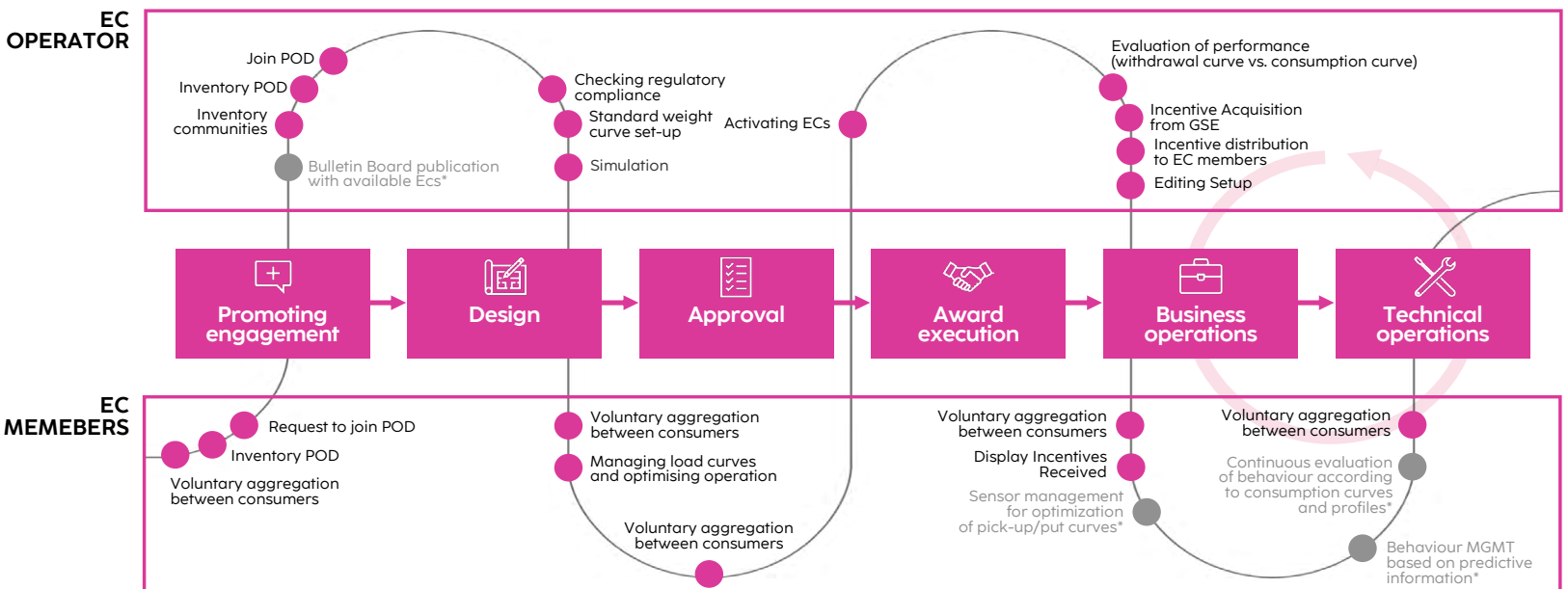
What does it do?

Energy Communities Management

EC – Energy Community allows:

- manage the onboarding activities of Community members through easy-to-use “guided paths;
- support the activities related to administrative fulfilments that characterise the entire life cycle of the energy community;
- support the **management process of the incentive** of the Gestore dei Servizi Energetici (GSE), through the activities of acquisition, evaluation and distribution of the same to the members of the community on the basis of configurable rules;
- **verify the sustainability** of CERs through **simulations** based on the habits of individual citizens and Renewable Energy Source plants;
- **analysing the consumption habits** of the community to promote actions to maximise the incentive.

CER: Journey map and functional coverage of Engineering's solution



OTHERS ACTIVITIES (aggregators, promoters, ESCOs, ...)

- Promotion of the initiative by the Aggregating Authority
- Selection of suppliers for the infrastructure section
- Collection of document kit for approval
- Monitoring the approval process
- Construction of the CER plant
- Monitoring
- Work progress
- Ordinary and extraordinary plant maintenance

● - Features not covered

Fig. 1 - Renewable Efficiency Management System

Governance/Decision Support System

The REMS ecosystem approach can **obtain information** from other business process management systems in the digital ecosystem:

- **electric device charging** - charging devices for various devices (cars, bicycles, scooters, scooters) with low, medium, or high power, either public (located at public streets and places) or private (apartment buildings, residential environments)
- **intelligent watering** - devices that remotely optimise the water consumption of public or private green spaces
- **air quality** - devices that can measure air quality or control emissions from production plants
- **public lighting** - intelligent devices that can be remotely controlled to optimise electricity consumption during the provision of lighting services
- **traffic control** - connected devices that can operate traffic optimisation actions (traffic lights, car parks
- **video surveillance** - field devices capable of managing the perimeter security of a public or private environment.

The ecosystem approach of REMS also allows to **enhance information assets**, integrating data and feeding the governance level with a set of homogeneous dashboards to support stakeholders in the achieving objectives of:

- **effectiveness** - e.g. supporting the achievement of emission targets (environmental sustainability) also with respect to the achievement of strategic 'community' targets to be reached by 2030 and 2050 (increased energy capacity and Net Zero with reduction of CO2 emissions)
- **efficiency** - e.g. the saving of primary energy produced from RES sources and used by any connected and ecosystem-integrated urban device
- **quality of service** - e.g. raising awareness of the use of energy produced by the community towards the population served.

Finally, the ecosystem approach of REMS can:

- enabling the development of **data-driven digital strategies**, allowing the **development of new services** also through **integration from data sources external to the ecosystem business processes** (e.g. meteorological data, mobility data, environmental data) such as **data monetisation.**
- supporting **analysis on production and consumption** of any kind, enabling Energy Managers to make **informed decisions** on energy policies that can be realized within the digital ecosystem and a better **ability to adapt** to changing market needs.

What value for stakeholders?

Several stakeholders are interested in the activities involved in the management of communities and the results achieved through the governance of renewable energy issues.

- **Community Members**: households, companies or organisations that actively participate in the Energy Community, producing energy from renewable sources and participating in decisions on the management of these resources
- **Community Managers**: entities or organisations responsible for the management and operation of the energy community, coordinating energy supply demand, distributing energy to members and ensuring that the community functions efficiently and in compliance with regulations
- **Energy Service Providers**: Operators or Companies that provide services related to energy production, such as the installation or maintenance of renewable generation plants or energy management
- **Local and Regulatory Authorities**: Municipalities and Entities in the Energy sector (GSE, ARERA, ...) that play a regulatory role in the life cycle of the Energy Community, influencing its policies and regulatory compliancy
- **Local utilities**: utilities involved in the distribution and supply of energy within the Energy Community, contributing to its procurement
- **National Institutions**: entities with control functions must have an informed approach to the developments initiated through the investments allocated and the results obtained
- **Investors: individual or institutional, provide capital necessary for the development and expansion of the energy infrastructure used by the Community**
- **Environmental groups and organisations**: interested in energy communities as a means of promoting the sustainable use of energy resources and an enabler of the ecological transition
- **Media**: structured awareness-raising and education actions on the importance of using renewable energy sources.

Why choose us?

The REMS solution makes it possible to:

- supporting Community members in an end-to-end manner throughout the Community lifecycle, through simulations and reporting mechanisms **to manage the use of the energy resource in a greener way**
- **build new services based on the integration of core process data** related to renewable energy sources to support future challenges of the digital ecosystem
- **enabling a layman's approach** to existing market solutions in the digital ecosystem, safeguarding past investments that characterise each customer's application stack
- enable the construction and sale of **multidimensional Analyses** on data of interest to other markets (e.g. analysis and metadata on energy bills)
- more effectively govern **inclusive and sustainable urbanisation**, with the possibility of planning interventions based on the concept of "consumption", "efficiency", "savings"
- **help reduce environmental impact** by understanding "where" "when" and "when" the energy produced by an Energy Community is used.

For Public Administration stakeholders, Engineering Group, through the company Municipia, as ESCo, extends its capabilities in the field of Public-Private Energy Community with a full outsourcing approach, guaranteeing technical and financial support in the construction phase of the energy production plant from renewable sources and the related operational management through ordinary and extraordinary maintenance services.

Appendices

www.eng.it

Engineering Group

@LifeAtEngineering

@EngineeringSpa