enel X

Circular Economy
Factbook
2021/2022

Index

Francesco Starace
Chief Executive Officer and General Manager Enel Group

Enel's vision embraces and endorses the principles of the Circular Economy, the strategic value of which is made even more clear by the challenges of the climate crisis and the pandemic. With this Factbook, we want to communicate the innovative tools and sustainable initiatives Enel X has developed to concretely enable the circular transformation to the entire market.

Francesco Venturini
Head of Enel X Global Retail

The Circular Economy is a tool to support electrification that enables us to reimagine and reconfigure traditional business processes and models in a sustainable way. Enel X, by engaging suppliers, customers, and individuals, is boosting the growth of a positive ecosystem to generate shared value for all and promote investments in increasingly sustainable and innovative solutions.

Ernesto Ciorra
Head of Innovability Enel Group

The human body changes continuously to survive. This goes for companies, too, which must constantly update themselves to evolve and create value for customers who are increasingly interested in environmental and social sustainability. In this Factbook, we'll tell you about our constant evolution, and how Enel X innovates to make sure people's well-being is at the center of all our processes and services.

Introduction

"Without concrete action, by 2050, the global population will consume resources at a rate that is three times what the Earth will be able to provide".

The **European Commission** described the crossroads we are facing with these words.

Global consumption of materials like biomass, fossil fuels, metals, and minerals is expected to **double** by 2060, while annual **waste production will increase by 70%** by 2050.

In March 2020, to implement concrete actions to tackle the climate and environmental crisis we are going through, the European Commission set, as part of the **Green Deal**, the goal of **climate neutrality** by 2050[1] and proposed the first package of measures to accelerate the transition to the Circular Economy, as announced in the "Action Plan for the Circular Economy". The proposals include boosting **sustainable products**, empowering consumers for the green transition, revising regulations on **construction materials**, and a strategy for **sustainable textiles**.

Every day at **Enel X**, we promote an idea of innovation based on **creating shared value** through **sustainable growth**. This approach – supported by a sharp increase in direct and indirect investments planned to boost decarbonization and electrification – is at the root of the **2021–2023 Strategic Plan**, with its vision expanded to 2030 for the entire Enel Group[2].

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[1] https://www.europarl.europa.eu/news/en/headlines/society/20210128STO96607/how-the-eu-wants-to-achieve-a-circular-economy-by-2050

[2] https://www.enel.com/investors/strategy

We have come to a new view of the concept of **sustainability** – no longer merely linked to corporate social responsibility, but a real driver of **innovation**, and a **strategic guide** for all ours Business Lines, with an Open Innovability® approach.

Over the past few years, we've developed and consolidated an innovative methodology, based on the principles of the Circular Economy. We strongly believe that applying the principles of circularity is a strategic choice to tackle environmental challenges while also making companies more efficient, resilient, and competitive by opening up new business opportunities.

This Factbook describes our **models**, **projects** and **results** regarding these topics.

1
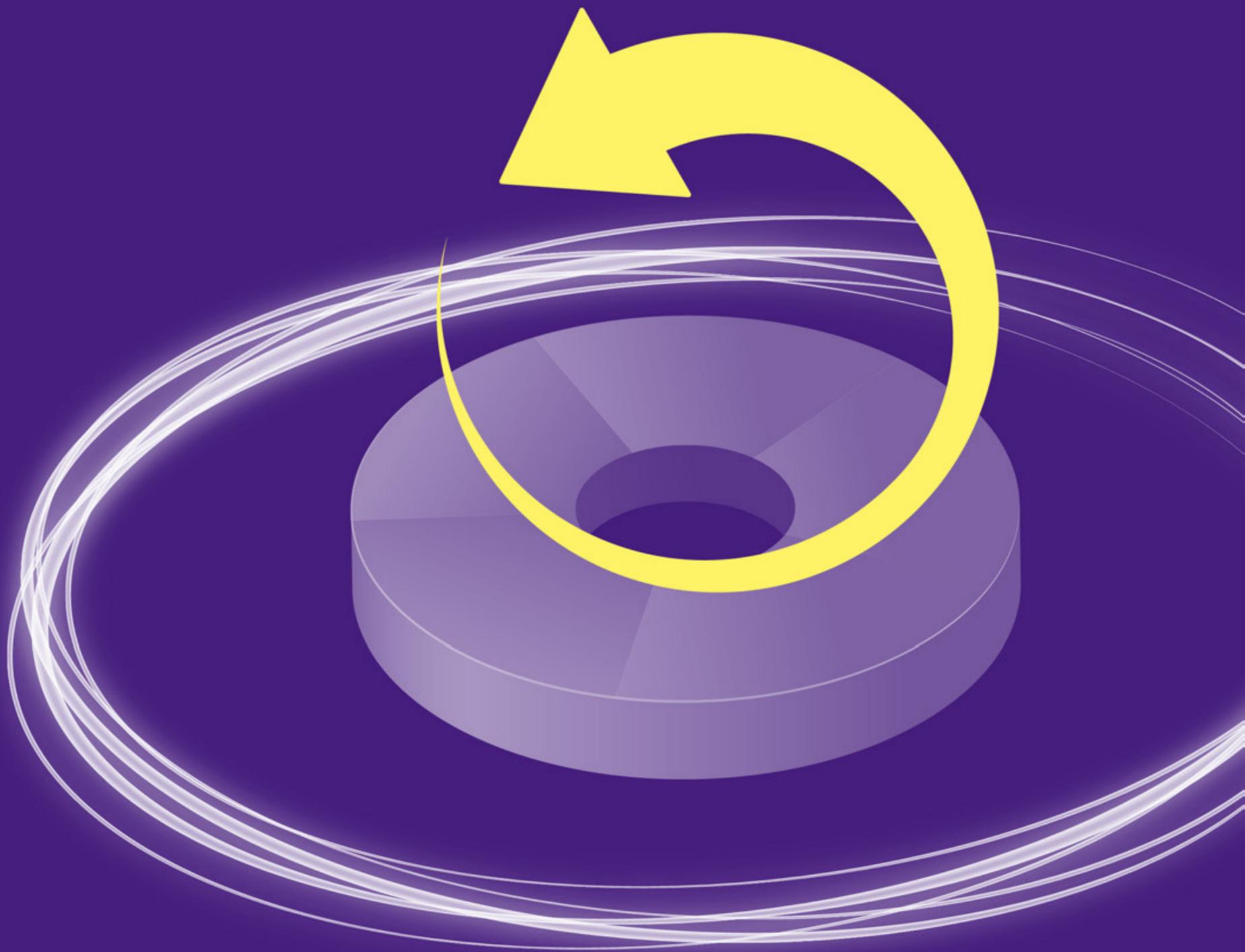
**Enel X's approach
to Circularity**

Enel X's sustainability strategy is based on the **five pillars of the Circular Economy**, in order to **reduce the environmental impact** of our solutions and of our customers, while creating new business opportunities.

Recovery and recycle

Use of goods and products beyond the end of their service life, by recovering and recycling components and raw materials

Sustainable inputs

Use of energy and raw materials that can be regenerated over time and resources that are renewable, recyclable, from recycled material, or biodegradable

Product as a service

Creation of business models based on the sale of a service rather than the asset involved

Sharing platforms

Promotion of the use of goods and services shared through digital platforms

Life extensions

Modular design and initiatives for regeneration and repair to extend product life cycle

CITIZEN

SUPPLIERS

INDUSTRIAL

Recovery and Revycling

Sustainable inputs

CIRCULAR ECONOMY

BUSINESS MODELS

enel X
Circular Booster

Life cycle extension

Product as a service

SERVICE PROVIDERS

Sharing platforms

CITIES

SALES CHANNELS
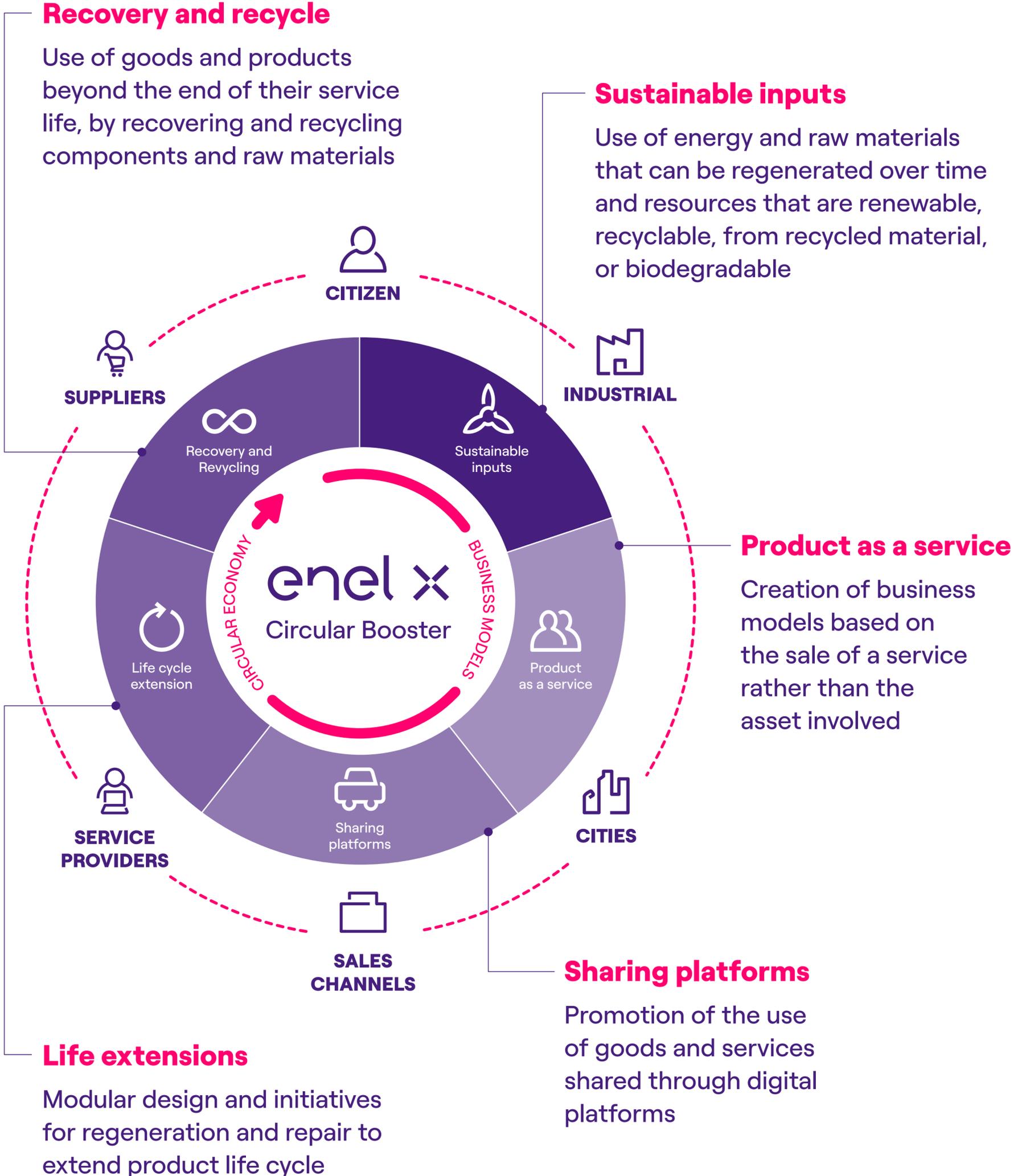
With the importance of the Circular Economy in our current context in mind, the **Enel X's Circular Economy Boosting Program**® is an innovative methodology able to measure and improve the environmental performance of products and services.

The Program includes **4 stages**:

Scoring

Measurement of the **initial level of circularity** of a solution by applying an **Enel X methodology**: the circularity **score**

Boosting

Stage for **generating and selecting new opportunities** to increase a solution's level of circularity

Implementing

**Execution** of the ideas selected in the Boosting phase

Rescoring and Reporting

After implementing innovative projects, a **new level of circularity of the solution is measured** and results are **reported** to stakeholders

1.1 How we measure the Circularity of products and solutions

The **Circularity Score** is a **metric** that measures how much a solution applies the principles of the Circular Economy. By analyzing material and energy flows and the level of implementation of circular business models, this is the starting point for the **Enel X Circular Economy Boosting Program®**.

The **final Circularity Score** is represented by a **value between 0% and 100%**, parametrized to **levels 1 to 5** for simplicity. The following infographic shows the circularity indexes calculated for Enel X solutions:

Remote heating systems — 3

Homix — 3

Photovoltaic — 3

Storage — 3

Solar thermal — 3

Air Conditioning — 3

Demand Response — 5

Public lighting — 4

Public charging — 3
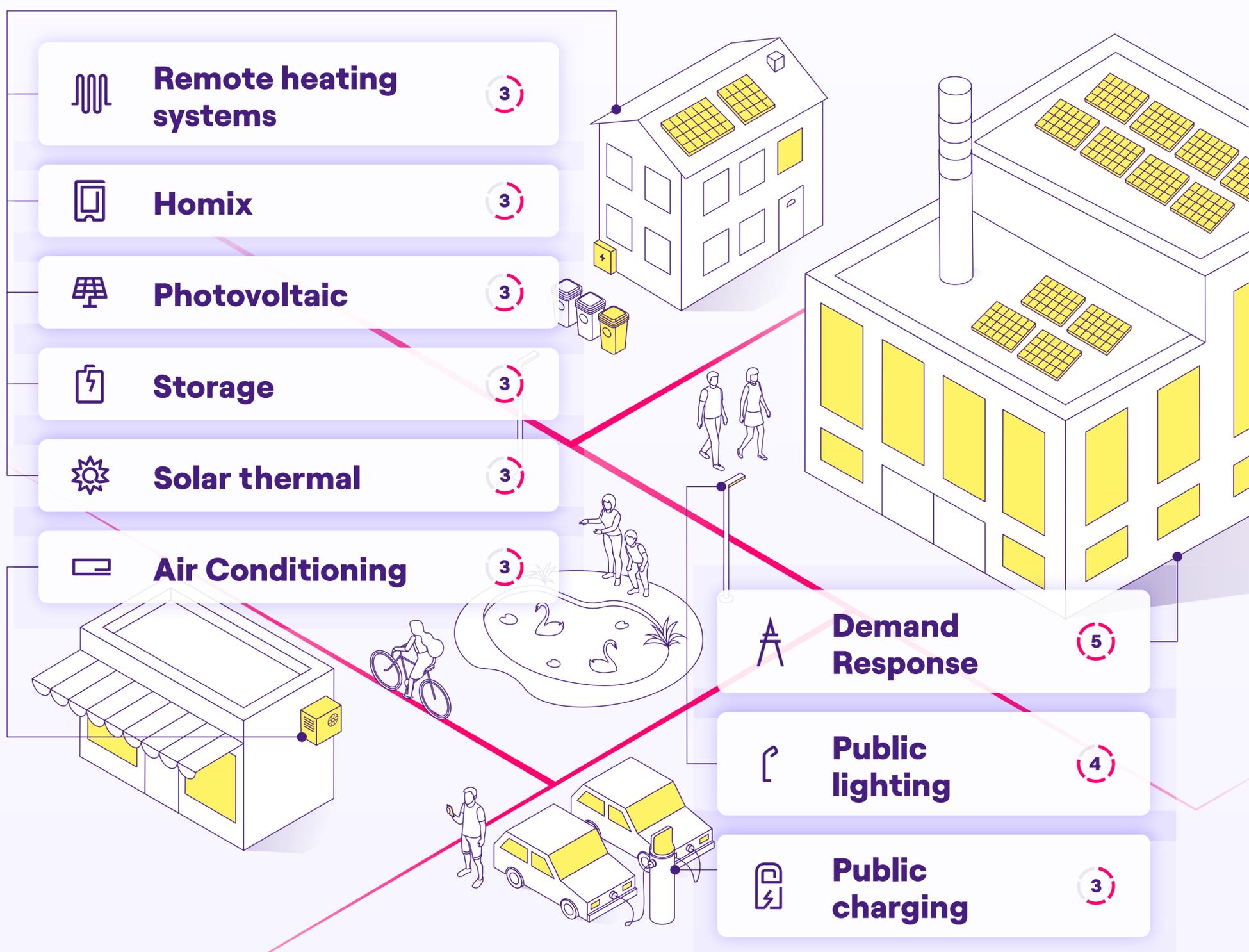
Homix

This solution makes the day-to-day management of the home **smarter**, **simpler**, and **more immediate**. With an intuitive touch interface, users can adjust **heating** and, with the addition of other devices, **lighting** and **security** as well.
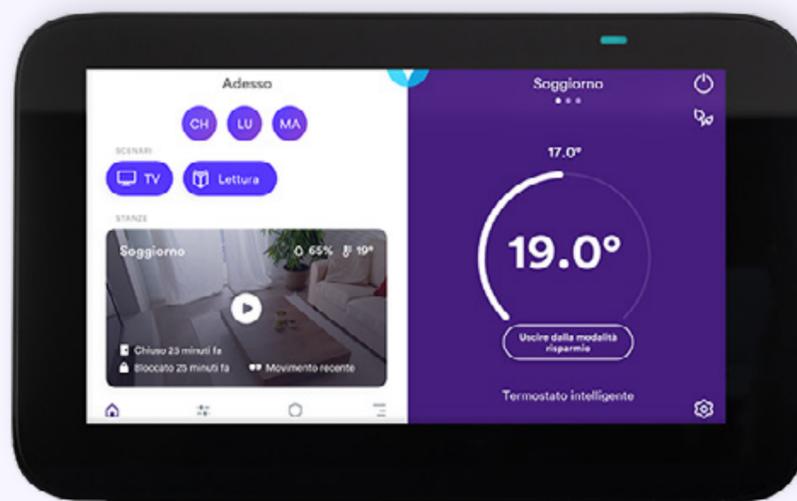
Homix responds to **3 of the 5 business models** of the Circular Economy:

> **Sustainable inputs**
  42% of the steel contained in Homix, representing about 25% of the model's weight, comes from recycled inputs. In addition, using artificial intelligence, Homix increases energy efficiency in homes by optimizing heating and – with additional smart lightbulbs – light intensity.

> **Product as a service**
  With Gigafiber Smart Home, available for a monthly fee, users can benefit from the Homix Smart Modem for 12 months and receive a smart device from the Homix line, applying it as a service.

> **Recovery and Recycling**
  The steel and aluminum components of the product, representing about 35% of its weight, are 85–95% recyclable. What's more, production waste represents only 0.3%, in weight, of the materials.

Circular Economy Score

Based on the circularity scale of Enel X solutions, Homix §gets a score of 3. This solution is partially integrated with the principles of the Circular Economy.

3

Air Conditioning

Mono-split air conditioners, made up of an outdoor unit plus an indoor unit, and **multi-split** air conditioners, made up of an outdoor unit and two more indoor units, are ideal for maintaining a comfortable temperature inside, optimized for different areas of the home. In this case, a circularity scores were calculated for each category of air conditioner (mono, dual and trial-split).

The Air Conditioning solutions offered by Enel X respond to **2 of the 5 business models** of the Circular Economy:

> **Sustainable inputs**
> The main materials contained in the air conditioners, namely copper, aluminium and iron, come 18%, 30% and 42% from recycled input, respectively.

> **Recovery and Recycling**
> Once they are at end-of-life and collected, the components in aluminum, iron, and polypropylene are 85-95% recyclable.
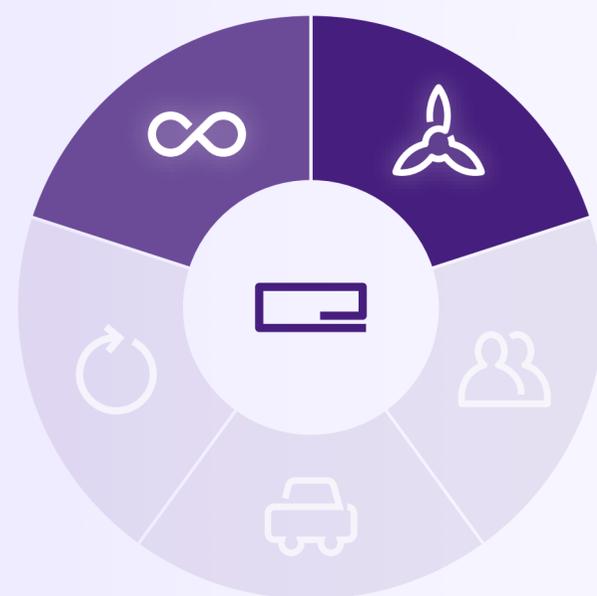
Circular Economy Score

Based on the circularity scale of Enel X solutions, all the Air Conditioning products - mono, dual and trial-split – get a score of 3. This solution is partially integrated with the principles of the Circular Economy.

3

1.2 Product Index of Circularity 2.0

Since 2021, **Enel X** has been working with **ICMQ S.p.A.**, owner of the **Program EPDItaly**©, to develop a certification scheme for a product's level of circularity, starting from the current circularity score.

Enel X experts and ICMQ **developed a new Index of Circularity**, referring to the International Standards **ISO 14040** and **ISO 14044**, which describe ways that life cycle analysis can be applied to products and services (LCA or Life Cycle Assessment).

These points of reference will also be the point of connection between the new index and the **EPD** (*Environmental Product Declaration*) **program**, since both adopt the same LCA approach, though with different objectives and outcomes.

The tool developed to calculate the index **analyzes and quantifies material and energy contributions** to the products being analyzed, to **highlight** those featuring recovered or recycled material and renewable energy sources.

To **test the effectiveness** of the Index in the field, **select Enel providers** and certain products marketed by them were chosen to apply the calculation model. Following the results of these tests, the pilot phase was concluded and a certification framework was developed.

This certification scheme will be proposed for **accreditation** at **Accredia**, to provide the market with a tool marked by absolute **strength**, **independence**, and **impartiality**.
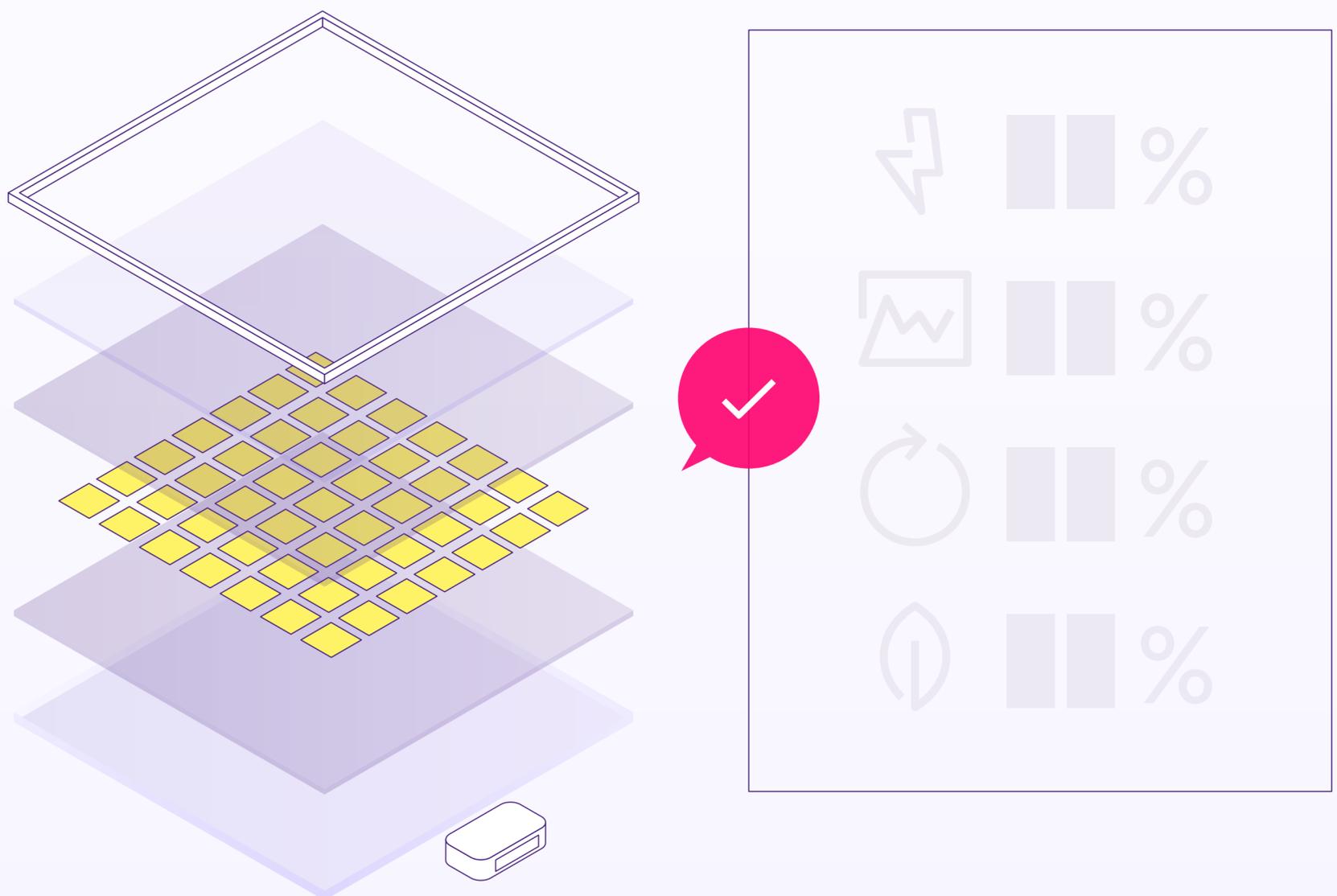
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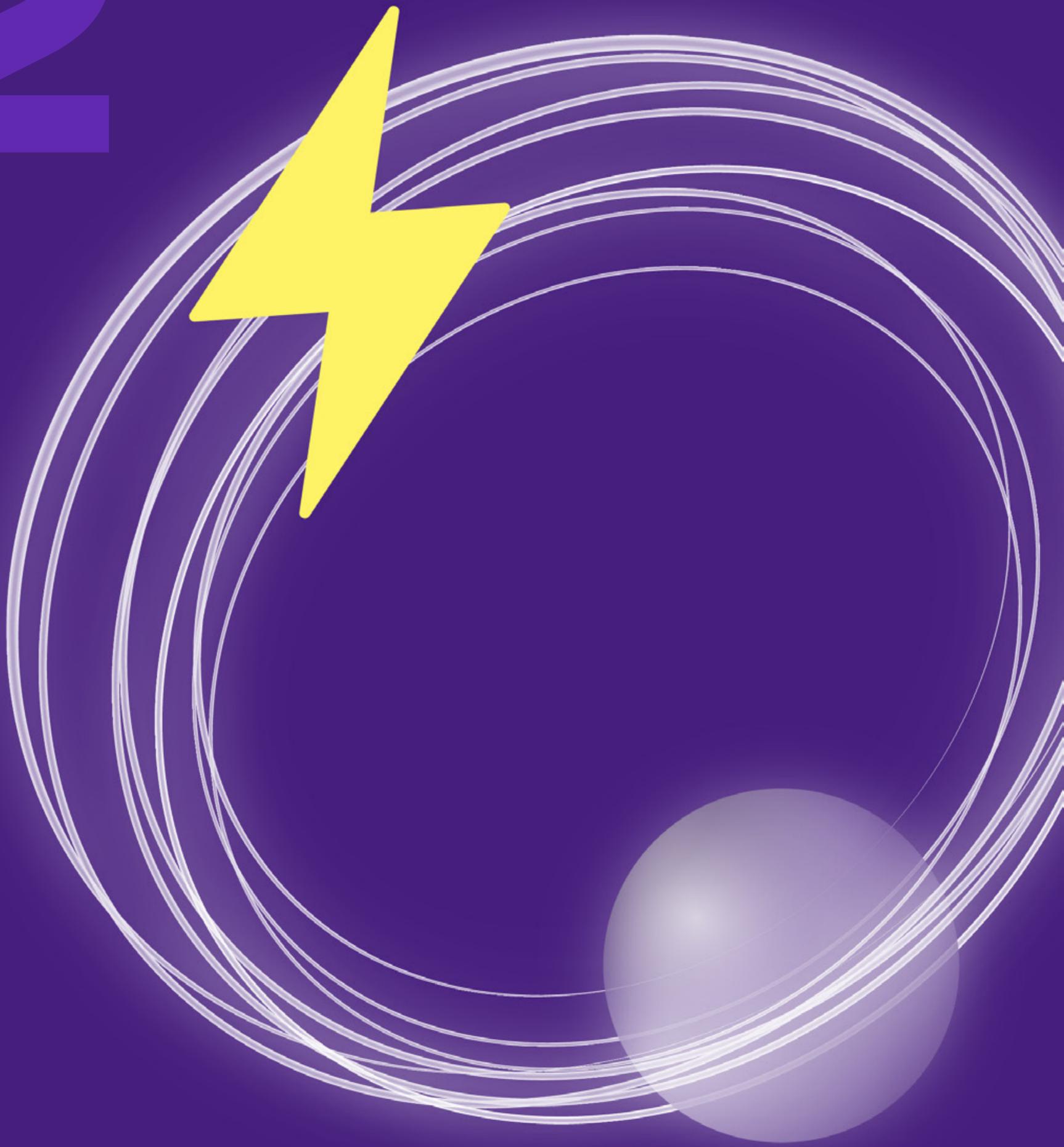
Circularity Boosting Program

The **Enel X Circular Economy Boosting Program®** is Enel X's innovative program to increase the application of principles of the Circular Economy in its solutions, in all the countries where it is active.

In order to **identify and select solutions** that would gain the most advantage from scaling-up, we work constantly with key contacts from Business Lines and countries. Following **in-depth analysis**, we select the most strategic solutions to activate the the Boosting process on.

From 2018 to 2021, **23 Boostings** were completed on various Enel X solutions and countries, and for **2022** we have another **10** planned.

Colombia

USA

Peru

Chile

Spain

Italy

Romania

Brazil
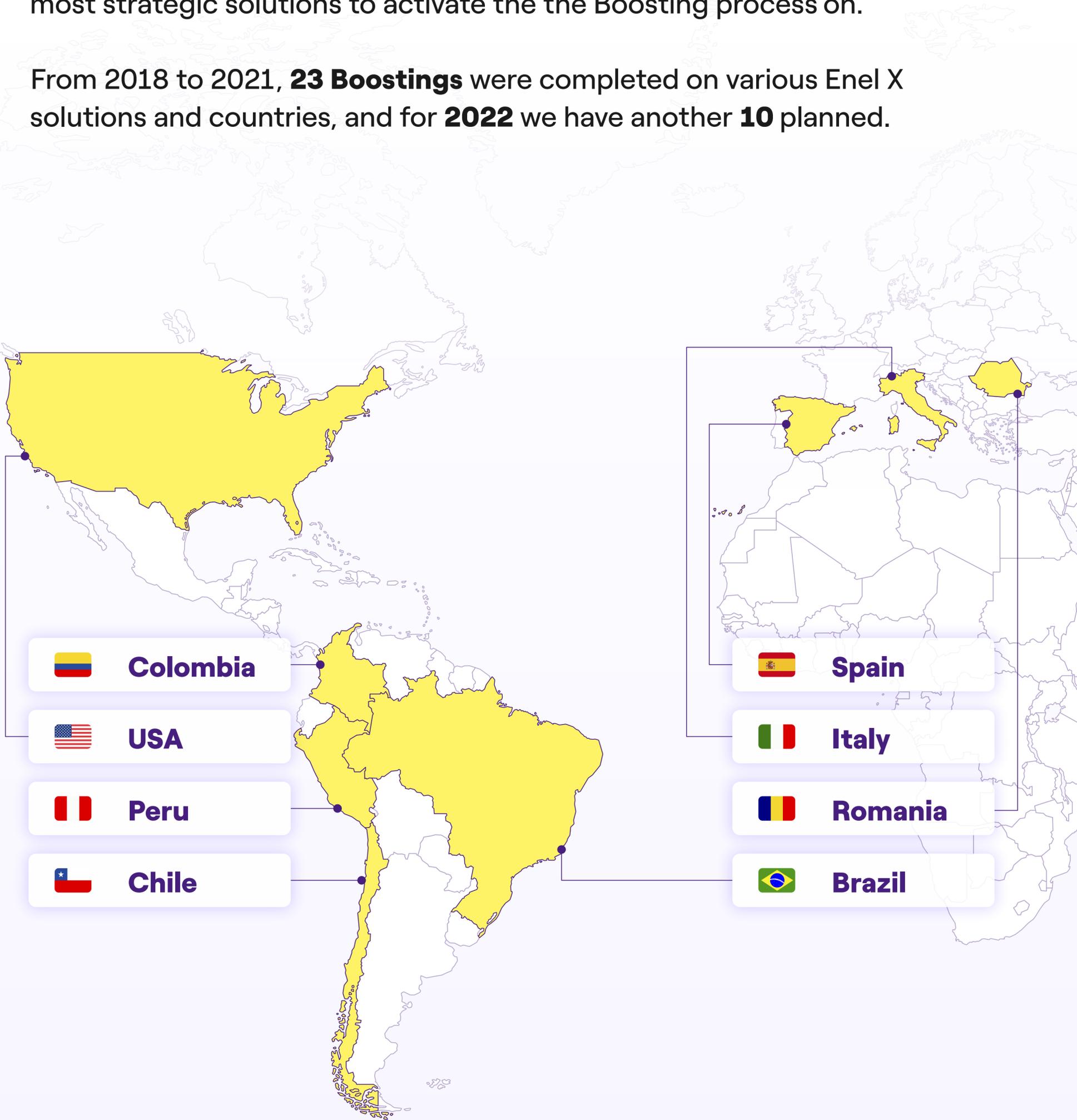
The **operational details** of the idea generation phase, the core of the **Enel X's Circular Economy Boosting Program®**.

Value chain analysis

In order to fully understand all the technical and commercial features of the solution in question and reconstruct its entire value chain, **structured interviews** are held with local technical experts
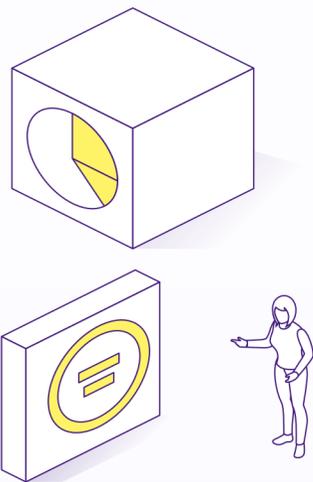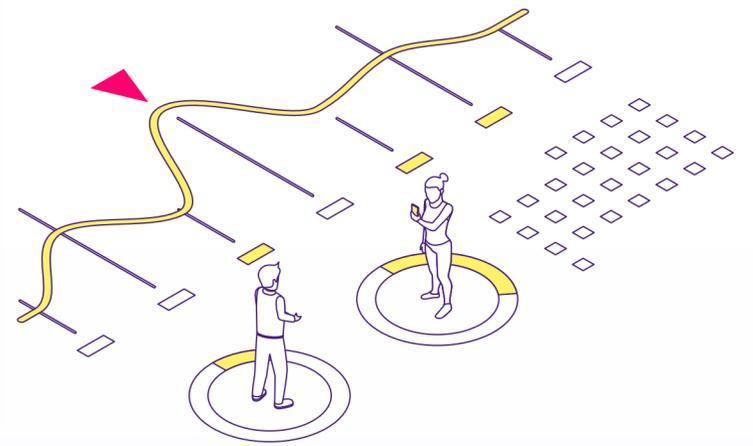
## Innovation and Circular Intelligence

Once the entire value chain is analyzed, **innovative solutions** are explored by using **Innovation and Business Intelligence** tools like scouting startups, new technologies and market trends and analysis of success stories

Selection of opportunities

The Intelligence stage produces a list of new **new projects and initiatives** to be **integrated** into Enel X's value proposition, including principles of the Circular Economy. From this list, **projects** to implement are **selected** based on business potential and alignment with Enel X's strategy
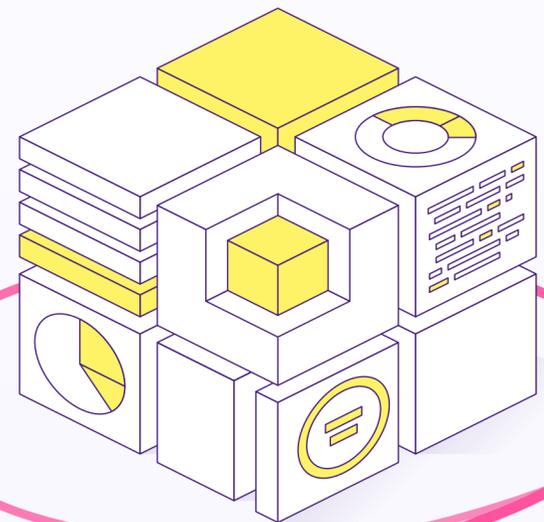
Circularity Rescoring of our solutions

Once the initiatives launched within our Enel X's Circular Economy Boosting Program® are implemented, we can **measure improvements** to the level of circularity of the solutions, made possible by Enel X's Circular Economy Score

2.1 Projects that increase Circularity

In 2021, we have worked on **projects transversal** to the Boosting Program to ensure that our skills and positioning stay up to date on the most recent trends.

First Terminal for private corporate e-buses in Chile

On 18 March 2021, the Minister of Energy and Mining, Juan Carlos Jobet, and the Minister of Transportation and Telecommunications, Gloria Hutt, inaugurated the **first private hub** for **charging electric buses** in **Chile**. The initiative equipped a company fleet – used to transport, among others, employees of the company **Anglo American** – with modern e-buses. The goal was to **electrify the company's transportation**, to benefit from reduced CO_2 emissions and less noise pollution.

The terminal, located in the Enea neighborhood of Santiago, equips companies, including the multinational mining company Anglo American, with a fleet of electric buses managed by Enel X, making use of the circular business model product as a service. As part of the e-mobility project, developed in partnership between Enel X and Anglo American, **17 electric buses** are in operation to **transport workers**, representing the largest intercity fleet in the country. The environmental impact of the initiative is estimated at **850 fewer tons of CO_2 emissions a year**.

The charging structure (managed by Enel X Way), is also optimized through **hybrid use by private and public customers**: the agreement with Anglo American and the other companies stipulates that they have exclusive use of the e-bus chargers at set times, while the terminal can be used by the public outside of these times.

Business Line
e-Industries in collaboration with Enel X Way

Country
Chile

Circular Economy Model
Product as a Service and Sharing Platform

Value for the customer
Reduced CO_2 emissions and lower sound pollution

Value for Enel X
Management of a private terminal for electric buses

In 2019, Anglo American started to experiment with electric vehicles: five SUVs, one taxi and one electric bus. The trial demonstrated high performance, even in extreme conditions, and with low operating costs. A decision was therefore made to expand the use of electric vehicles to include a company fleet of e-buses for employee transportation that, through the fleet-as-a-service model, becomes even more circular and sustainable.

Hot water as a service in Chile

Enel X and Eurocorp joined forces to develop and promote **new multi-family buildings**, a term that refers to residential buildings whose apartments, built and managed by a single entity, are exclusively rented. Both wanted to expand the business model of this emerging trend and created a joint project, which includes various energy efficiency solutions

The specific project involves **upgrading the building's current gas system** and **reduces the current operational cost** of cubic meters of hot water through **an ultra-efficient technology** and a **system of general control**, which includes the maintenance and full support of the system, the Energy Management System, and all associated expenses.

Through the leasing model, in line with *product as a service*, Enel X's energy efficiency solutions allow for a **significant decrease in the consumption of fossil resources**, reducing the environmental impact of the real estate sector.

Business Line
e-City

Country
Chile

Circular Economy Model
Product as a service

Value for the customer
Savings on consumption

Value for Enel X
Energy efficiency

Circular batteries

In 2019 and 2021, respectively, Enel X received authorization to develop projects through the first and second **IPCEI** (*Important Project of Common European Interest*), created to support the **European battery supply chain**, with **42 European companies** in the sector participating. Enel X's projects impacting circularity concern applications for large-scale **stationary storage** systems and the sustainable management of **end-of-life** lithium batteries.

Machine Learning to extend battery life

For the first IPCEI, Enel X's project involves the development of tools based on **artificial intelligence** (machine learning) to predict failures/anomalies and model the **degradation** of next-generation lithium-ion **batteries**. Predictive tools aim to **extend the life** of batteries and increase their **safety**, while optimizing operational and maintenance activities. The project is expected to be completed by 2023. Part of the work to build the **Storage X-Lab in Catania** and some equipment for the laboratory was financed through the project.

Business Line
e-Industry

Circular Economy Model
Product life extension and Recovery and Recycling

Value for the customer
Reperire materiale in Europa già disponibile, senza trasportarlo con minore impatto di emissione

Value for Enel X
Creation of a circular supply chain for recycling in Italy

Sustainable management of the end-of-life of lithium batteries

In the second IPCEI, the two projects involve:

> **Optimization software for industrial-scale storage systems for Front-of-the-Meter applications**. The software and models developed will make it possible to optimize the sizing of plants and the use of energy storage systems and second-life batteries for stationary applications, using energy from renewable sources and the principles of the Circular Economy, such as sharing and life extension.

> **Industrial solutions for the logistics, transport, storage, automation of disassembly processes and recycling of end-of-life batteries from electric vehicles** – estimated at about 60,000 tons/year by 2030 in Italy alone – **and large-scale storage systems for stationary use**. The project will be developed in collaboration with other participating IPCEI companies and research entities, including **ENEA**, a public research institution that coordinates the **Italian Battery Alliance** and participates in all European R&D&I initiatives on batteries, and **MIDAC**, a leading battery producer (with volumes of about 3GWh/year of lead-acid batteries for automotive and industrial applications). The latter will develop industrial applications for the project. This initiative lays the groundwork for a new national battery supply chain that is sustainable and competitive; further confirmation of the importance and opportunities offered by energy circularity.

The two areas, **Digital** and **Product Life Extension** and **Recovery and Recycling**, though seemingly in different domains – the first digital and the second two strongly "material" – actually tend to converge: investing in digital brings greater control over the supply chain and asset utilization.

As part of our procurement processes, we are always looking for traceable material. Our HSEQ team verifies certifications and ensures the safety and **sustainable disposal** of our assets. New European regulations in this area, with the projected development of the **Battery Passport**, foster **traceability** throughout the production chain, ensuring that supply is both ethically and economically viable. This is made possible in part by new technologies with embedded sensors at all storage system levels, as well as the collection and certification of the sustainable origin, processing and use of materials and components at every step of the value chain.

Enel X has chairing positions on the technical committees of **Batteries Europe** and **BEPA**, and is on the executive board of BEPA, and has successfully participated in IPCEIs on batteries and **Innovation Fund** projects, in addition to continuing to follow the work of the European Battery Alliance, an integral part of the European ecosystem and the heart of the Italian supply chain.

Finally, Enel X is also part of the **Global Battery Alliance**, an initiative with roots in the **World Energy Forum**, focused on important issues in the ethical sourcing of raw materials, capacity building, second life, and sustainable recycling.

Circular airport: a second life for car batteries

This **revolutionary project** is one of the firsts of its kind. Enel X created a system to **reuse batteries from the automotive sector**, giving them a **second life** storing excess energy produced by a 30-MW solar photovoltaic plant at **Rome's Fiumicino International Airport**.

The project, called **PIONEER** (*airPort sustaInability secONd lifE battERy storage*), won an **EU call for proposals** and obtained financing from the Innovation Fund, which will guarantee its development. The aim of the project is to store surplus energy produced by a solar photovoltaic system during the day, to use in the evening, when the airport's peak in demand needs to be covered in the absence of solar energy. The energy storage system will have a **nominal capacity of 5MW/10MWh**: it's one of the first projects in the whole world to achieve numbers like this with second-life batteries.

Business Line
e-Industry

Country
Italy

Circular Economy Model
Product life extension

Value for the customer
Maximized self-generated energy consumption

Value for Enel X
Provide flexibility services to the electrical grid

PIONEER's innovation lies in its integration of **second-life batteries** – from **multiple car manufacturers** – and the use of those batteries for **various services** (photovoltaic storage, auxiliary services, peak load reduction, and demand response) in the airport environment. The technical management proposal of this solution, which uses batteries of various sizes, voltages, capacities, brands, technologies, and different ages, is **a leap forward** from the most advanced technologies at present. The solution will use battery packs from three different car manufacturers, reducing supply risk and increasing the system's modularity.

Smart optimization software will maximize performance and battery inputs. Advanced **machine learning** techniques determines the energy needs of the airport and the battery is charged and discharged automatically at optimal times, to provide the **highest possible economic return**.

With this project, no new batteries are needed, and the **level of greenhouse gas emissions is cut by 100%** compared to the conventional technology.

Agricultural Energy Community

With this project, Enel X confirms its commitment to actively supporting the energy transition in business and the path toward Net-Zero. Using a variety of technological services and cutting-edge digital infrastructure, we aim to make Energy Communities true **efficient and sustainable ecosystems**: the strategic agricultural sector had never experimented with a model of the kind until now.

The project, supported by **Enel X**, with the collaboration of the **Banca Agricola Popolare di Ragusa**, calls for the construction of a 200-kW **photovoltaic system** and a **technological platform** to **manage the Energy Community**, made available to a group of agricultural companies in Ragusa and led by **La Mediterranea Società Consortile Agricola**.

The Energy Community, made up of several companies managing a total of 60 hectares of land, will be able to share energy consumption, obtaining 20-year state incentives to be redistributed to benefit all members. At the same time, greenhouse gas emissions will be significantly reduced, with economic benefits and environmental advantages for the entire area.

The photovoltaic system will produce more than **300 MWh** a year, and will put **240 MWh** into the grid, which will be 100% shared by member companies in the same business condominium.

Business Line
e-Industry

Country
Italy

Circular Economy Model
Sharing platform

Value for the customer
Economic savings and government incentives

Value for Enel X
Technical-economic management of the Energy Community

Enel X will guarantee **the multi-year technical and economic management** of the Community, providing its digital platform and innovative technologies. This will ensure – through the app and periodic reports – that the status of energy sharing is constantly monitored, in real time. Potential solutions for improving the quantity of energy shared will be identified, encouraging members to electrify their consumption, making them increasingly sustainable.

The project will lead to **environmental**, **economic**, **and social benefits**: thanks to the photovoltaic system, 121 fewer tons of CO_2 will be produced a year, while the Community will benefit from 20-year economic incentives, generated by the process of **collectively sharing** energy.
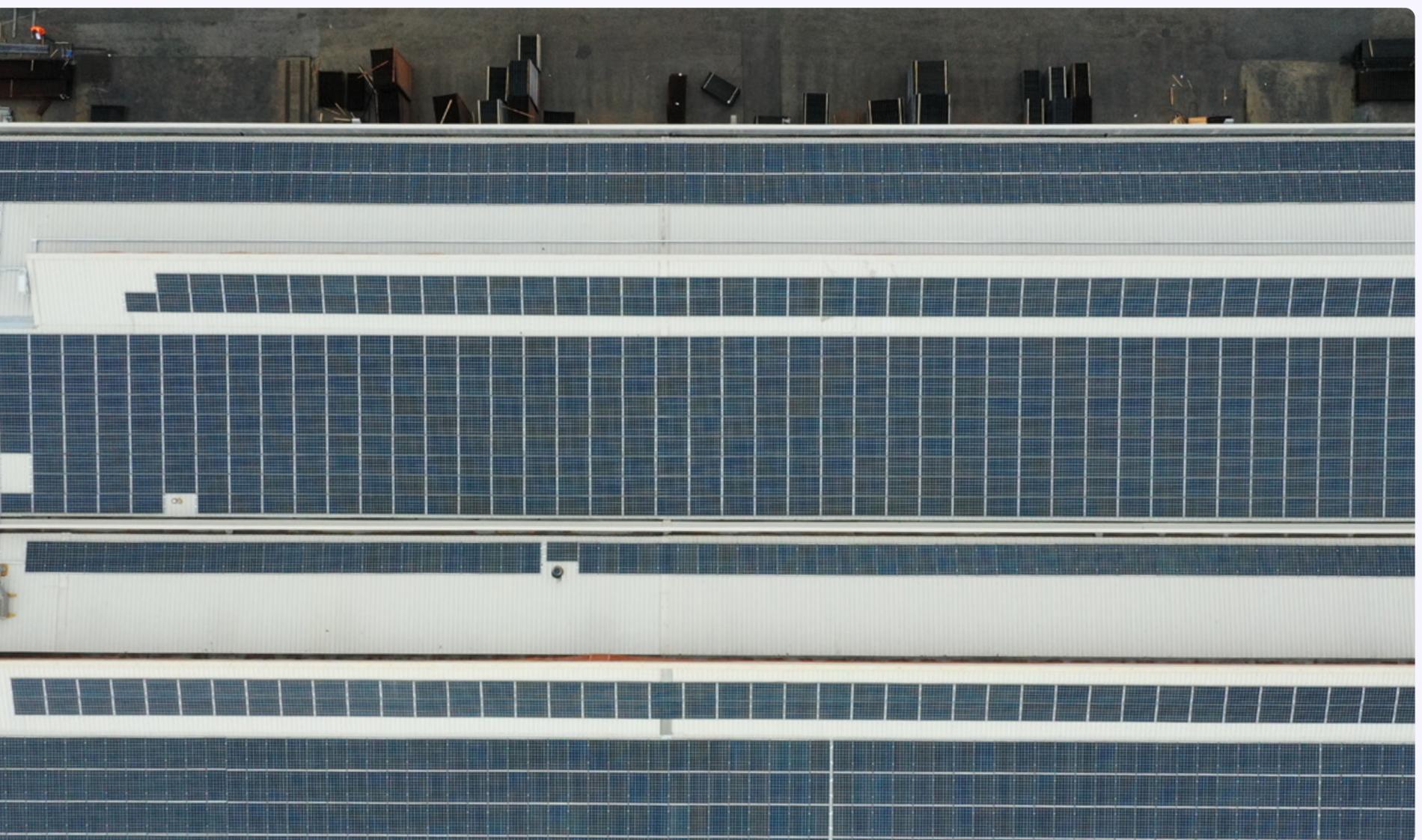
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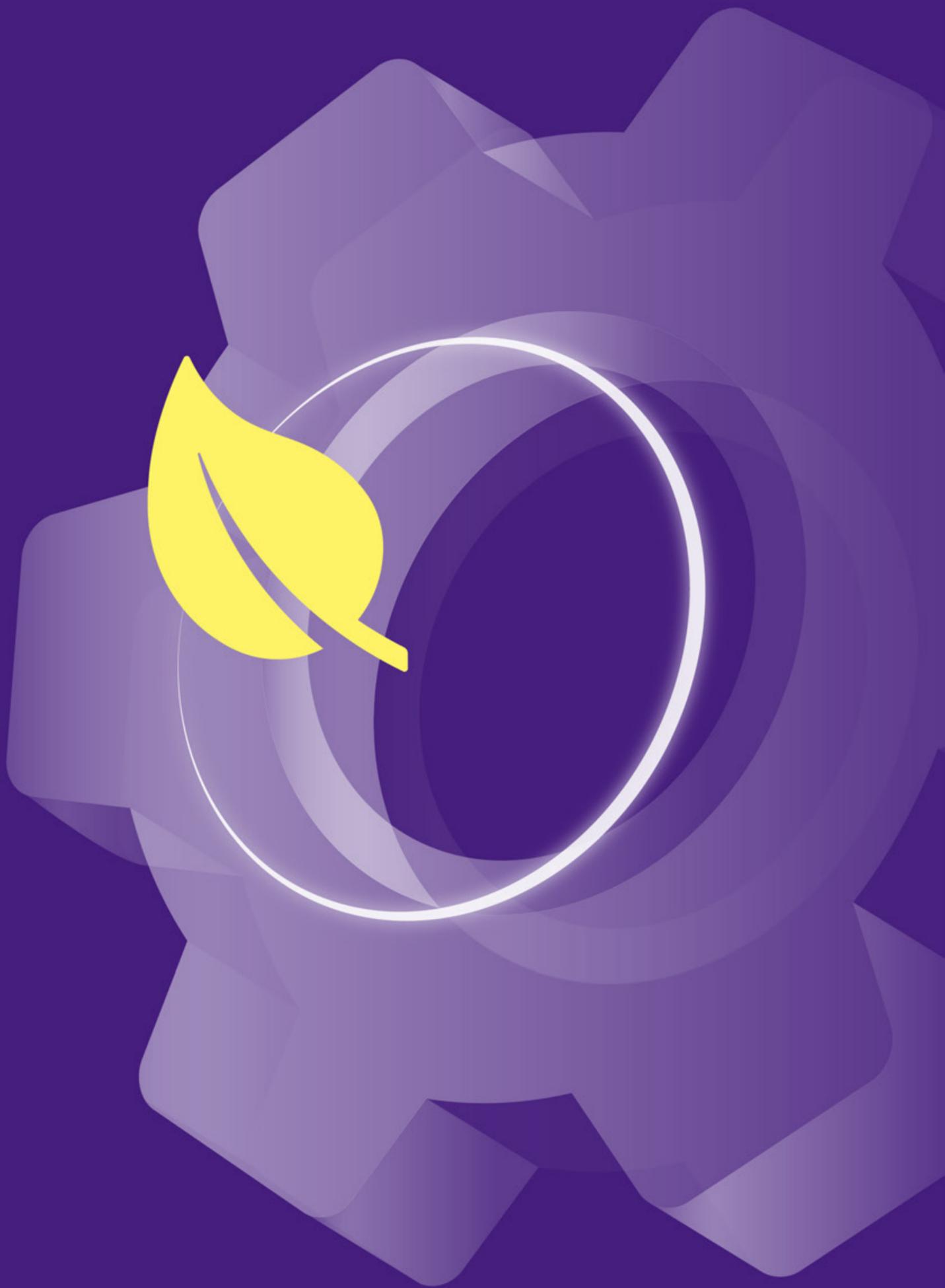
Measuring Circularity for Companies

The **Circular Economy** and **decarbonization** are simultaneously the **main challenges** and the key to guide companies along the path to sustainability. Enel X developed the **Circular Economy Report**, aimed at measuring and improving a business's all-around circularity with a two-tiered analysis:

> **Corporate**: to evaluate the maturity and spread of the principles of the Circular Economy throughout the business's entire value chain;

> **Energy**: to evaluate one or more of the company's specific sites from the perspective of energy sources, efficiency, and management of consumption.

Enel X also offers its business customers the chance to **quantify their carbon footprint** at an organizational level, according to **international standards** (ISO and GHG Protocol).

Given the strong synergies, Enel X developed an integrated offer that makes it possible to measure an organization's carbon footprint and the company's circularity with a **single tool**, optimizing data collection and providing a roadmap of possible solutions to increase circularity and achieve decarbonization goals, unlocking several benefits.

The **Circular Economy Report**, integrated with the organization's carbon footprint, is organized in **three key stages**:

1

Analysis and measurement of the sustainability As-Is

Detailed analysis and measurement of environmental impact in terms of circular maturity and/or organizational carbon footprint.

2

Outlining of a roadmap

Creation of a personalized roadmap that identifies possible actions and technological solutions aimed at increasing the level of circularity and reducing the business' carbon footprint.

3

Implementation of ad-hoc solutions

Support with carrying out actions identified in the roadmap and selected by the business, thanks to Enel X's expertise and its broad portfolio of energy and electric mobility solutions.

3.1 The Circular Economy Client Report

The Contents of the Report

Measuring of the As–Is circularity level

The output of this measurement consists of two percentage scores:

26.7% *
Corporate CE

36.5% *
Energy CE

Corporate circularity

The **company's maturity** in applying the principles of the circular economy throughout the value chain: product design, choice of suppliers and raw materials, management of sales and post-consumption, etc. The Corporate CE score also considers the level of integration of SDGs in the company's business plan.
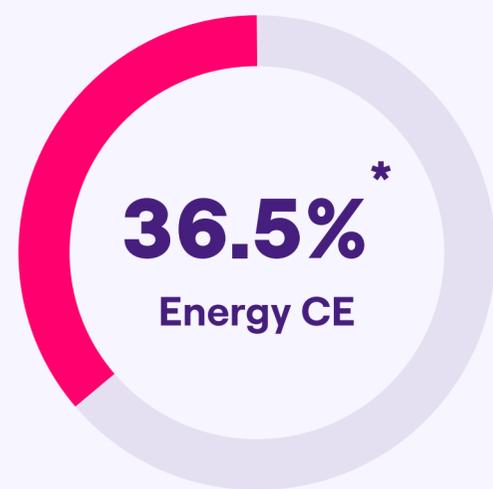
Energy circularity

Maturity of the specific site under analysis, from the perspective of energy circularity: choice of sources, energy efficiency and management, innovative technologies.

1 SCONFIGGERE LA POVERTÀ	2 SCONFIGGERE LA FAME NEL MONDO	3 BUONA SALUTE	4 ISTRUZIONE DI QUALITÀ	5 PARITÀ DI GENERE	6 ACQUA PULITA E SERVIZI IGIENICO-SANITARI	7 ENERGIA RINNOVABILE	8 BUONA OCCUPAZIONE E CRESCITA ECONOMICA	9 INNOVAZIONE E INFRASTRUTTURE
10 RIDURRE LE DISUGUAGLIANZE	11 CITTÀ E COMUNITÀ SOSTENIBILI	12 CONSUMO RESPONSABILE	13 LOTTA CONTRO IL CAMBIAMENTO CLIMATICO	14 FLORA E FAUNA ACQUATICA	15 FLORA E FAUNA TERRESTRE	16 PACE E GIUSTIZIA	17 PARTNERSHIP PER GLI OBIETTIVI	THE GLOBAL GOALS OBIETTIVI GLOBALI PER LO SVILUPPO SOSTENIBILE

* Indicated percentages are an example.

Creation of the Roadmap

Based on the main gaps identified in the analysis phase, a **roadmap** of actions is created to **increase energy circularity levels**.

Energy CE POTENTIAL

Flexibility

Optimization

Supply

Consulting

Energy CE CURRENT

Mobility
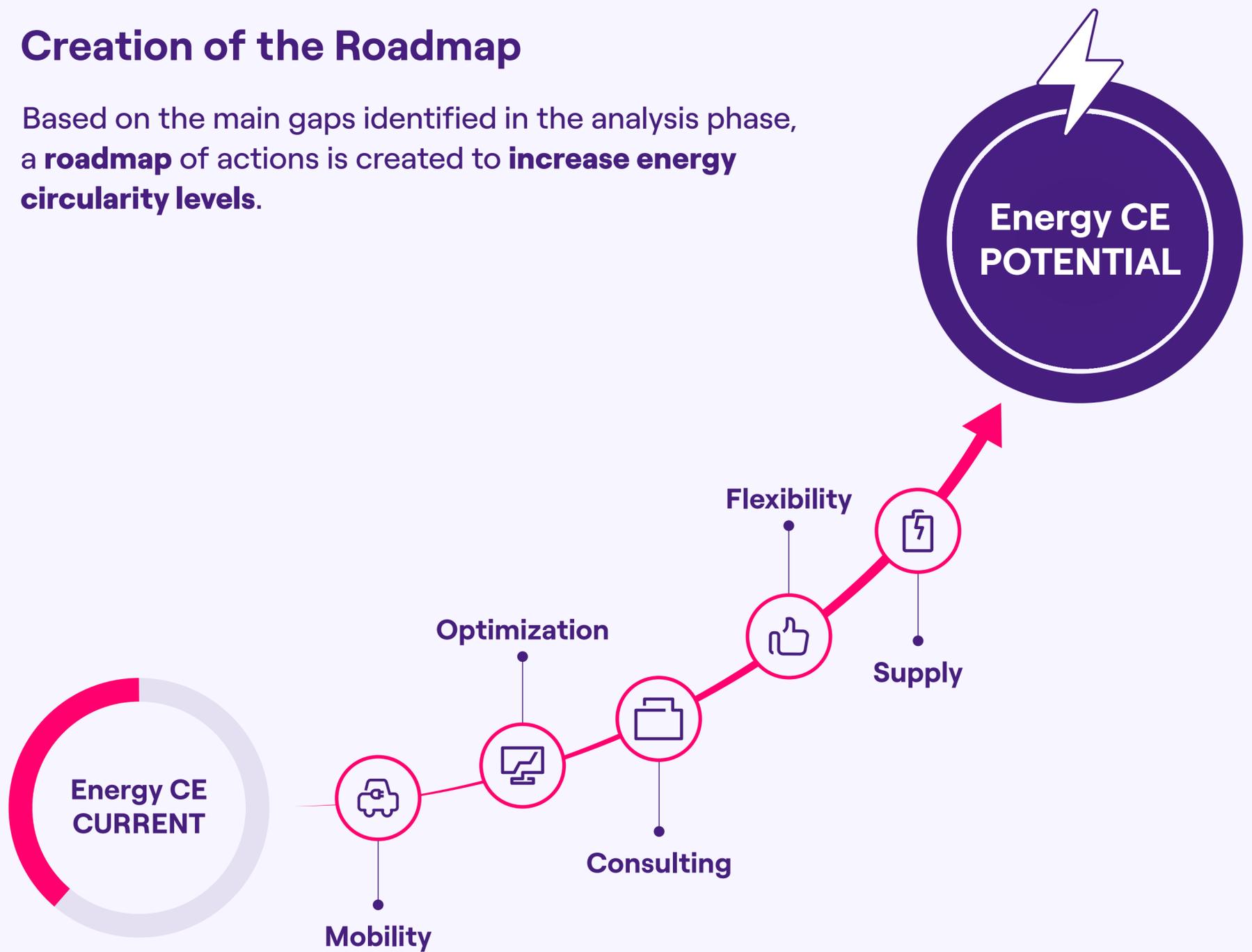
Sensitivity Analysis

Sensitivity analysis simulates **various application scenarios** of the solutions laid out in the Roadmap, showing the **potential increase** each one could provide to the circularity score.

SCENARIO A

SCENARIO B

36.5% >>>>> 44.5%* >>>>> 70%

Energy CE CURRENT

Energy CE POTENTIAL

Energy CE POTENTIAL
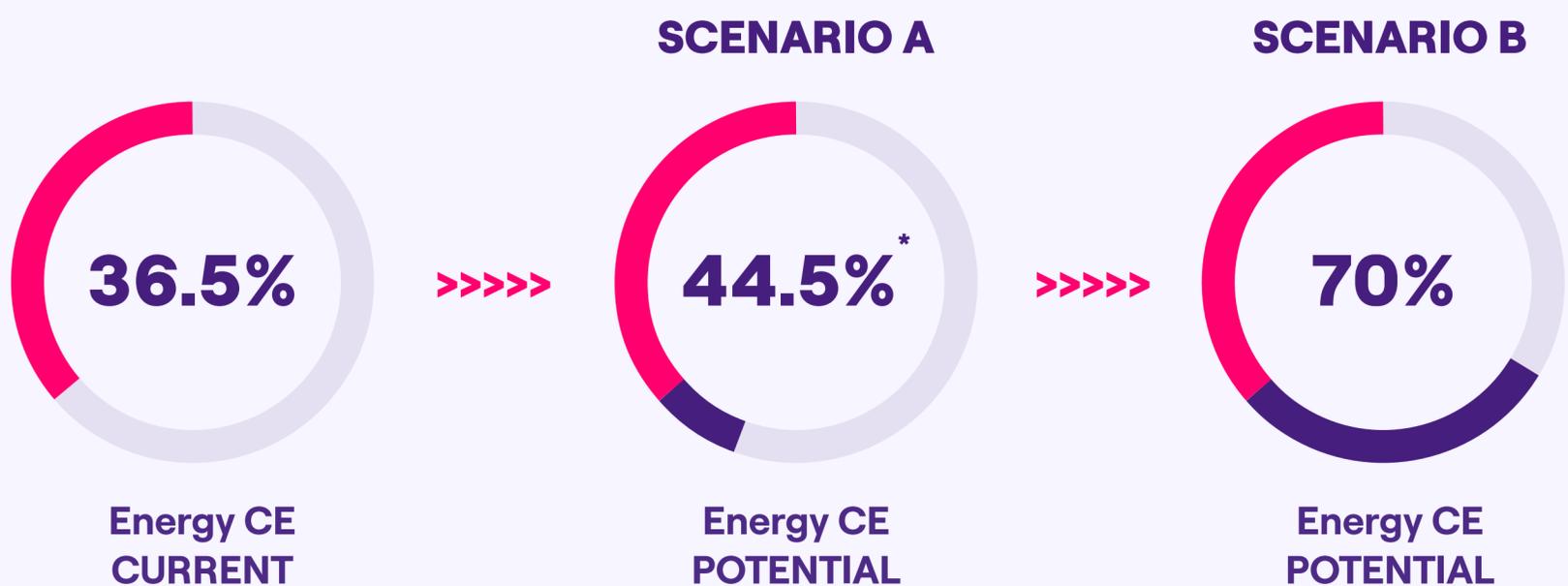
Benefits of Measurement

Enel X stands out for its end-to-end approach, which makes it possible to add support in the implementation phase of possible concrete solutions to the analysis phase.

Specifically, companies can implement **one or more of the solutions** illustrated in the roadmap, together with Enel X and thanks to its broad portfolio of business solutions, customizable to the needs and specific features of each customer.

We offer our customers the chance to measure circularity and their organizational carbon footprint using an **integrated approach**, drawing value from the synergy of the two solutions (CE Report and GHG Report):

Strategy and planning

Identifying and prioritizing potential sustainability actions, supporting the definition of company targets

Cost saving

The integrated roadmap provides the customer with an estimate of the economic savings that can be achieved by implementing the proposed solutions

Opportunity identification

Measuring energy savings and reduced emissions from the proposed solutions

Anticipation of market needs

Starting to measure emissions and circularity today puts a company in an advantageous position on the market, which is evolving toward increasingly stringent sustainability disclosure regulations

Storytelling and communications

The company will have access to an effective and credible storyline, sharing its journey toward all-around sustainability

Environmental impacts

Visibility of a series of circular opportunities for the business

In 2021, we concentrated our efforts on creating a **pilot project in Italy**, to strengthen and consolidate Enel X's skills in offering services to develop and implement **sustainability strategies and initiatives**. We created a task force of talent dedicated to the offer and implementation of services, to guide companies along the **path to sustainability**. Starting with analysis of current sustainability performance, a precise roadmap is outlined to support the execution of Enel X solutions, to help achieve our customers' decarbonization goals.

Thanks to the Enel Group's many years of experience in decarbonization and the circular economy – as well as to a strategic approach guided by **ESG** indicators – Enel X now offers its customers a wide range of Sustainability Advisory services, including tools for the analysis and measurement of environmental impact, like the **Circular Economy Report** and the **GHG Report**, and help designing an ESG strategy and reporting with the **Sustainability Report**.

In 2021, to create the Circular Economy Report, more than **50 companies** in Italy were involved, **with more than 160 sites** from various business sectors, including Genagricola, Inalca and DOpla.

Key Highlights 2021

50	**165**	**17,184**
businesses involved	Circular Economy Reports created on corporate production sites	predicted CO_2 savings through the solutions identified by Enel X on the roadmaps of 51 Circular Economy Reports made in 2021

Clients by Industry

2% EACH	7%	9%	11%	17%	17%	26%
Extraction, events, automotive, plastic	Petrol-chemical	Real estate	Metals	Food and beverage	Services	Textiles
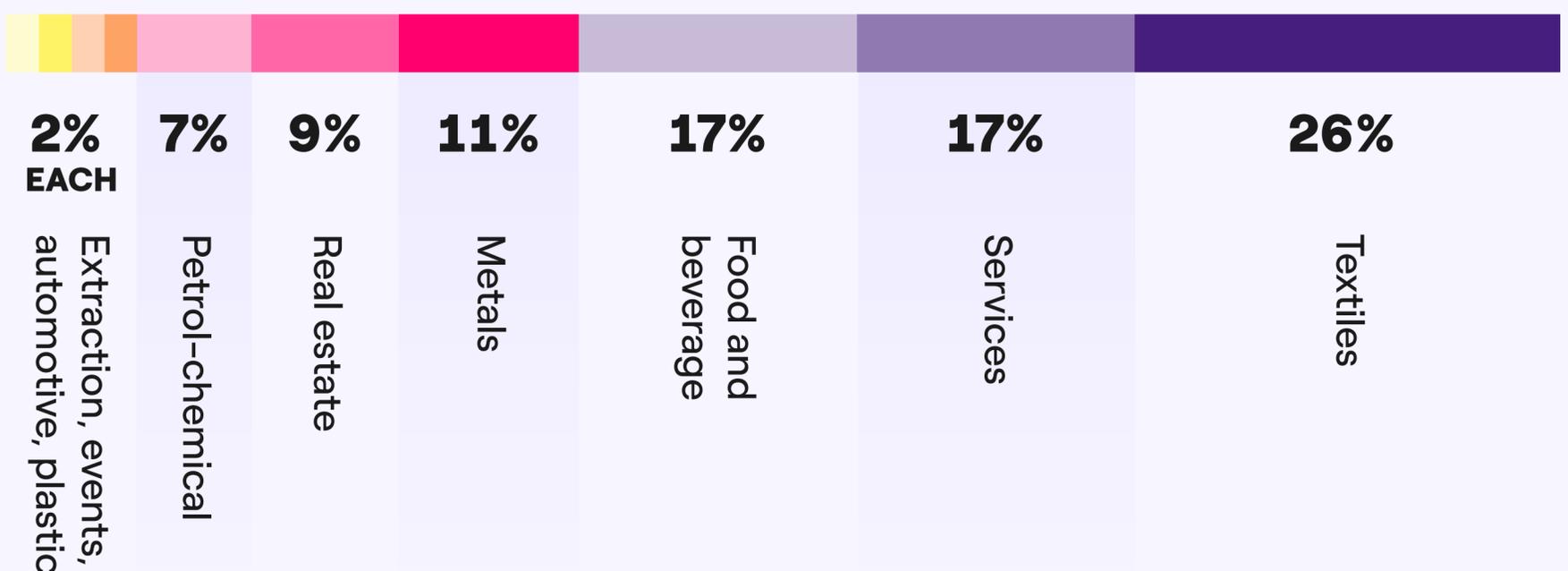
Genagricola

Genagricola S.p.A. turned to Enel X for a pathway to circularity, to become **the first zero-impact agricultural corporation in Italy**.

With over 8,000 hectares cultivated in Italy and more than 7,000 in Romania, Genagricola S.p.A. is **the largest agricultural corporation in Italy**. Its business is focused on **viticulture**, **arable land**, **livestock**, **forestry**, and **renewable energy**, using some residual products to produce biogas for electricity.

Enel X helped Genagricola outline **its own energy transition** by identifying its starting circularity score through two levels of analysis: Corporate Circularity and Energy Circularity. The analysis was carried out on **22 of the company's sites** throughout Italy.

Corporate Circularity for Genagricola

Enel X evaluated in detail, at each point of the value chain, how Genagricola applies the principles of the Circular Economy and where the main areas for improvement are.

31.1%
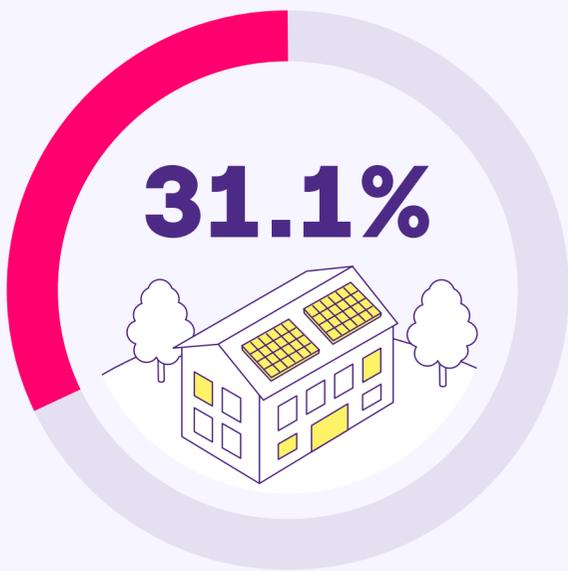
Genagricola divides the topic of sustainability into three different aspects: economic, social and environmental.

Through a strategy of decarbonization and electrification, it is working on ensuring a sustainable tomorrow for future generations.

27.5 — 72.5
Procurement

41.7 — 58.3
Production inputs

2.5 — 97.5
Energy consumption

57.5 — 42.5
Waste production

15 — 85
Logistics and Production

Sales models

Post-Consumption

100
Energy consumption for NON-production purposes

45 — 55
Approach to the Circular Economy

■ AS-IS
■ GAP
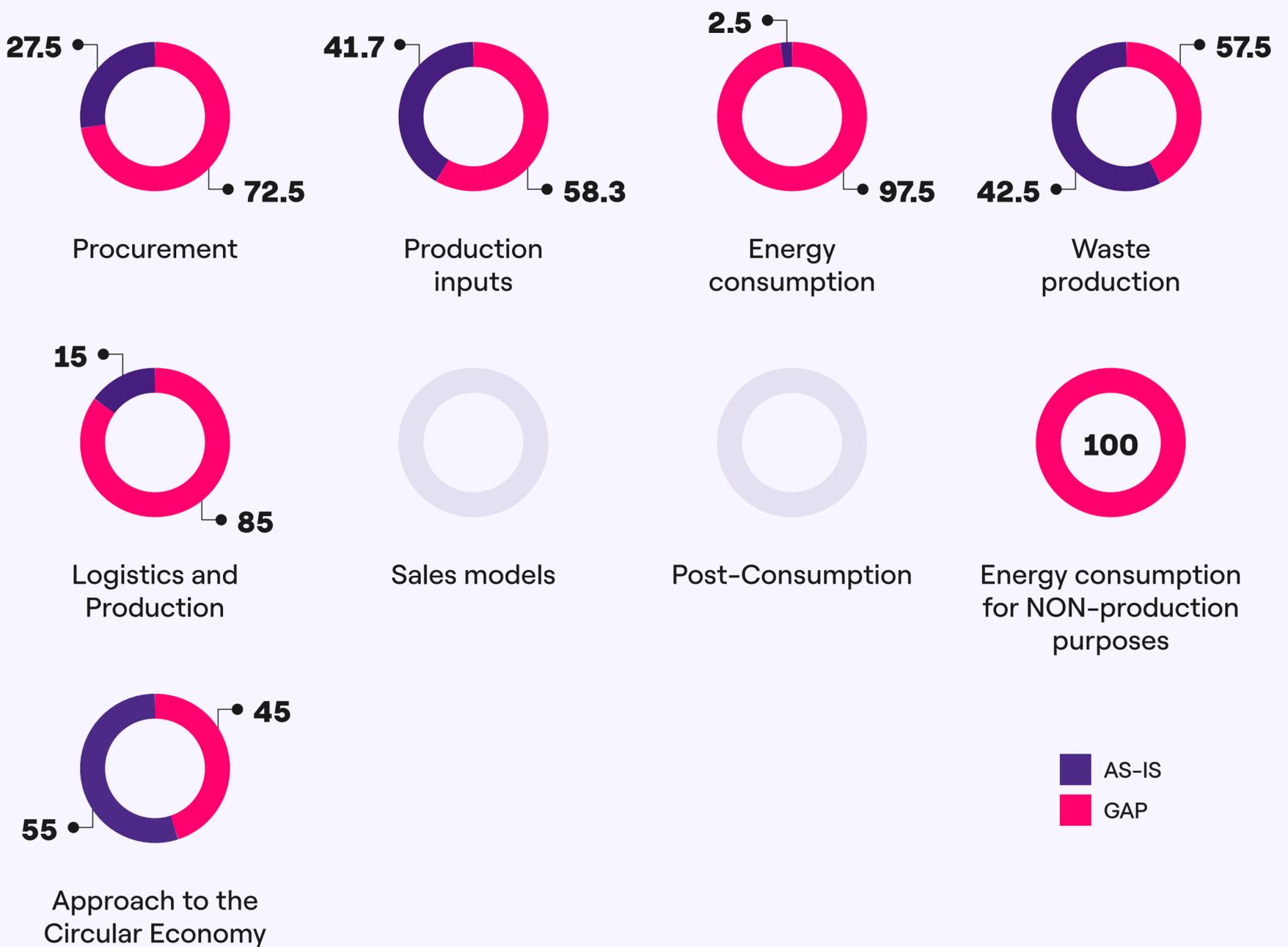
Strenghts

> One of the elements that most impacted the circularity score was the close attention paid to the **efficient use of materials** throughout the value chain. Almost all production waste is reused internally, and some of the materials used for packaging come from recycling.

> Another strength lies in the **company's approach** to the **Circular Economy**. Genagricola communicates its activities in sustainable agriculture and biodiversity to its stakeholders through a dedicated section of their website.

Areas for improvement

> Genagricola's score of 31.1% can be improved by working on energy supply from renewable sources and on **logistics** and **distribution** using electric mobility.

Measuring As-Is

Site Energy Circularity for Genagricola

Enel X evaluated in detail how Genagricola applies the principles of the Circular Economy in consumption and the energy management of the sites analyzed.

The average energy circularity score from the 22 sites was **14.8%** (ranging from 5% to a maximum of 22%).

The main areas for improvement concern the self-production of energy, the adoption of sustainable mobility solutions, and the creation of a Circular Economy plan with quantifiable goals.

14.8%
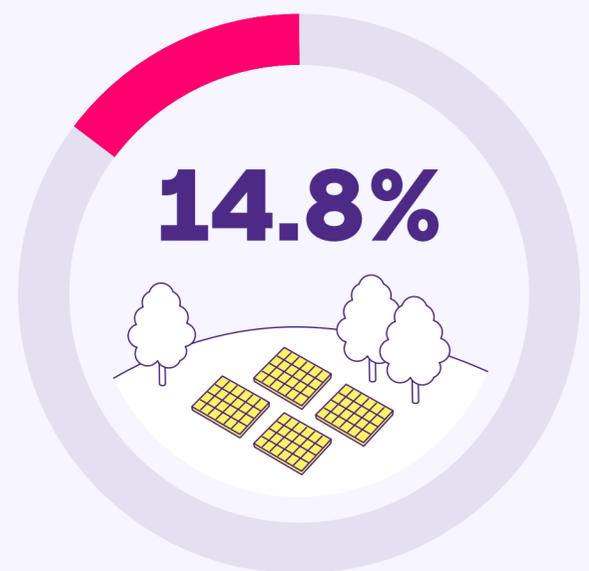
Average score of 22 sites

Roadmap for Genagricola

By integrating the solutions proposed by Enel X, the energy circularity score could see an **average increase of between 43 and 58%**.

In the first phase of Genagricola's transformation process **two key pathways** were defined: the use of **self-produced from photovoltaics** and the **electrification of the entire corporate fleet**.

Through the partnership with Enel X, Genagricola will install photovoltaic panels at three of its facilities:

> **500 kWp** at the S. Anna estate, Genagricola's operational site in Annone Veneto (VE), where it is estimated that **5,150 equivalent tons of CO_2 will be avoided** in the 25 years of the plant's service life;

> **153 kWp** at the Costa Arente estate, in Grezzana (VR) that will make it possible to **avoid production of about 1,700 tons of CO_2** in the same period of time;

> **55 kWp** at Cà Corniani, in Caorle (VE), where the **savings** expected are around **610 tons of CO_2**.

The photovoltaic plants will be paired with a **monitoring** system that detects energy produced, energy taken from the grid, energy self-consumed, and energy put into the grid in real time and for different time scales, as well as the economic savings generated and the CO_2 emissions avoided.

The **electrification of the entire company fleet** replaces employee cars with electric vehicles, equipping **18 locations with 27 charging stations**, including some **fast** (50 kW) stations.

58%
Energy CE
POTENTIAL

Energy
efficiency

Photovoltaic

14.8%
Energy CE
CURRENT

Fleet
electrification
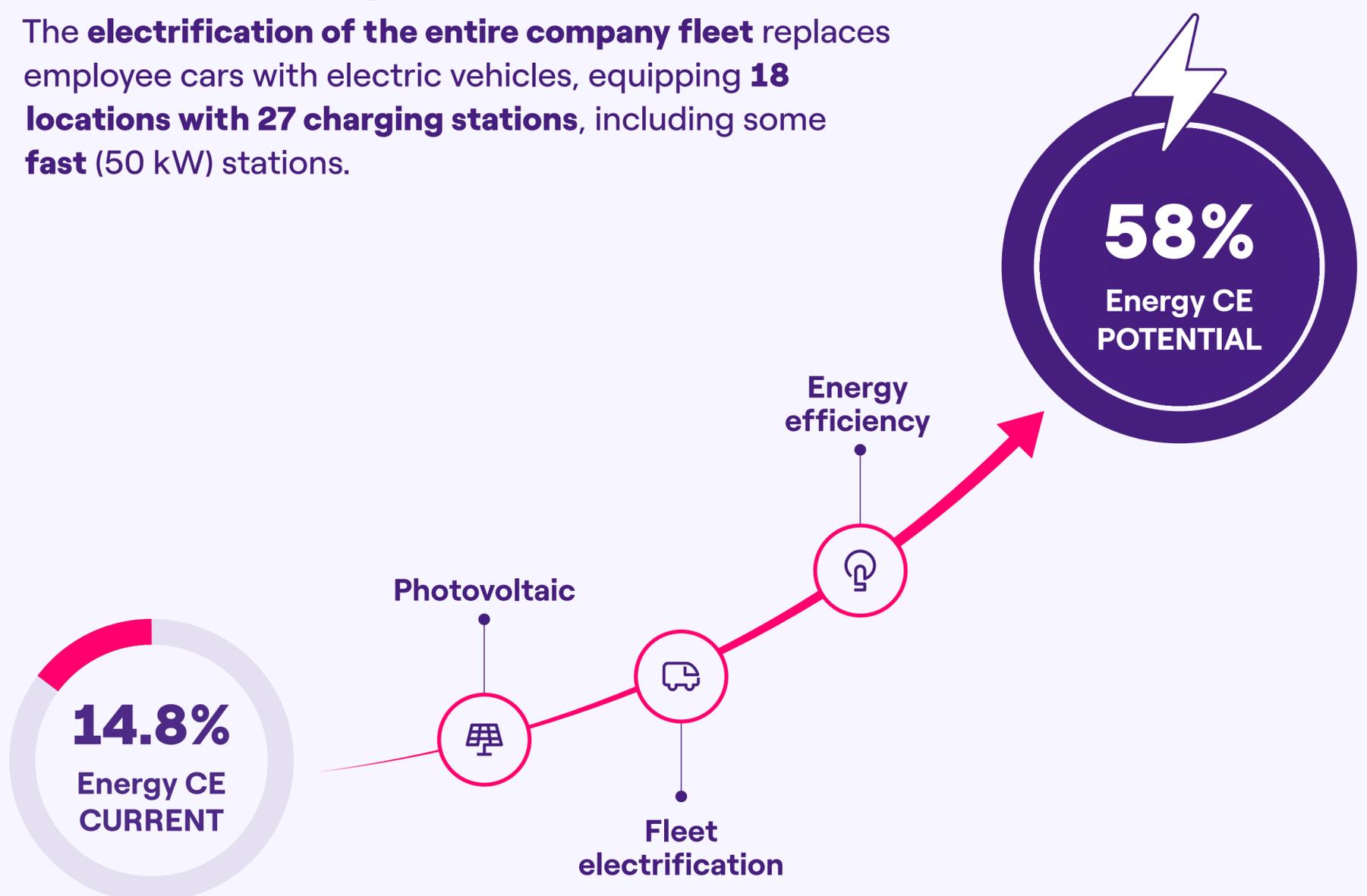
Inalca (Cremonini Group)

The leader of the **Cremonini Group** turned to **Enel X** to increase the level of circularity of its production processes.

Inalca (Industria Alimentare Carne) is a **European leader** in the processing and distribution of beef, with business ranging from fresh products to canned meats, frozen meats and by-products, and the mass production of roughly 500,000 tons of meat a year, both under its brand and for third parties.

Enel X helped Inalca identify its **starting circularity score** using **two levels of analysis**: **Corporate Circularity** and **Energy Circularity**. This path integrates Inalca's strategy to increase the sustainability of its entire supply chain.

Corporate Circularity for Inalca

Enel X evaluated in detail, at each point of the value chain, how Inalca applies the principles of the Circular Economy, and where the main areas for improvement are.

55.3%
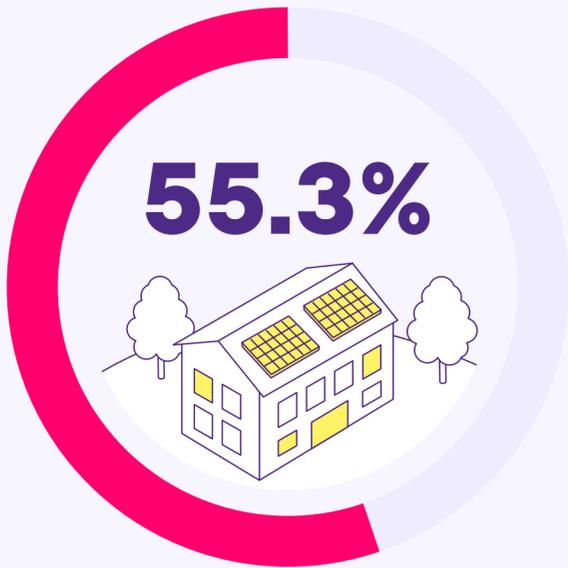
Providing safe food at affordable prices with a reduced environmental impact is the sustainability goal that Inalca strives for in its business. This outcome can be achieved through oversight of the entire supply chain.

Relationships with suppliers and the sharing of value produced with the community make it possible to maximize results in terms of environmental sustainability.

Design
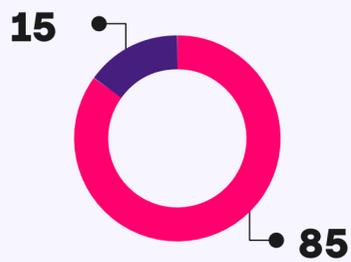
Procurement — 15 / 85
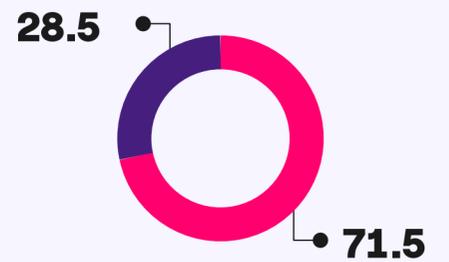
Production inputs — 100

Energy consumption — 28.5 / 71.5

Waste production — 100

Logistics and Distribution — 100

Sales models

Post-Consumption
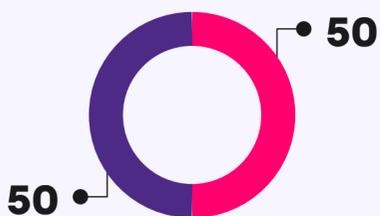
Energy consumption for NON-production purposes — 50 / 50
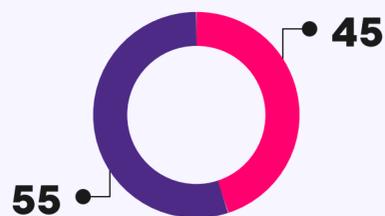
Approach to the Circular Economy — 45 / 55

AS-IS
GAP

Strenghts

> One of Inalca's top strengths in terms of the Circular Economy is their energy procurement. **Inalca self-produces almost 100% of their energy needs**, with 36% from renewable sources.

> Another strength lies in **waste management**; 99% is sorted and more than 7,000 tons of processing waste is recovered and reused in agriculture as organic fertilizer. In addition, 45% of **packaging** is made with recycled paper, 17% with recycled plastic and 72% with recycled aluminum and steel – and 95,000 cubic meters of **water** are recovered and recycled through purification.

Areas for improvement

> The score of 55.3% can be improved by working on **logistics** and **distribution** and **procurement**.

Energy Circularity of Ospedaletto Lodigiano for Inalca

Enel X evaluated, for the Ospedaletto facility, how Inalca applies the principles of the Circular Economy in energy consumption and management.

57.9%

+0.42
Energy CE Gap

0.58

1.00

	AS IS	MAX
Enablers	0.00	0.05
Energy Management	0.05	0.15
Energy Efficiency	0.06	0.30
Renewable Energy	0.46	0.50

Legend:
- Enablers
- Energy Management
- Energy Efficiency
- Renewable Energy
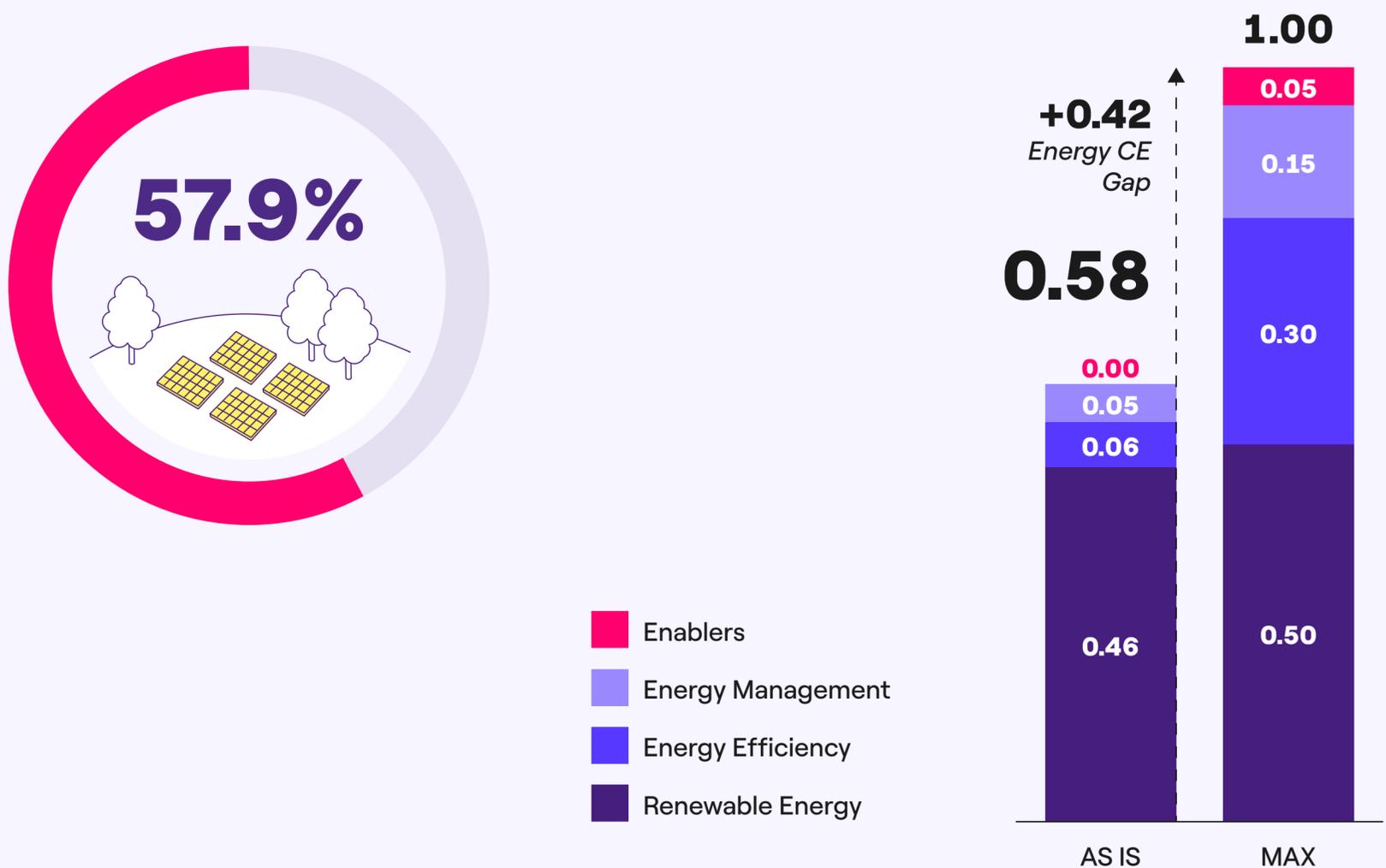
Strengths

> The main strength of Ospedaletto Lodigiano, the site in question, is its approach to **self-production**; with systems of electrical and thermal self-production located on site, it can cover more than half of its energy needs.

Areas for improvement

> The site's circularity score can be improved by **modernizing machinery**, reducing waste by **monitoring** and **managing energy consumption**, optimizing its **lighting system**, and by introducing enablers for **electric mobility** and car-sharing programs for employees.

Roadmap for Inalca

Integrating the solutions proposed by Enel X, the best of the three envisaged scenarios, will bring the Ospedaletto Lodigiano site's level of energy circularity **from 57.9% to 80.4%**.

80.4%
Energy CE
POTENTIAL

57.9%
Energy CE
CURRENT

Machineries
improvement

Lighting
efficiency

Sensing and
dimming

Energy
efficiency

Electric
mobility
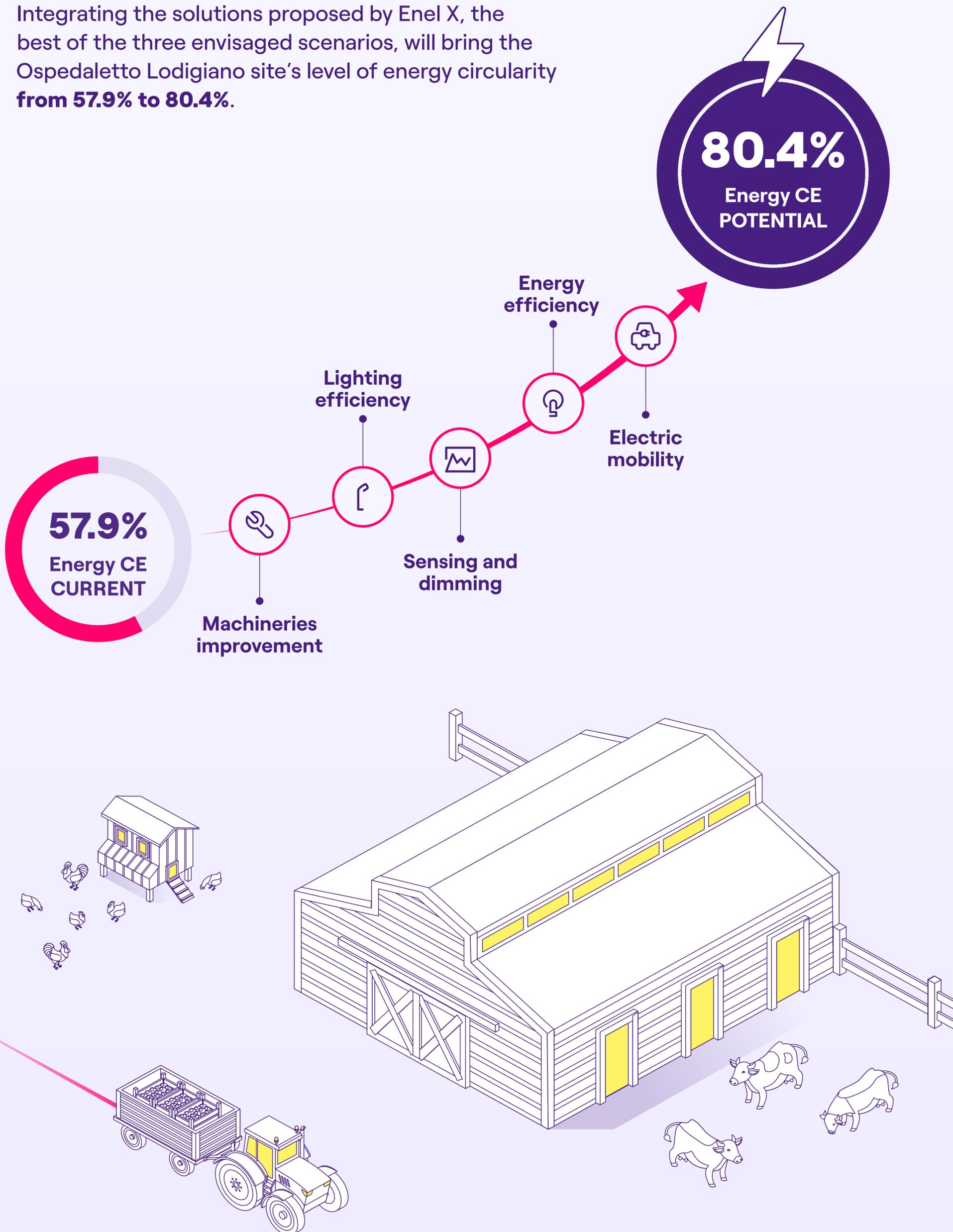
DOpla

The **DOpla** Group came to Enel X to monitor and increase the circularity level of its activities.

The company from Treviso, founded in 1964, is now the **Italian leader and one of the biggest producers in Europe** of **tableware and containers for food use**, created in natural fiber (cellulose pulp), paper/cardboard, or bioplastic, as well as traditional reusable and recyclable plastic.

Enel X helped DOpla identify its initial circularity score with **two levels of analysis**: **Corporate Circularity** and **Energy Circularity**.

Corporate Circularity for DOpla

Enel X evaluated in detail, at each point of the value chain, how DOpla applies the principles of the circular economy and where the main areas for improvement are.

33.5%
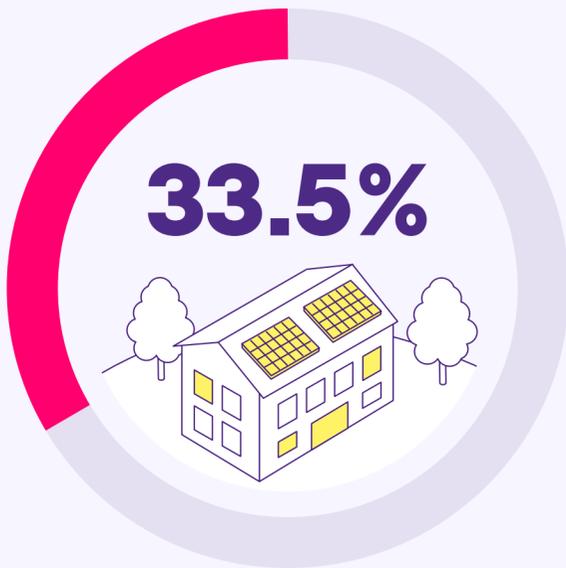
Producers of tableware and containers for food use are some of the most active in researching new technologies aimed at increasing the sustainability of products on the market.

DOpla has long been in the front lines in joining innovation and sustainability, both in terms of production materials used and in finished products made.

100

Design

22 / 78

Supy

33 / 67
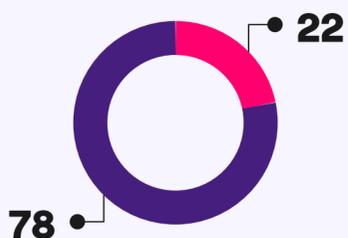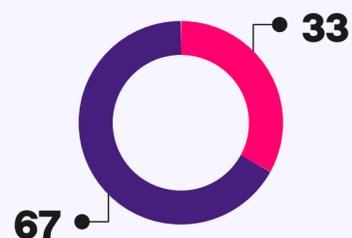
Energy consumption in production
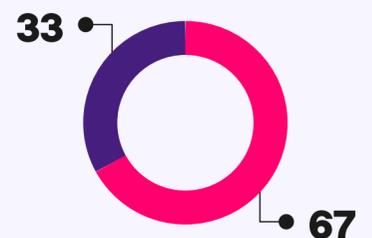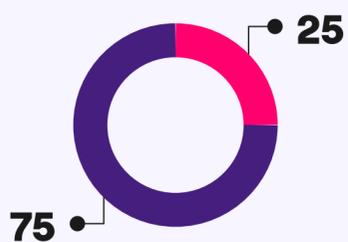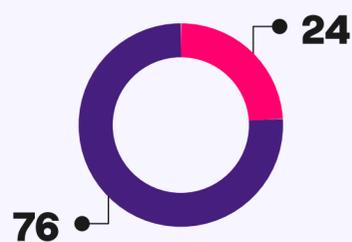
33 / 67

Waste production

100

Logistics and Distribution

25 / 75

Sales models

24 / 76

Energy consumption for NON-production purposes

45 / 55

Approach to the Circular Economy

■ AS-IS
■ GAP
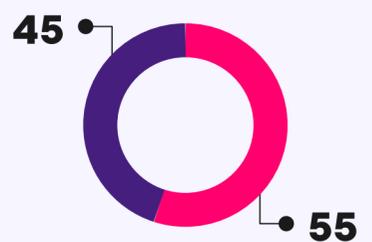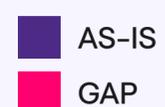
Strengths

> In 2020, the company generated 165 tons of **waste**, of which **65% was reused or recycled**.

> Another strength lies in the sustainability and circular economy strategies the company has adopted, which aim to reduce CO_2 emissions, including **reducing** the thickness of the stretch film used in packaging **by 8.33%**.

Areas for improvement

> The score of 33.5% can be improved by working on **logistics and distribution**, **procurement**, and **production inputs**.

Energy Circularity of the DOpla headquarters

Enel X evaluated in detail how DOpla applies the principles of the circular economy in the consumption and energy management of its headquarters.

46.5%

+0.535
Energy CE Gap

1.00

0.05

0.15

0.30

0.465

0.00

0.09

0.14

0.50

0.24

- Enablers
- Energy Management
- Energy Efficiency
- Renewable Energy

AS IS   MAX
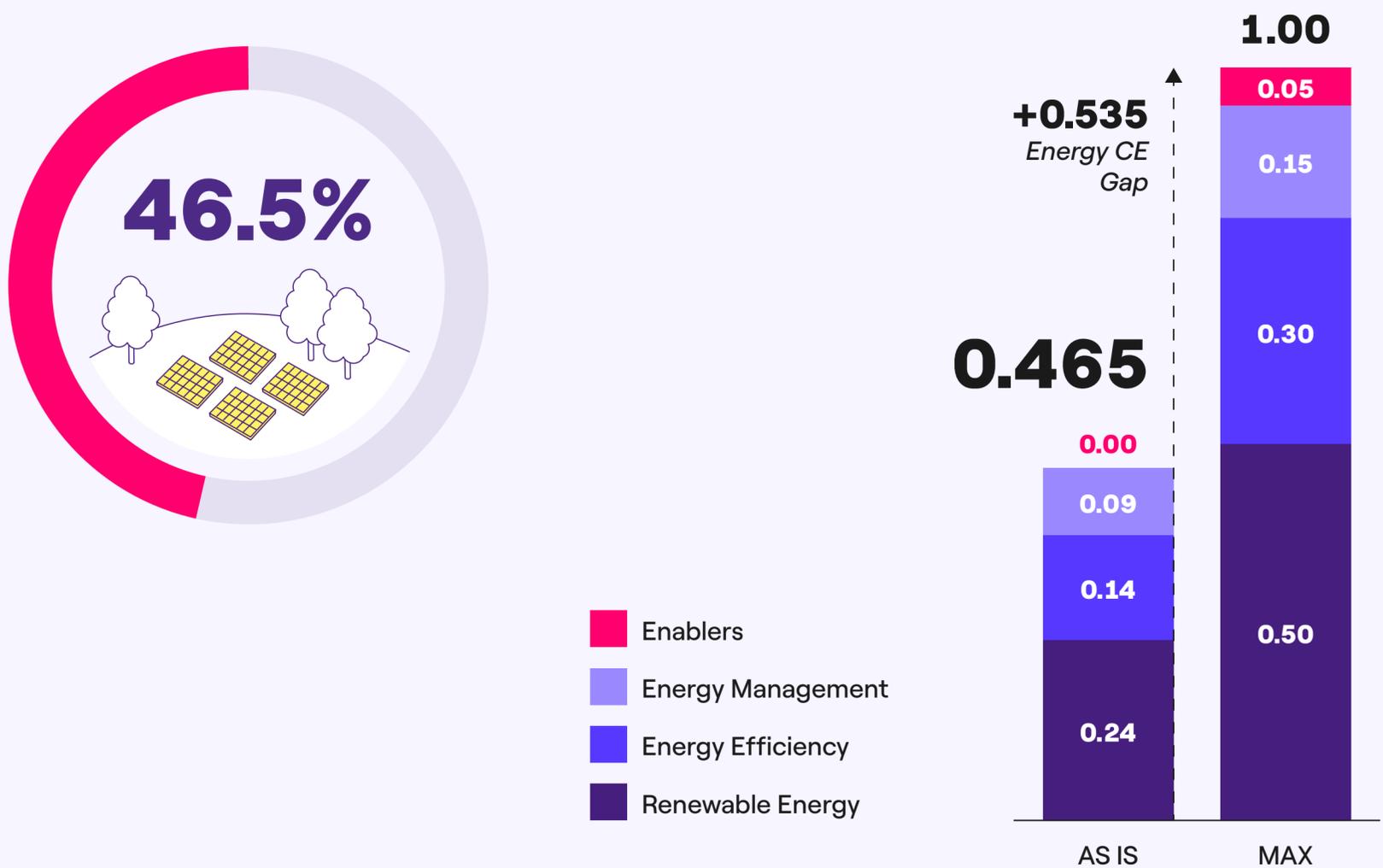
Strengths

> Consumption is partly powered by **clean energy** generated by a **photovoltaic system**. It also features a system that recovers the hot air produced by the compressors to heat working spaces.

Areas for improvement

> The circularity score for the Casale sul Sile headquarters can be improved by making its **lighting** more efficient and introducing solutions for **electric mobility**, such as the installation of charging points.

Roadmap FOR DOpla

Integrating the solutions proposed by Enel X, the best of the three envisaged scenarios, will bring the level of energy circularity of the Casale sul Sile facility **from 46.5% to 56.1%**.

56.1%
Energy CE
POTENTIAL

46.5%
Energy CE
CURRENT

Efficient management of energy consumption

Lighting efficiency

Electric mobility
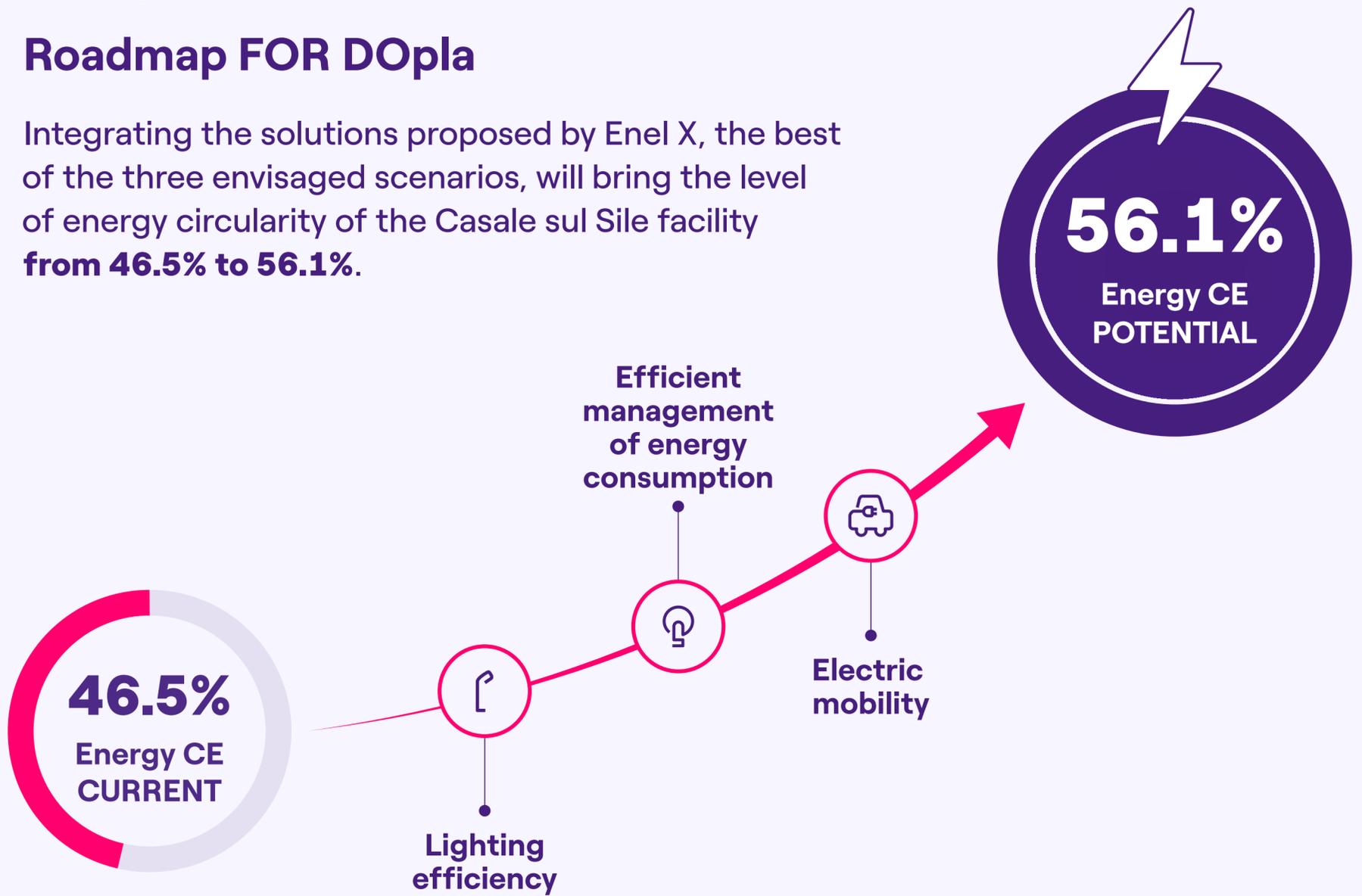
The scenario includes the following intervention for DOpla's site:

> **Renovation of the lighting system** with LED bulbs;

> **Energy Monitoring System**;

> **Electric Vehicle charging** solutions.

AS–IS

TO–BE

Energy CE

46.5%

56.1%

LED
>>>>>>>

EMS
>>>>>>>

EV CHARGING
>>>>>>>

Corporate CE

31.9%

31.9%

3.2 Monitor for Circular Fashion

SDABocconi
SCHOOL OF MANAGEMENT
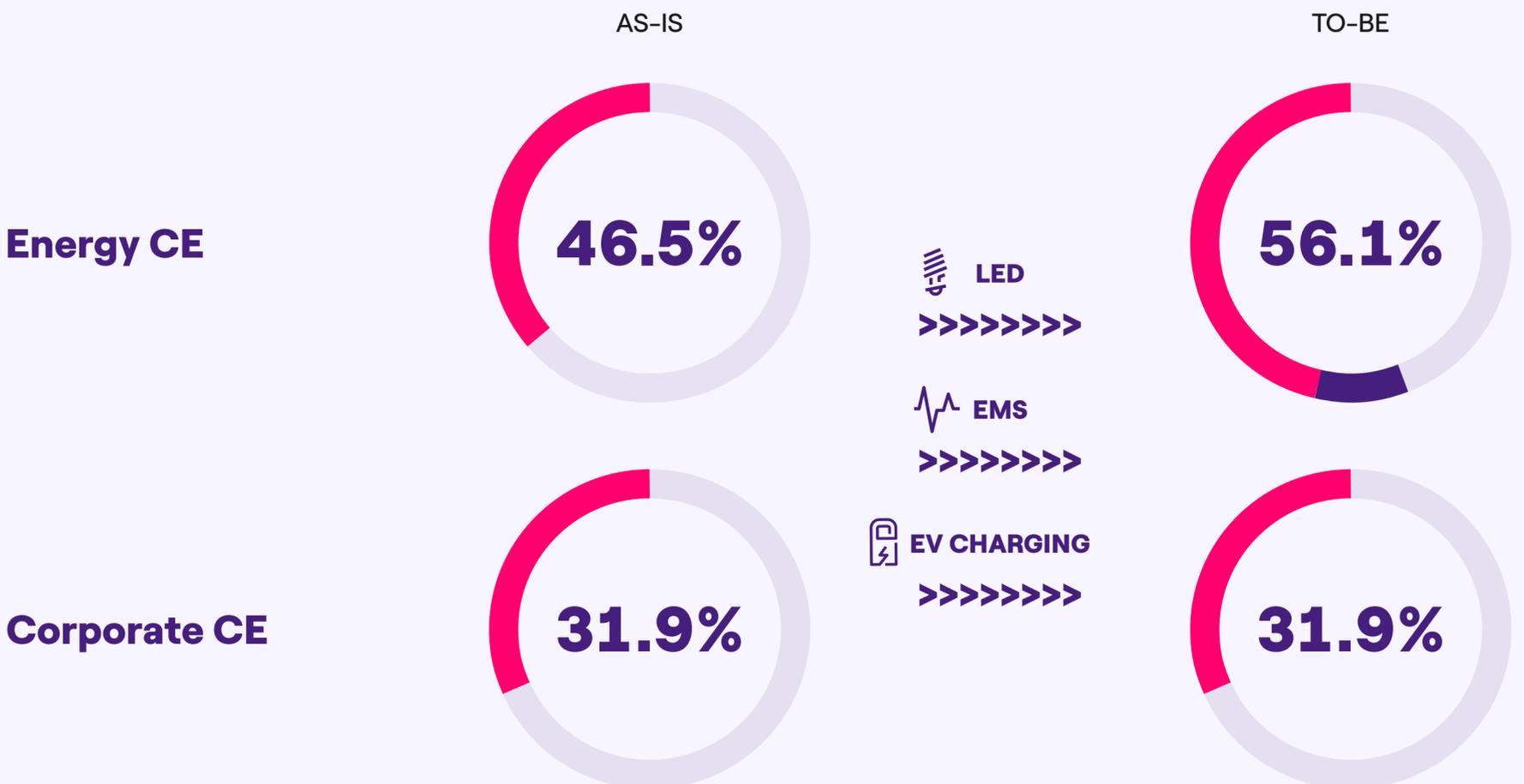
SUSTAINABILITY LAB
MONITOR FOR CIRCULAR FASHION

In 2021, Enel X was a main partner for the first edition of the **Monitor for Circular Fashion** powered by Enel X, a study directed by the **SDA Bocconi School of Management** – the first of its kind – aimed at providing a clear overview of the **maturity of the circular economy in the Italian fashion industry**.

The Monitor for Circular Fashion features a **representative cross-section of the Italian fashion industry** throughout the supply chain (participants included OVS, Vibram, Radici Group, Vivienne Westwood, Candiani Denim, and others) with the goal of **mapping** and **analyzing** industry dynamics and trends in the coming 5-10 years, and examining how these trends and the 2030 Agenda will influence business models.

The companies were analyzed using the Enel X methodologies at the basis of the **CE Report**, in order to understand their positioning with respect to **energy–related** cross-sector KPIs and through surveys created by SDA Bocconi, aimed at identifying new KPIs for circular fashion.

Thanks to the participation of SDA Bocconi, and to Enel X's know–how, the companies followed a **training** course on topics of the circular economy as applied to the fashion industry, with a special focus on the themes of **supply chain transparency and traceability**, as well as energy efficiency and **decarbonization**.

In September 2021, during **Milan Fashion Week**, a Report on the first edition of the Monitor was presented. In it, alongside the results of SDA and Enel X's analysis, a **circular pathway** for each business model was suggested, to identify **concrete actions** to begin or step up the transition of companies in the industry.

Further information and insights

3.3 Circular Economy Best Performers

Because of a shared commitment to the circular economy, **Enel X** and **Confindustria** started a collaboration in 2019. For the third year, Enel X offered the Circular Economy Report as a prize in **"Circular Economy Best Performer",** a contest created by Confindustria, which collects and disseminates Circular Economy projects and initiatives.

The contest puts the spotlight on the companies that best captured the spirit and business opportunities offered by the Circular Economy model in the various phases of the production cycle (procurement, design, production, distribution, consumption, recovery, recycling). The context provides proof that, even for businesses operating in different production sectors, the challenge of the Circular Economy can **provide a competitive advantage** that generates a **positive impact** in environmental, energy, and economic terms.

> **Best performers** are companies that, over the last few years, have undertaken actions to develop business models or activated/ updated the production process, **in view of transitioning to a "circular logic".**

The winning companies, again for the 2021 edition, received the Circular Economy Report, a tool used to **identify measurable and concrete solutions** that, once implemented, will allow companies to gain a competitive advantage from the many opportunities offered by the circular economy.

4
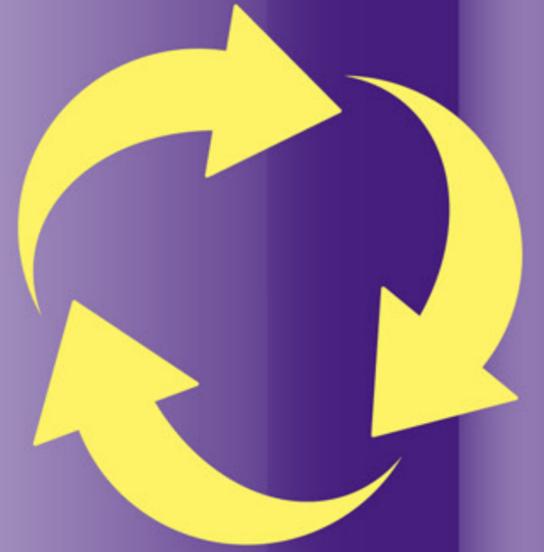
Measuring Circularity of Public Administrations

The city of the future is a city that embraces an all-around model of **sustainability**. It balances aspects of environmental, social, and economic sustainability. In other words, it is a city that **manages resources in a smart and economically sustainable way**, is energy **self-sufficient**, and cares about the quality of life of its residents. It is a city that monitors **data and analytics** to develop policies and plan the development of new infrastructure and services, using **technological innovation** to its advantage.

To achieve this sustainability model, Enel X endorses a transitional approach based on three key principles:

Decarbonization

Urban centers produce 70% of global emissions and, considering the growing rate of urbanization, **acting on the carbon footprint** of cities is a priority. **Decarbonization** and **electrification**, supported by the use of cutting-edge digital technologies, become a strategic tool to face pressing global challenges.
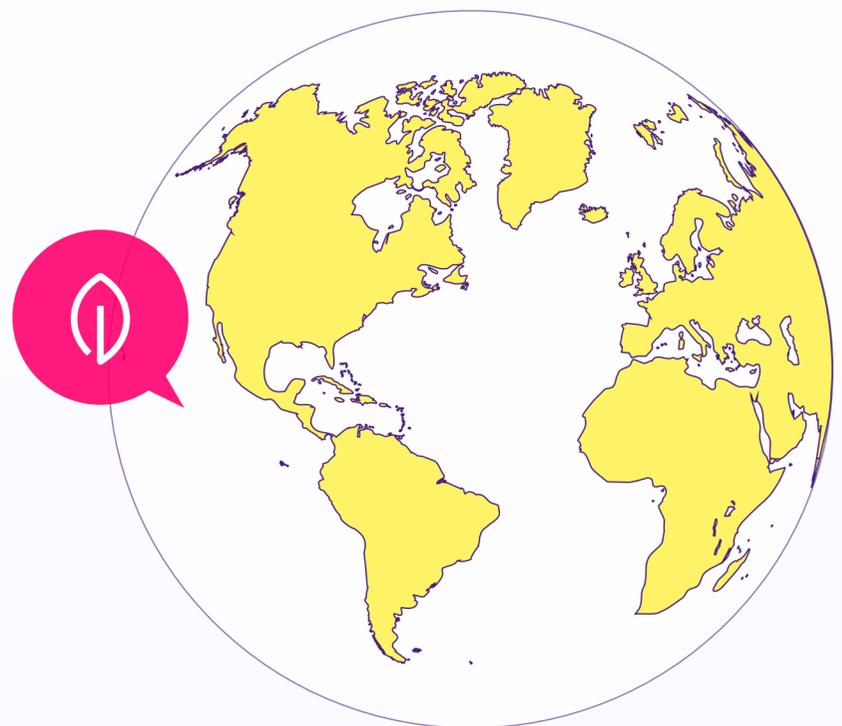
Circularity

Cities consume over 60% of resources, generating 50% of waste. Applying the principles of the **Circular Economy** to urban planning makes it possible to move away from the classic linear flow of take-make-waste, in favor of production and consumption models that optimize the use of natural resources through the integration of renewable and recyclable inputs, models of sharing and the extended service life of assets and infrastructure (e.g., public buildings, mobility, etc.)
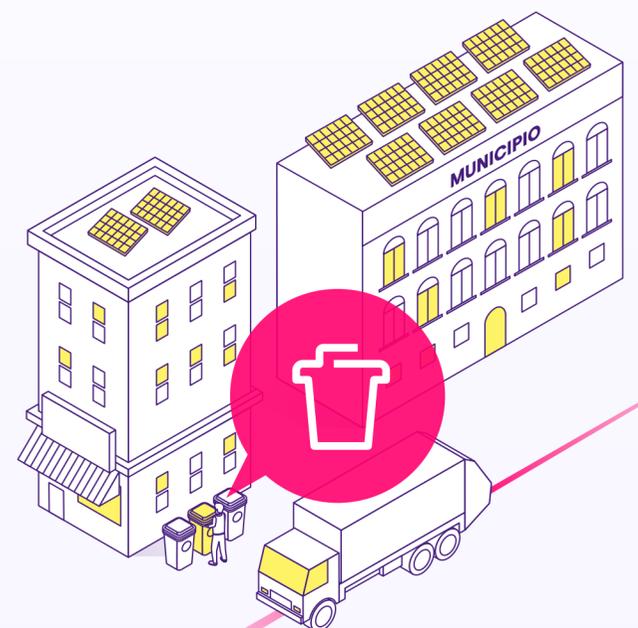
The **5 principles of the Circular Economy** are:

| Sustainable resources | Product as a service | Sharing platforms | Product life extension | Recycling and reuse of urban resources |

People-friendly planning

Urbanization is increasing at a rapid pace (in 2050, 65% of the world's population will live in cities, compared to today's 55%) and lifestyles are changing fast. Only through a **holistic perspective** and in-depth understanding of the city and its systems, interdependencies, new citizen needs, and the opportunities presented by new digital technologies will it be possible to carry out **urban planning** that values local, social, economic, and environmental specifics. The city can develop while ensuring well-being, growth, involvement, and equal opportunity for its residents. It's **citizen-centric planning**, based on the proximity of services and new service models.
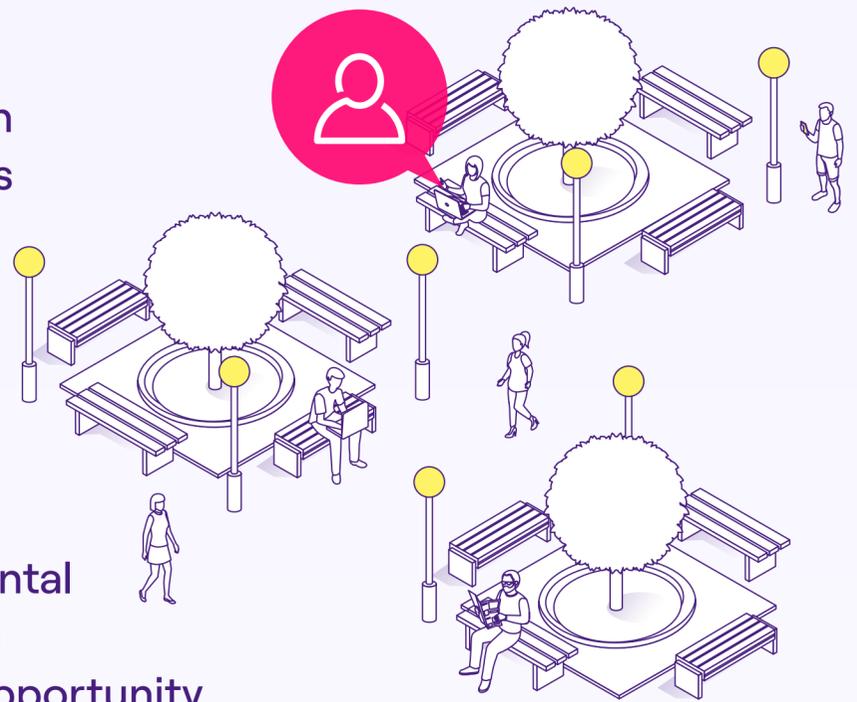
Enel X proposes a structured and data-driven process, to help administrations define and implement a **personalized sustainable development plan**:

1 **Use of data and calculation of KPIs** to measure current sustainability and monitor new developments in Italian cities, helping them review and set new goals through objective and comparable KPIs, calculated in part by using open data.

2 **Outline of a personalized roadmap** of key actions to improve the city's sustainability.

3 **Implementation support** by implementing integrated solutions and innovative financing systems.

Sustainable and circular public lighting in La Florida – Chile

In 2021, the town of La Florida, in the metropolitan area of Santiago de Chile, set a record. Enel X proposed and developed a **project for energy efficiency** that, in addition to applying the circular pillars of extending product life and circular inputs, will allow for a **savings in annual consumption of up to 50%**.

The initiative, which involved the replacement, installation, and maintenance of **16,815 public lighting fixtures**, identified **LED** as the best alternative, especially because of its **environmental and economic benefits** (these fixtures do not contain mercury, reducing risks and costs linked to hazardous material management).

Business Line
e–City

Country
Chile

Circular Economy Model
Product life extension and Sustainable Inputs

Value for the customer
Energy efficiency and economic savings

Value for Enel X
Replacement, installation and maintenance of public lighting

The old lights consumed 27.8 KWh, while consumption dropped to 15.2 KWh with the new LED lights – a savings of 4.6 MWh a year. Furthermore, the replacement process provided the opportunity to **use the materials** from 16,815 sodium and metal halide lamps through recycling initiatives. A total of **150,000 kilograms** of aluminium and plastic components were recovered, to be **reused** in other structures or **recycled**.

With better quality lighting in public areas, the community benefits from increased safety. In addition, the **energy savings** unlocked will allow for **economic savings** that can potentially be turned into a greater availability of funds for the city's administration, to carry out projects and initiatives that improve services for residents and their quality of life.

4.1 Open Data and indexes for Public Administrations

For some time, Enel X has worked hard to develop digital tools to aid governments in accessing data and translating that data into information to use for sustainable urban planning.

The first tool Enel X developed was **Enel X City Analytics**, which maps the movements of people and vehicles throughout the city, to plan mobility and security services and optimize hospitality.

During the pandemic, we designed and developed **Enel X City Analytics Mobility Map**: an interactive map that allows the user to view daily mobility variations in cities. The map has now been available at no charge for over a year and a half.

The next step on this roadmap was to leverage the enormous amount of **Open Data**, data available and accessible at no charge from public portals or alternative sources, like satellites and community open sources. Open Data on the area is, however, fragmented and does not have a uniform format.
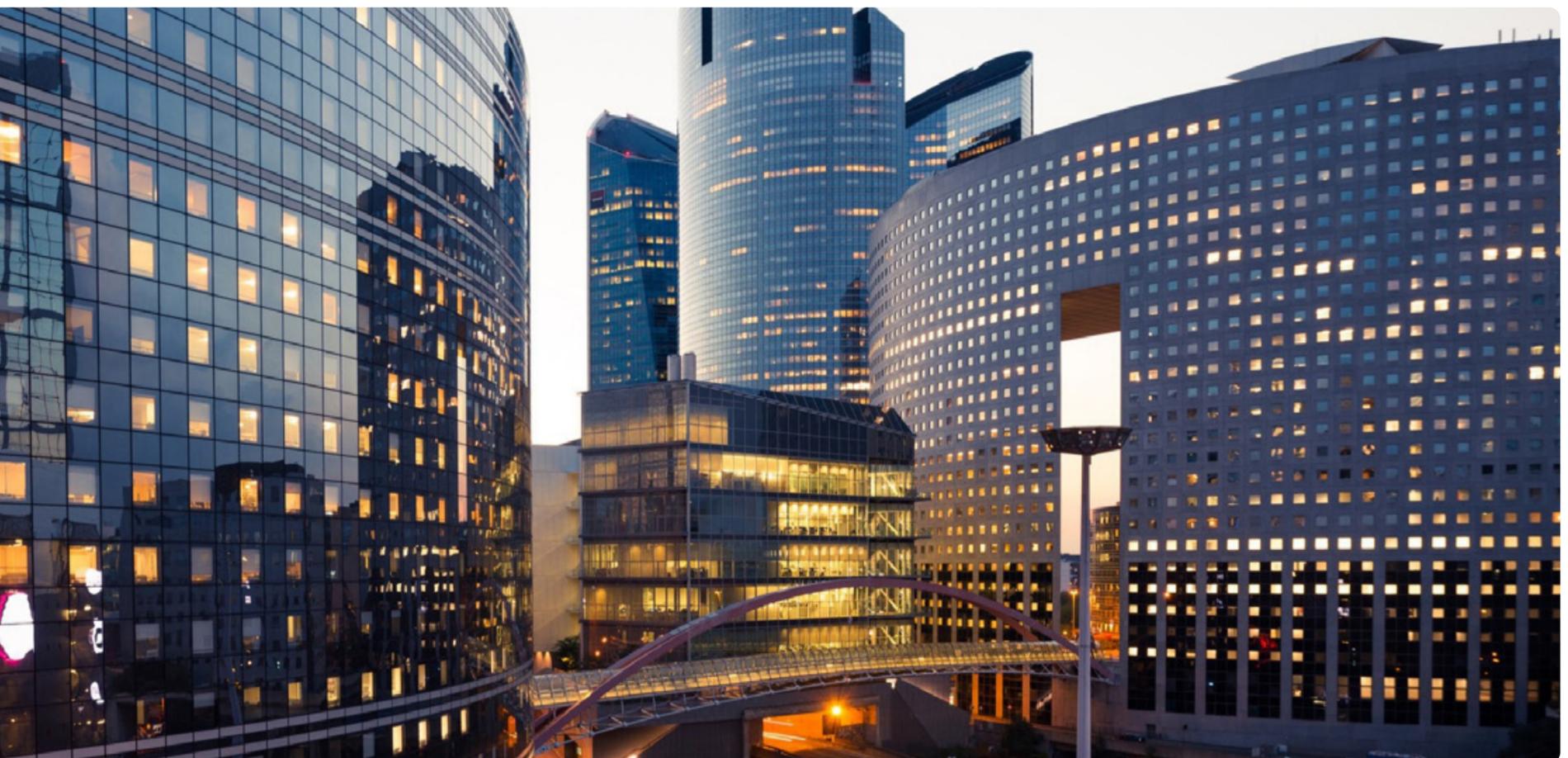
Using the Open Data available in Italy and through collaboration with universities, Enel X developed **three complementary sustainability indicators**:

> **Circular City Index**: developed in collaboration with the University of Siena and IMT Lucca, analyzes a town's level of urban circularity, helping it identify any priority areas for improvement.

> **15 Minute City Index**: developed in collaboration with the University of Florence, assesses a city's urban planning from a proximity perspective, with the goal of supporting public administrations in evaluating and carrying out actions that allow residents to access essential services within a 15-minute walk or bike ride.

> **CO$_2$ City Index**: an indicator that measures the level of anthropogenic emissions of CO$_2$ in Italian cities, in terms of tons of CO$_2$ per km^2 and tons of CO$_2$ per inhabitant, giving access to monthly averages for 2019 and historical annual trends from 2000 to 2019.
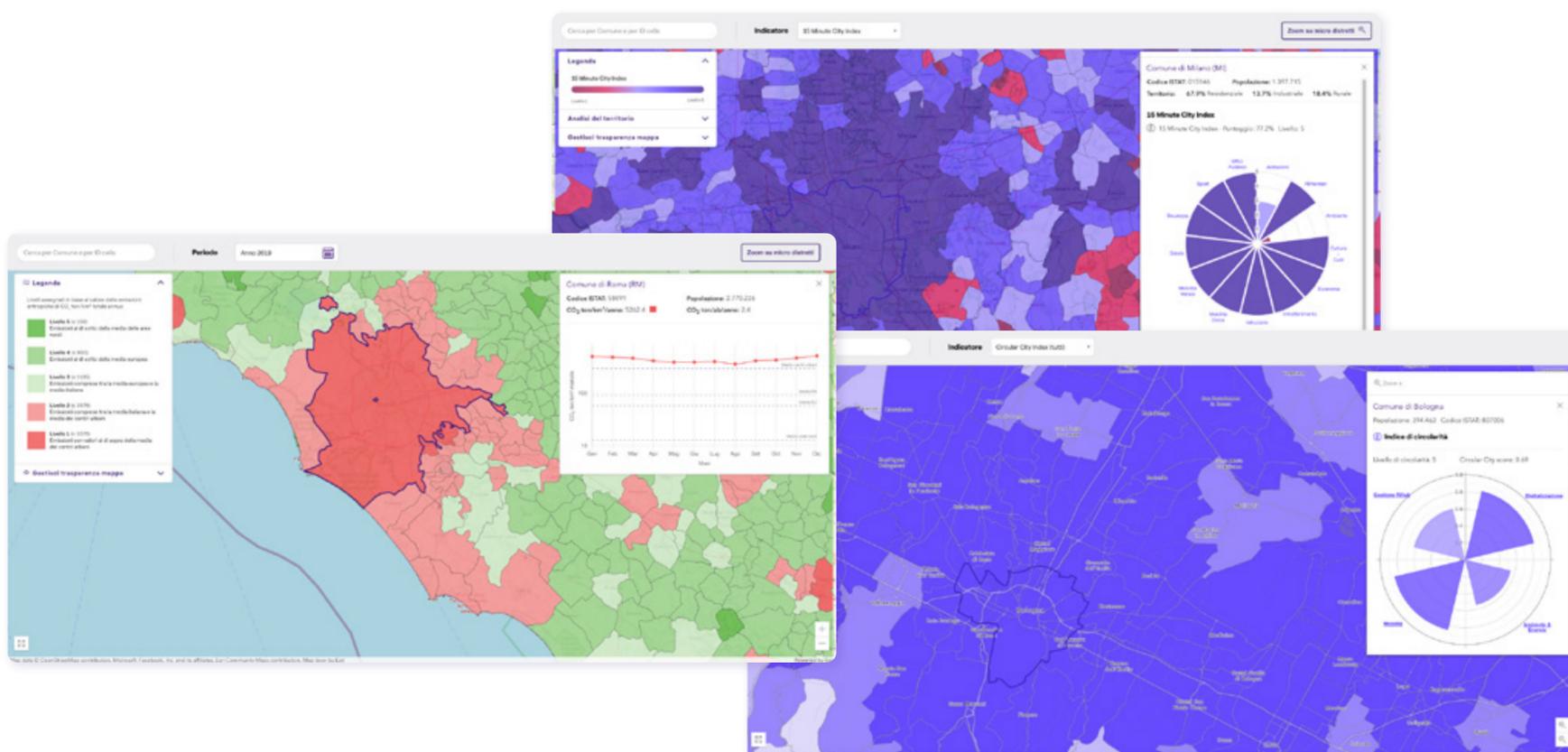
These three indices provide administrations with a **greater awareness** of strengths and areas for improvement, thanks in part to the possibility of comparing the city with the results of other Italian municipalities. **The analysis and constructive comparison** aim to support the planning and execution of projects for all-around urban sustainability, maintaining **the well-being of residents as the primary goal**. Residents that, in turn, can contribute to the collection of data and information for public administrations, triggering a virtuous cycle.

4.2 Enel X Circular City Index

The **Circular City Index**, an indicator developed by Enel X in collaboration with the **University of Siena** and **IMT Lucca**, evaluates the circularity level of **over 7,000 Italian towns**. The indicator, based on Open Data from national sources, gives an overall score that evaluates the maturity and implementation of **policies**, **services**, **and infrastructure** that allow the area to begin a transition toward the Circular Economy, organized in **4 aspects**:
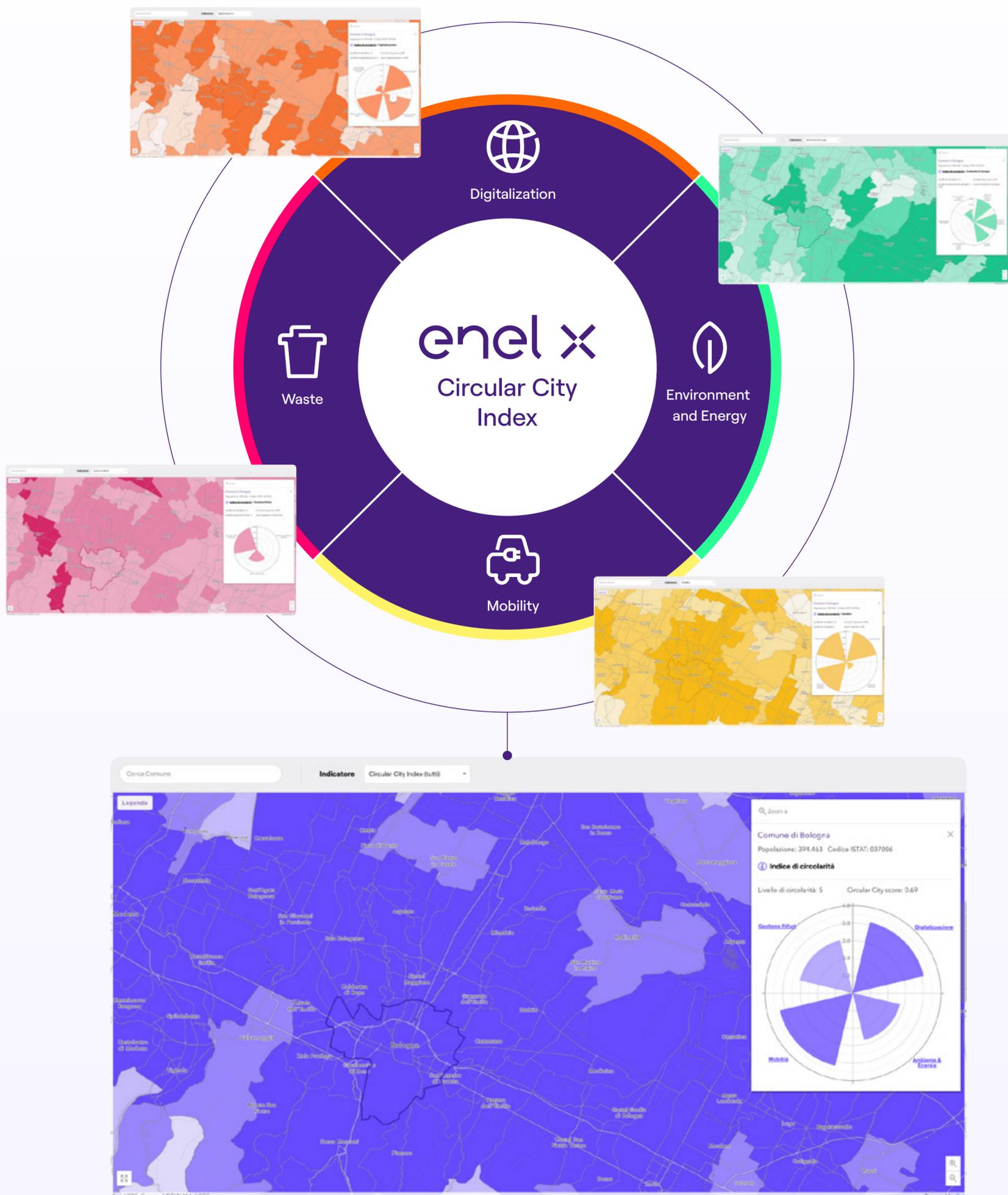
Enel X decided to make this solution completely free of charge. The **Enel X Circular City Index** is currently available for all Italian municipalities on **YoUrban**, Enel X's online portal for Public Administrations, which we use to digitalize our services. The service is based on Open Data from national sources and can evaluate more than 7,000 large, small, and medium municipalities, providing them with the opportunity to:

> **Study areas for improvement**, through data-driven analysis able to support the development of a city plan aimed at increasing the level of urban circularity;

> **Compare the city to national levels**, identifying success stories and innovative areas, from which to take example to replicate and adapt tested and effective circular solutions;

> **Have the certainty of transparent and scientific data**, guaranteed by the University of Siena and Lucca IMT.
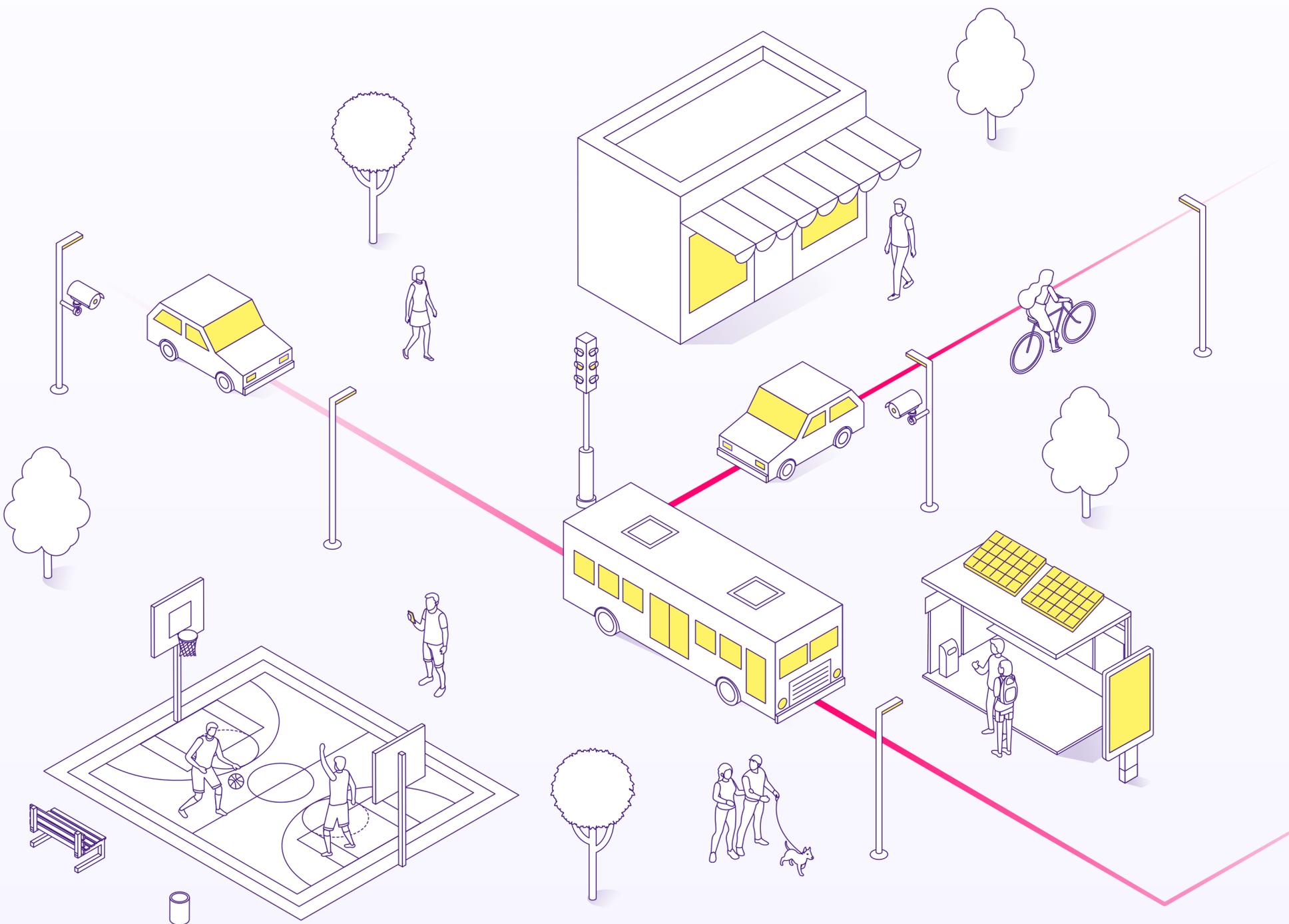
# 4.3 The Circularity Report for Public Administrations

National policies and public awareness of sustainability and the Circular Economy are growing, inspiring governments to set new and challenging goals.

With the **Circularity Report**, Enel X supports Public Administrations in their efforts to respond to new challenges in sustainability and set an example for other cities.

The Circularity Report measures urban circularity on **two levels**:

> **the Public Administration level**;

> **Site-specific level**.

At the **Public Administration level**, the level of maturity and diffusion of the principles of the Circular Economy within the city is assessed, in 5 assessment areas:

Electric and sustainable mobility

Electric vehicles, for **private** and **public (e-bus) mobility**, and sharing programs

Emissions and climate

Air quality (PM 2.5 and PM 10) and **intensity of CO_2 emissions**

Renewable energy and energy efficiency

Renewables and **energy efficiency** in public buildings, areas and streets

Waste collection and management

Recycling of **municipal waste** and **waste for energy recovery**

Water management

Plans and objectives for **saving water**, and **water network efficiency for the city**

For each evaluation area, analysis is then divided into **4 sub-areas**:

🏛 **Governance and Policy**	🎁 **Initiatives and Incentives**
💻 **Digitalization**	∿ **Current Performance**

For the second level of assessment, at a **site-specific level**, we kept the same structure as the Circular Economy Client Report, detailed in paragraph 3.1.

Benefits for Public Administrations

Local planning tool

Tool to help define **policies** and **strategies** for sustainability and the Circular Economy at the local level

Tool for management and monitoring

Using the report, it is possible to **measure and monitor progress** over time on the path to circularity, exploring development opportunities

Mechanism for reducing energy costs

The identified solutions make it possible not only to **increase the level of circularity**, but also to **generate energy efficiency**, allowing for significant economic savings

Mechanism for institutional communication

An effective tool for storytelling and communications toward stakeholders, to activate **local marketing** strategies and **attract people** and **investments**

Accelerator for urban livability

This process fosters greater attention to **environmental sustainability**, **potentially improving quality of life** and **urban livability** by reducing CO_2 emissions

The town of Albavilla

Albavilla is a town in Lombardy with over 6,000 inhabitants, located in the province of Como, near the lake of the same name. The town is surrounded by a rich landscape of natural beauty, which might explain its close attention to the sustainable management of environmental heritage and protection. With Enel X, Albavilla has undertaken a **path toward circularity**, analyzing its starting point and sustainability potential through the **Circularity Report**.

Measuring As-Is

Circularity of the town of Albavilla

Enel X evaluated in detail, for each assessment area and sub-area of urban circularity, how Albavilla applies the principles of the Circular Economy and any opportunities for improvement.

The town of Albavilla has **optimal levels of recycling**, recovering **100% of materials from sorted waste collection**, thanks to an efficient multi-city system managed by the company Service 24 Environment.

In terms of **energy efficiency**, the town has already developed several solutions to manage and optimize consumption in buildings.

Roadmap

Roadmap for the town of Albavilla

Using a roadmap outlined by Enel X, the Town of Albavilla was able to identify and evaluate solutions to implement at the analyzed site, making it possible increase its level of energy circularity.

Energy CE POTENTIAL

Supply of green electricity

Energy efficiency in buildings

Energy CE CURRENT

More efficient lighting systems

IoT solutions to centrally manage assets
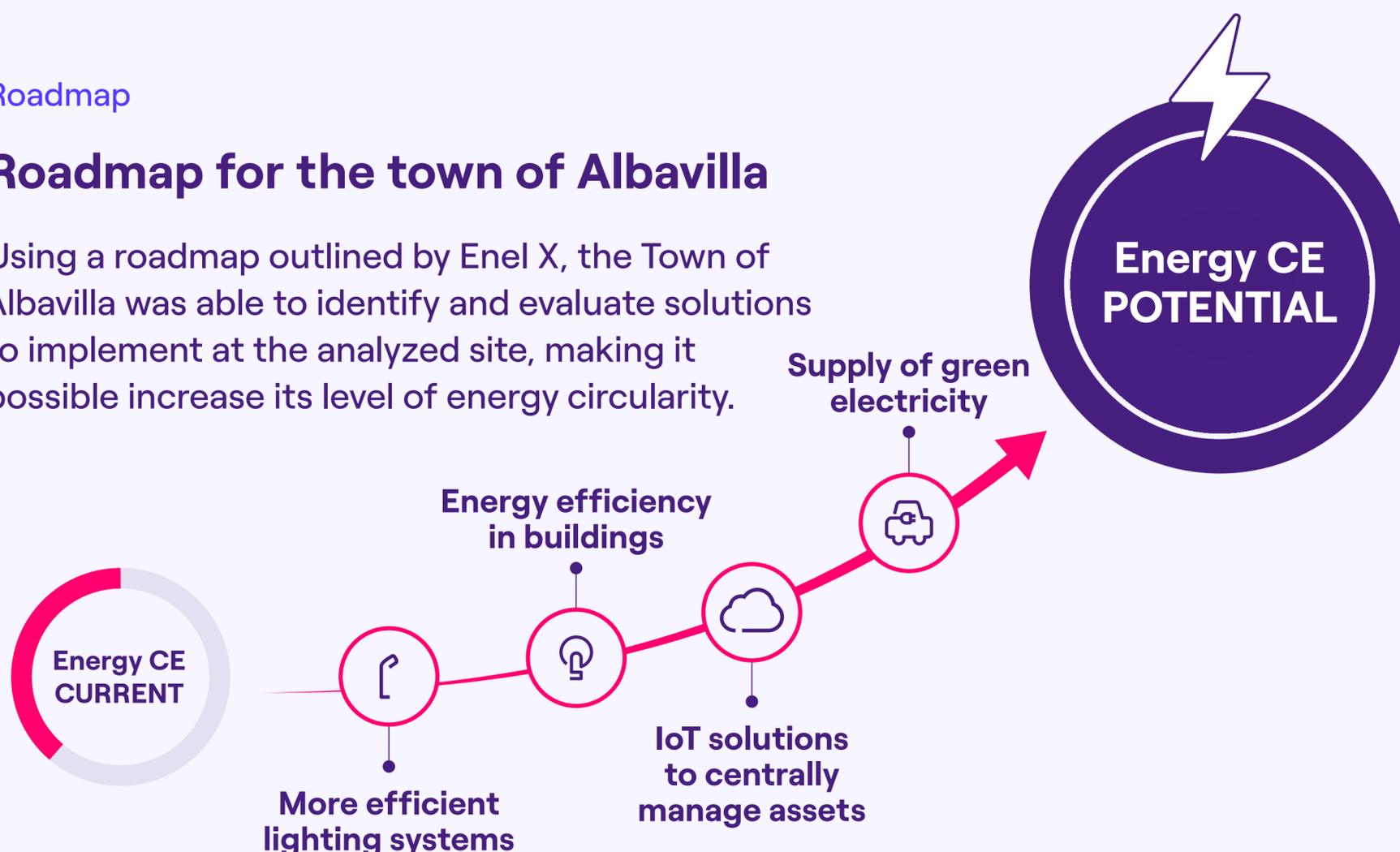
Istituto Comprensivo J.F. Kennedy

The Istituto Comprensivo J.F. Kennedy is located in a school facility built in the 1980s, located in the town of Albavilla in Lombardy, with more than 600 students. It provides primary and secondary education and features an adjacent gym and auditorium.

The school had a decent Circular Economy Score to begin with, which can be **further increased by 60%**.

Measuring As-Is e Gap Analysis

Circularity for the J.F. Kennedy Institute

Enel X evaluated, for each assessment area and sub-area of urban circularity, the ways the J. F. Kennedy Institute applies the principles of the Circular Economy, and any opportunities for improvement.

Its main strengths, from a circularity point of view, are **energy efficiency** and **enablers**.

Of the total number of bulbs installed, **37%** are **high-efficiency LED bulbs** and **59%** are **neon lamps**.


Roadmap

Roadmap for J.F. Kennedy Institute

Thanks to the roadmap suggested by Enel X, by integrating the solutions proposed, the level of energy circularity of the buildings of the J.F. Kennedy school **will increase by 61.1%**.

Energy CE POTENTIAL

Energy efficiency

Energy CE CURRENT

Supply of green electricity

Smart management of consumption
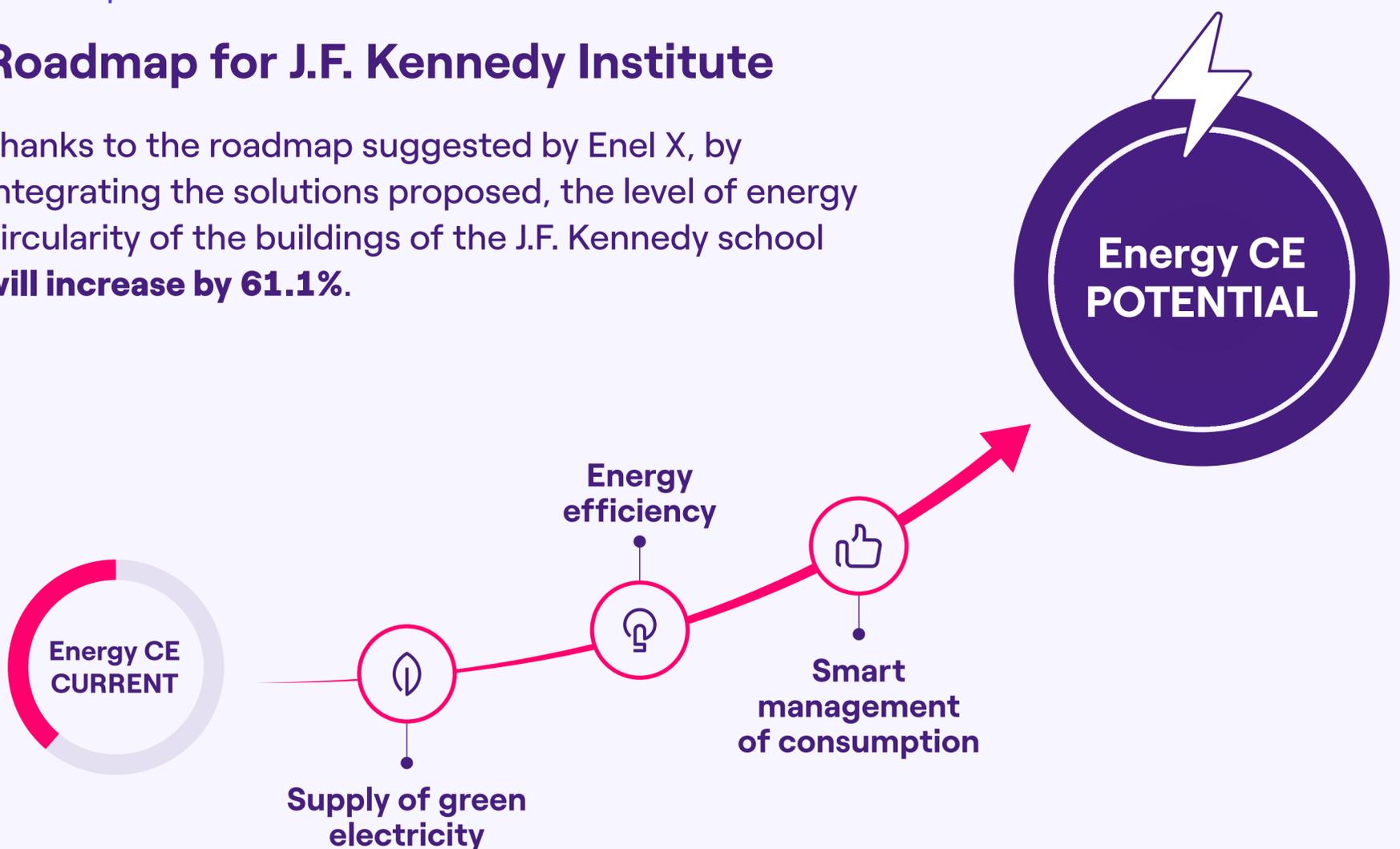
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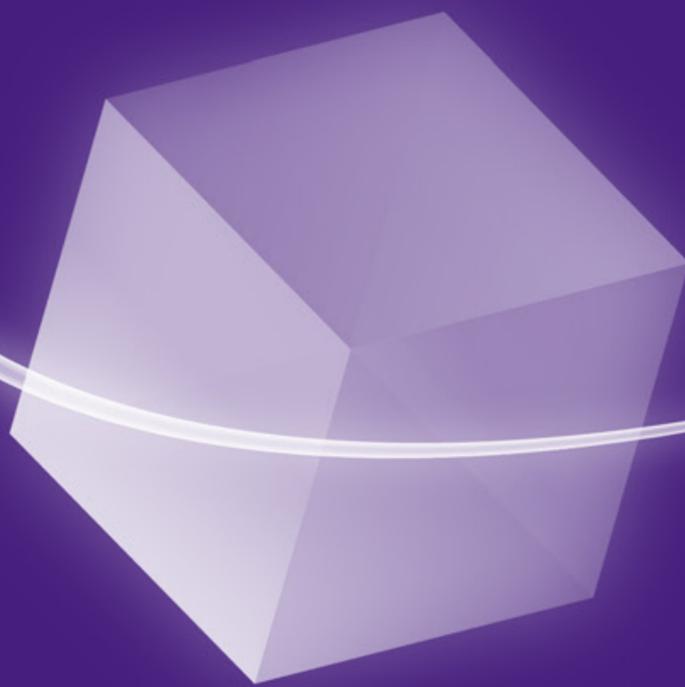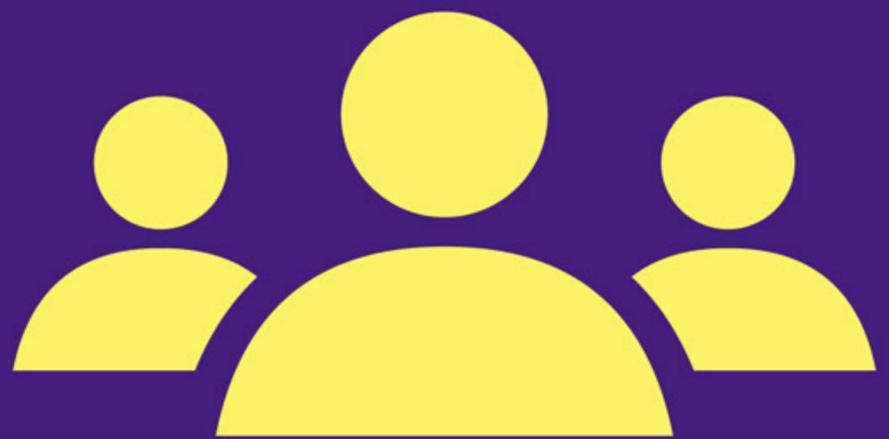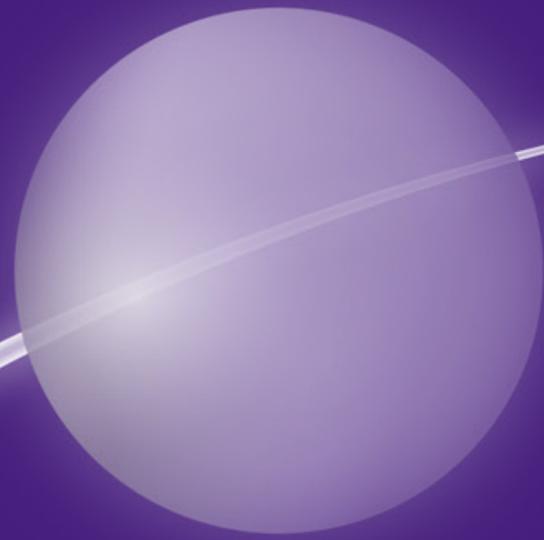
Sustainability beyond the Circular Economy: Social Inclusion

We embrace a comprehensive view of sustainability, including both the **environmental** and **social** spheres, aimed at creating shared value for business, for communities and for all stakeholders.

In 2021, we developed a new innovative methodology equivalent to the circular economy score to address social sustainability issues, based on **Inclusion**.

> We've arrived at a **new vision of sustainability**, entailing the creation of products and services that can generate value for the environment, for people and for businesses, **leveraging the principles of the Circular Economy and Social Inclusion**.

Alongside the growing focus on environmental efforts, there is the unavoidable responsibility to guarantee equal ambitions in the **social sphere**. Addressing the needs of **elderly people**, people with **disabilities**, and those living in conditions of **socio-economic vulnerability** is, on one hand, the responsibility of institutions; on the other, it is an opportunity for the private sector to expand its visibility and improve market position.

The **number** of people affected is significant: according to the United Nations, **35%** of the world's current population is **over 60 years old**; the World Health Organization estimates over **a billion people** experiencing some form of **disability**; the World Bank counts **more than 700 million people** living in conditions of **poverty**, which in most cases goes hand in hand with conditions of **social vulnerability**.

The **inclusion of people** using suitable strategies for business growth and development – supported by a consistent offer of products and services – is an effective stimulus for the creation of **shared value**.

Based on this premise, at Enel X, we've worked to **improve the inclusivity** and **accessibility** of our solutions, at a pilot project level, by applying a simplified version of the Boosting Program.

We've acted on **usability**, **functionality**, **comprehensibility**, **helpfulness**, **affordability**, **and communicability**, in order to come up with innovative solutions to meet the needs of **people with disabilities** or who are in conditions of **social** or **economic vulnerability**.

Outlining these **accessibility levers** allowed us to act directly and concretely on **customer experience**, on the **interface** of digital applications, on **channels** and **sales models**, and on the design of our products, rethinking their very foundations.

We were **successful** thanks to the collaboration of a working team with mixed skills, in-depth research of market trends and modern tools, and valuable input from the communities we engaged in the pilot projects.

Possibility of getting

Making a solution of asset easily attainable in different economic and social contexts

Possibility of experiencing

Allowing the effective and comfortable use of a solution or an assets by all different kinds of users

People in vulnerability conditions

People that live in economic or social vulnerability conditions, including diversity-related vulnerability conditions

People with impairments

People with sensory, motor or cognitive impairments that may hinder their full and effective participation in society

Solutions that increase Inclusivity

Once the theoretical reference models were built, we implemented various pilot **Boosting initiatives** focused on Social Inclusion, making sure to represent the various Business Lines and countries involved. This will allow us to **carry out increasingly specific projects** to facilitate the development or improvement of our Business Lines through sustainability–based innovation.

We completed the Boosting phase for the solutions Enel X Pay and Homix, among others in Italy, and **Electric Buses** in Brazil. Using intense analysis of the solution, markets, and the positioning of main players when it comes to Social Inclusion – and through creation sessions with technicians and the invaluable contribution of communities – we designed projects for **potential implementation**, even in the **near future**.

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Circular Economy
Factbook 2021/2022

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