INNOVATION

Priorities

F Economic and financial value creation

N Innovation and digital transformation

Plan

Growth accelerators

Target

SDG

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE   **17** PARTNERSHIPS FOR GOALS

Activities	2020–2022 targets	2020 results	Status	2021–2023 targets	Tag	SDG
• Further enhance the reach of our innovation ecosystem, to find the best solutions on a global scale • Generate value by solving the ever-increasing needs of the Business Lines, by enabling open innovation tools (collaboration with start-ups, crowdsourcing, partners, universities, intelligence, technological communities, solution design activities)	Launch of **200** Proof of Concept to test innovative solutions in the period 2020–2022	**111** projects launched	ON–PLAN	Launch of **350** Proof of Concept to test innovative solutions in the period 2021–2023	I S G T	9 17
	Scale-up of **30** solutions to accelerate the implementation of the Strategic Plan in the period 2020–2022	**32** solutions adopted in the business	ON–PLAN	Scale-up of **100** solutions to accelerate the implementation of the Strategic Plan in the period 2021–2023	I S G T	9 17
	75 bootcamps to identify startups with which to collaborate	**45** bootcamps	ON–PLAN	Target outdated as a result of the digitization of activities	I S G T	9 17

Goals

⊕ New   ↻ Redefined   ↻ Outdated

I Industrial   **E** Environmental   **S** Social   **G** Governance   **T** Technological

ReShape: Innovability® to build a better future
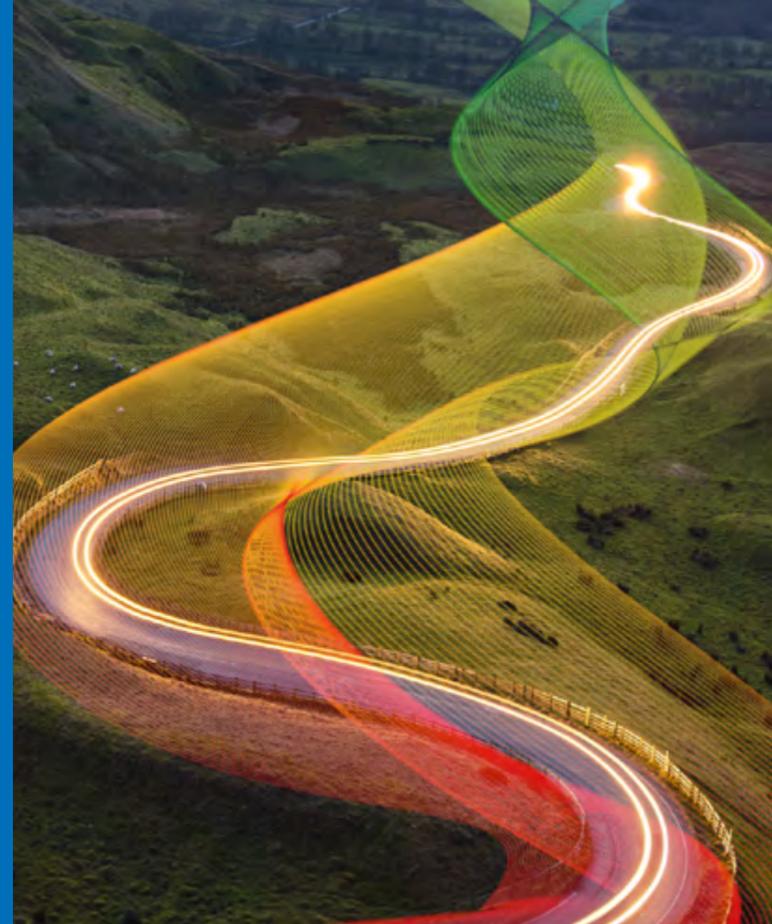
The ability to anticipate and adapt to change has become a crucial part of business. The global scenario of Covid-19 has forced companies to stop and think about their internal and external processes and about their way of innovating. In our capacity as sector leader, and keeping in mind our sustainability objectives, we have launched a global call to reinvent the manner in which our activities are managed in what will be the new normality.

ReShape is a global call for the energy transition, to conceive, along with problem solvers, start-ups and small and medium-sized enterprises new ways to transform innovation into solutions for the world energy context of the future and for new global needs. The term chosen, ReShape, refers to the ability of the organization to change and reinvent itself constantly, both inside and outside, and reflects our global commitment to Open Innovability®.

The challenges launched with our call cover all our Business Lines: from energy generation to the creation of new added value products and services, from robotics to artificial intelligence, from virtual reality to automation, from construction of renewable plants up to technologies and algorithms to understand better the needs of customers and thus rationalize the entire customer journey in the digital era. Some examples:

> Applying automation to renewable plant construction
> Ensuring rapid sanitization in field operations and external spaces
> Providing remote site visits for Enel X's industrial & residential customers
> Fostering Enel customers' digital experience
> Improving Enel's end-user profiling
> Digitalizing scalable recovery plans for local markets
> Developing connectivity & digitalization to overcome social inequality
> Increasing automation of O&M in renewable power plants
> Increasing employees' safety and ensuring correct distancing and traceability

enel

2,600

START–UPS

with which Enel came into contact despite the pandemic

70

NEW COLLABORATIONS

with start-ups around the world

53

INNOVATION AND SUSTAINABILITY CHALLENGES LAUNCHED

INNOVABILITY

INNOVATION

| DMA EU (former EU8) |

Technologies and Innovability®

"Sustainability is our goal and innovation is our tool to achieve it". We innovate in order to create the conditions to be more sustainable. These two concepts that go hand in hand, and which merge in the word Innovability®, defined for the first time by us and which demonstrates the degree to which one deeply permeates the other.

An "Open" approach that promotes the richness of innovation by involving internal and external entities and that makes us ready to reassess several traditional business models with a view to creating new ones.

We want to innovate to safeguard the environment, but also to create conditions of equality and inclusion for those who otherwise would have fewer possibilities, including from a work related perspective. A practical example: in our Company we have a deaf person, who feared that he/she would not have the same opportunities for growth since he/she could not use video conference systems without lip reading. We therefore found a start-up with which we put together a service that has allowed all of our deaf people to take part actively in video conferences in a perfectly integrated way. The step from social to economic sustainability was, at the end of the day, brief: having facilitated the inclusion of people into the Company, we moved on to customers, which meant doing something socially useful, but which was also a business choice. It is enough to think how many millions of deaf or partially deaf customers can benefit from this service and how many can be made loyal to the Company, thus making us even more competitive and sustainable.

We identify the most innovative solutions to meet the main challenges of sustainable development as well as the 17 SDGs of the 2030 Agenda of the United Nations, both in line with and as a support for the Group's Strategic Plan. The Company further dedicates a part of innovation to exploration activities which can open significant new fronts of innovation in the near future. Currently, we are defining a three-year innovation plan, shared with top management and submitted for approval to the Group Innovation Committee, chaired by the Chief Executive Officer. The Holding Innovability® Function (Innovation and Sustainability), reporting directly to the CEO, in collaboration with the various Functions and Business Lines in all countries where the Group operates, manages innovation activities, in conformity with regulations currently in force and with our own compliance programs. Furthermore, dedicated facilities at Business Line level have been set up to facilitate the development and dissemination of innovative solutions.

In order to promote innovative solutions, we have created new instruments, such as openinnovability.com, a crowdsourcing platform for gathering the best solutions, the Innovation Academy and the Idea Factory to leverage the interaction and development of creativity and entrepreneurship within the Company. In addition, a global network of Innovation Hubs and Labs is present in order to make contact with start-ups and other stakeholders present in the innovation ecosystems around the world.

> "Sustainability is our goal and innovation is our tool to achieve it.

Ernesto Ciorra

Innovation and Sustainability

Why is it important for our stakeholders?

We must change in harmony with the world around us, with the people that live in it, with the society to which we contribute, and with the environment in which we live. Only in this way can we really create sustainable progress.

Why is it important for Enel?

In order to survive, living beings renew their cells continuously. A culture of widespread Innovability means that the whole Company aims to renew itself constantly, thereby ensuring its survival.

The Open Innovability® ecosystem

The way to win challenges and lead change is to search constantly for innovations that can promote sustainable development, start-ups, independent innovators, potential partner companies, universities and research centers, associations and ONGs.

We are open to innovative ideas in a very dynamic way: stimuli and influences can arrive from outside and inside the Company. It is important that there are the right ecosystems in which information can circulate and give life to sustainable and scalable business projects and models.

Our platform for gathering innovative solutions: openinnovability.com

Our crowdsourcing platform, **openinnovability.com**, has hosted **over 145 challenges** in total, reached 500,000 solvers, gathered thousands of solutions originating in over 100 countries worldwide, assigned economic awards and entered into collaboration agreements with Italian and international companies, start-ups, researchers and single individuals.

Specifically, in 2020 53 innovation and sustainability challenges were launched, of which 15 cross-posted on partner platforms, 28 dedicated exclusively to people within the Company and 10 targeted externally. Seventeen challenges concerning the health emergency linked to the Covid-19 pandemic were also launched. In particular, while the world has begun to define a new normality, we have launched the global challenge ReShape, with the aim of identifying innovative solutions for the future of energy and to face emerging needs. Of the more than 300 innovative proposals received, around half are from ecosystems that are under the responsibility of the Innovation Hub (for more detailed information see page 145).

The challenges launched by Enel have also been disseminated on other platforms (for example, innovitalia.esteri.it of the Italian Ministry of Foreign Affairs and International Co-operation) and specialist channels (Focus.it, Wired.co.uk and Rinnovabili.it). At the same time, our crowdsourcing platform is open to the publication of challenges from external companies that are seeking innovative and sustainable solutions to unresolved problems. In 2020, 6 challenges for external companies such as the ESA (European Space Agency), Marzotto Venture Accelerator and Extreme-e were published and/or managed.

Together let us create a better future: our partnership agreements

As of today, **64 innovation partnership agreements with companies of different sizes and markets** are active. Of these, 8 are of Group relevance with the involvement of various Business Lines in different thematic areas.

During the last year, agreements have been renewed with Cisco Systems and Intesa Sanpaolo, the former focused on the development of products and services to support the achievement of IoT platforms and cyber security functionalities, and the latter with the aim of facilitating, on the one hand, access to credit for start-ups and small and medium-sized companies of the energy ecosystem and, on the other, the development of digital innovation.

Collaborations related to the circular economy have also been developed, in particular with Novamont for the recycling of plastics and the use of biodegradable oils, and with the US multinational 3M for the use of new materials and sensor technology for the health and safety of our people, predictive maintenance, and efficiency of the distribution grids and generation plants.

We are also pursuing collaboration in the sector of the space economy, cooperating with several market leaders among which Thales Alenia Space, a reference point for the realization of space technology and a partner for the achievement of innovative space services, especially satellite technology. Together with the ESA, we are further promoting the development of space sector applications to support the security of the distribution grid, economic and environmental sustainability and circular cities.

The network of ideas with start-ups, and not only: Our Innovation Hubs and Labs

The Innovation Hubs and Labs help the Group to consolidate the new collaboration model with start-ups and SMEs, which sees the latter propose innovative solutions and new business models, whereas we make available our experti-

se, facilities for testing, and a global network of partners to support their fine-tuning and scale-up.

We rely on a global network of:

> **10 Innovation Hubs** (of which 3 are also Labs): located in the most significant innovation ecosystems for the Group (Catania, Pisa, Milan, Silicon Valley, Boston, Rio de Janeiro, Madrid, Moscow, Santiago de Chile, Tel Aviv), they handle relations with all players involved in innovation activities and constitute the main source of scouting for innovative start-ups and SMEs;

> **22 Innovation Labs** (of which 3 dedicated to start-ups): these allow start-ups to develop and test their own solutions together with our people from the various Business Lines. Milan, Pisa, Catania, São Paulo, Haifa and Be'er Sheva are among the most representative.

For further details visit the site: https://startup.enel.com.

Despite the pandemic, in 2020 we met more than 2,600 start-ups, launched more than 70 new collaborations and organized more than 40 bootcamps dedicated to different technological areas; furthermore, two new geographical Countries and Regions (Canada and Australia) were opened for the scouting of start-ups. Enel X and Mastercard won a tender from the Israeli government for the creation of an innovation laboratory which aims to stimulate the development of fintech and cyber security start-ups in Israel (FinSec Lab in Be'er Sheva). The Innovation Lab will be capable of simulating systems, processes and financial data to supply an environment in which the start-ups can develop, test and display their products.

Some examples of innovative solutions

Important objectives were achieved during 2020 with regard to innovations which included **generation and distribution of energy**, aimed at accelerating sustainable growth towards the energy transition, through the study and adoption of innovative technologies and solutions for increasing sustainability and efficiency, as well as supporting safety on worksites and the operation and maintenance of assets. Through innovation we have demonstrated our resilience by remodeling approaches and processes, beginning with automation, remote control systems and technologies to support security, virtual visits, remote maintenance tools, solutions for and surveys of augmented and mixed realities, on worksites and in power plants, as well as artificial intelligence, and finishing with remote operations and experimental activities. The new

approach adopted has involved not only us, but the entire network of partners, facilitating the remodeling of the innovation journey and supporting the entire ecosystem.

Pontecosi: a big project in a small lake. In Tuscany, Enel Green Power is testing an innovative system for the management of the sediments that accumulate in the basin of an artificial lake. It is a project that could help the entire hydroelectric industry in as much as, besides reducing operating and maintenance costs, the solution is capable of restoring natural river transport, thereby contrasting phenomena of coastal erosion.

Innovative solutions for detecting ice on the blades of wind turbines. An experimental campaign on an innovative system for automatically detecting the presence of ice on turbines, using optical fiber, has been successfully completed on a wind farm in Greece. The initial results show great potential for improving the safety of operators and reducing production losses.

Solutions of artificial intelligence for a computerized vision to support wind turbine maintenance. The artificial intelligence solution has shown the efficiency on 45 wind turbines of solutions for recognizing images which facilitate the automatic detection of faults. The solution is completely integrated into our image acquisition approach and leads to a 60% reduction in inspection and data analysis times compared to the current method.

Smart meters. We can be considered among the world leaders in smart meter technologies, also known as Open Meters, for which we are putting into effect our third generation, in which our cutting edge technologies enable functionalities that go beyond the traditional concept of simple measuring. It is a customer centric approach that exploits a dedicated channel of communication (Chain 2) through Power Line Communication, offering customers the chance to receive real time data on energy consumption, but also to optimize grid operations (using predictive maintenance, load balancing and protection of revenues) in terms of quality and efficiency.

Robotics. Four legs to be able to move over different types of terrain and environments, the ability to customize in order to carry various types of mission, two hours of autonomy and, above all, the capacity to take on board and learn from the variety of activities that it carries out. We are talking about ANYmal, produced by ANYbotics, the Swiss start-up identified during a bootcamp organized by the Madrid Innovation Hub. It will be capable of carrying out missions both in autonomous mode and by giving added value to the people of Global Power Generation Enel, providing support and help. ANYmal combines the locomotion capacity of an animal's body with the use of algorithms of artificial intelligence, which allow it to analyze the surrounding environment - internal or external - and to take reasoned decisions.

ANYmal underwent successful experiments in Italy at the

combined cycle thermal power plant in Porto Corsini (Ravenna). It is a significant innovation at the service of the human component: the robot can help our people to carry out autonomous inspections, generating added value and intervening in environments that are difficult to reach or potentially risky.

Electric mobility: Enel X JuiceBox Pro and JuiceBox Pro Cellular. This is the latest line of domestic charging stations, which unites sustainability and innovation and presents a case realized in recycled plastic and a design which aims at reuse and recycling. In 2021, in Europe alone, 30,000 new Boxes will be produced, using 62 tons of waste plastic. The results in terms of performance are comparable to those obtained using virgin plastic (see also the chapter "Circular economy").

In May 2020, the World Economic Forum recognized our **Network Digital Twin®** as an extraordinary innovation born within the energy sector to enhance systemic efficiency. This program is a digital platform that creates a virtual replica of the infrastructure of physical power supply, of its components and of system dynamics. It is based on the use of new technologies such as 3D modeling for the examination of grid components, sensors for monitoring the infrastructure together with artificial intelligence and augmented and virtual reality, with a view to improving operations in the field and management of data in real time. These combined applications support the functioning of the system, grid design, integration of distributed energy resources and management of the workforce.

Further innovative solutions are dealt with in the various chapters of the present document.

Making innovation on cutting edge technologies: the Innovation Communities

We have created the Innovation Communities, open communities, without hierarchies, made up of our people who are passionate about technology (and not only), who desire to share ideas and projects and to participate firsthand in the innovation process. They are groups of people open to other views and to the exchange of experiences, ready to accept new ideas and opportunities, and who share a basic project: to make the world a better place using sustainable innovations. The communities are dedicated to a crucial innovation topic, from artificial intel-

ligence to robotics, from drones to the Blockchain, and are a point of reference for different technologies.

> **Blockchain**: the Blockchain exploits the characteristics of an information network of nodes to manage data and information securely in a shared manner without the need for a central control and assessment body. We have sought and promoted collaboration with different players, because the success of any project in this sector depends on the ability of participants to activate a network effect from which everyone can benefit. The Group has worked on various use cases (for example, the traceability of assets, trading, the management of energy poverty, and so on). The Community works on verifying the value of the new proposals, evaluating projects and diffusing their use, and, in particular, in 2020 it contributed to producing the consultation document for the national strategy published by the Italian Ministry of Economic Development.

> **Drones**: since 2012 we have made ample use of this technology in all countries, in generation plants, and in Business Lines linked to electricity distribution, and we have become an important stakeholder in the sector. The objectives of drone use are multiple: increase the efficiency and efficacy of operations and maintenance processes, but above all reduce exposure to risk for workers involved in interventions on our plants. The main uses concern, therefore, thermal imaging and the inspection of geothermal, hydro, solar and wind plants, the detection of abnormalities, 3D modeling, photogrammetry and laser scanning. Several new devices are in test phase, such as drones capable of transporting heavy loads or hydrogen powered drones capable of covering long distances. We can currently count on over 200 drones and 450 pilots worldwide. For many years in Italy we have been doing tests and gathering evidence in collaboration with regulation bodies such as ENAC (Ente Nazionale per l'Aviazione Civile - Italian Civil Aviation Authority and ENAV (Ente Nazionale di Assistenza al Volo - National Agency for Flight Assistance). In 2020, the Community dedicated to drones also promoted in-house training activities, for example regarding European regulations in this area.

> **Energy storage**: accumulation systems open new frontiers in the field of sustainability. Thanks to these systems it is possible to improve the level of reliability and to increase distribution quality indicators. In combination with the traditional generation methods, storage also ensures balancing of the grid and stability of system loads at national level. Beyond traditional lithium batteries, the Group is seeking new accumulation systems, such as solid state batteries, vanadium flow batteries, gravity batteries and other alternative technologies for long-term storage applications.

> **Augmented and virtual reality**: this Community aims to seek out sector products and platforms in order to follow their technological evolution and redefine use cases for the Company. At the moment, tests are under way to evaluate the effective application of specific tools of augmented reality and their integration into personal protective equipment. Into the main use cases fall remote assistance and inspections, digital twins for plants and grids, hands-free operations and the resolution of problems. In 2020 a shared database was created to gather all available virtual scenarios to be utilized for the training of people.

> **Wearables**: the main applications of wearables concern safety. These include sensors to check correct use of personal protective equipment, tools to track personnel on job sites and avoid interference, or devices to help people carry out their work in hands-free mode, without having to interact with potential sources of distraction such as smartphones or printed manuals. Wearable devices embrace a very vast range of products, among which smart glass and smart watches, as well as localization devices.

> **Robotics**: this technology offers the possibility of supporting people in high risk and remote places or who do demanding or repetitive work. The main applications concern the construction and automated maintenance of photovoltaic fields or other inspection and maintenance activities in areas that can contain risks for personnel. We are testing legged robots for specific and autonomous inspections, Remotely Operated Vehicles for underwater inspections of cables and Operation & Maintenance of hydroelectric reservoirs, photovoltaic plants and wind turbines. The new frontiers in the use of robotics include autonomous construction with diverse possible applications in the generation field.

> **Artificial Intelligence – AI** and **machine learning**: currently AI and automatic learning are broadly used for the automation of processes and of physical device operations, from sensors to drones, on up to robots. Our Business Lines make ample use of such technologies applied to analysis of images concerning O&M Functions. The Group can benefit from an ecosystem of artificial intelligence, a unique place where each user can access services developed internally and a data school for the development of in-house know how.

> **Additive manufacturing/3D printing**: this is a computerized production process used to create a product beginning from a digital model, and is considered the technology of the future for generating, improving and repairing a product, above all because it facilitates the reduction of production or repair times, thus ensuring greater reliability. In particular, this process concerns the fabrication of mechanical components for the repairing of important elements subject to wear and tear (turbine blades, burner parts) and for redesigning and creating innovative components with complex geometries and special materials. As of today, the biggest challenge that this technology must overcome concerns above all the definition of a quality system for finished products. This means defining modalities of production and precise parameters based above all on the behavior of the materials, which inevitably changes compared to traditional techniques of production.

> **Green hydrogen**: through this Community, we have defined a new business unit dedicated to developing projects linked to the production of green hydrogen through electrolysis, powered by renewable sources. Once the potential of direct electrification has been exploited to the full, this technology could facilitate the reduction of emissions in those sectors in which the latter are more difficult to abate.

In 2020 three new Communities were also launched: Materials, Computer Generative Design and Sensors. These themes will be studied and analyzed in-depth during 2021, to facilitate synergies and promote the application of new use cases in Group activities.

Global Power Generation RoBoost Program

An innovative flagship program, launched in 2018 to promote the diffusion of robotized ready-to-market technologies for O&M activities along the entire value chain to facilitate the allocation of people to value added activities[1], with economic savings included.

The main technologies that are the subject matter of the program, active in 14 countries, are thermographies with drones and AI, wind turbine inspections with drones and AI, robotized bathymetries, underwater inspections with ROVs, remote assistance on smartphones, smart glass and augmented reality, inspections with drones on thermal, hydro and geothermal plants. The main results in 2020 are as follows:

> a global index of robotization[2] of about **52%**, with an increase of **182%** of robotizable activities in 2020. The index shows an increase of 9% compared to 2019[3], following the growth of the perimeter of the plants considered and thanks to the new use cases in the RoBoost catalogue (products developed/new entries from the market);

> robotized activities amount to **6,339**, equivalent to **40%** of generation plants (cumulative figure 2019-2020) ;

> about **14 million solar panels** were inspected with drones and AI, amounting to about 4.5 GW and 12 Gwh of production recovered;

> about **1,000 inspections** overall on thermal, hydro and geothermal plants;

> **over 12,000 added value activities** following the program, of which over 60% involving solar technology. A result of this sort means greater training activities, more safety, more expertise and getting the best out of our people.

At the end of 2021 a rate of robotization of 60% is envisaged, with a growth of robotizable activities of 149%.

(1) All activities in which an allocation of our people or those of suppliers and stakeholders is recognised on greater value activities compared to those executed in the traditional manner (because they are safer, are exposed to lower risks, have more training, are allocated to more digital and less physical objectives, and so on).

(2) Index of robotization = robotized activities/robotizable activities. Robotizable activities are all those activities eligible for application of robotization (for example, manual thermography, where it is now possible to carry out inspections with drones, or bathymetry done by people maneuvering a traditional boat, that is now possible to do with a robotized boat). Robotizable activities have been calculated via a mapping of all cases in which ready-to-market robotized products are present and multiplied by annual frequency. Robotized activities are all those robotized for each use case (for a total of 6,339).

(3) 2019: 1,871 robotized activities out of 4,324 robotizable activities. 2020: 6,339 robotized activities out of 12,203 robotizable activities.

Creating value in the future: intellectual property

Our intellectual heritage is a complex of critical information and is at the base of a sustainable growth. The ecosystem of Open Innovability® generates innovation through the sharing of internal and external solutions that give life to a flow of ideas that demands suitable forms of protection. On the one hand, intellectual property presides over and regulates the sharing of ideas, technologies and knowledge which originate both in the Company and in start-ups, universities, with suppliers, programers and consultants; and, on the other, in so far as it is the authentic expression of the link between knowledge, innovation and progress, it is a tool at the service of strategic objectives of decarboni-

zation, electrification and creation of platforms, as well as the collaborative model based on Stewardship.

During 2020, we renewed and reinforced our commitment to the prosecution of the project targeted at the recognition, identification and measurement of our intellectual property heritage.

Specifically, the Group avails, overall, of 837 patents for inventions, belonging to 137 technology families; of these, 692 are patents awarded and 145 pending. This portfolio ensures protection on all the markets in which the Group is present. Our portfolio also includes 8 utility models and 130 design registrations. As regards trademarks, at the moment it is estimated that the Group owns 1,301, of which 1,133 already awarded and 168 pending approval.

The numerical increase of our whole portfolio of intellectual rights mirrors the growing in-house efforts targeted at reinforcing the information infrastructure required for the immediate identification of the innovation generated, its evaluation and protection, as well as the continuous monitoring of the evolution of the portfolio. All this is with a view to continuous and precise alignment between technological and commercial trajectories and the corresponding forms of oversight of the competitive advantage ensured by intellectual property rights. Progressively, the organization will proceed to the recognition of other intangible assets, first among which are the many and crucial software components, through which the pervasive digital potential of our Business Lines are expressed.

The Group's main patents and designs

In the framework of the Global Infrastructure & Networks Business Line, our patent heritage contributes in a significant manner to the strategy of creating platforms and the exploitation of network externalities in the services market, as well as automation of the management of utilities, with a reduction of related CO_2 emissions and operating costs. In particular, two patent families are most significant: that of the method for remote detection of electricity, water and gas consumption, and that of the system for the remote reading and control of electricity consumption. Within the Enel X Business Line, particularly significant are the design and patent to protect JuiceAbility, the device produced in recycled plastic which powers the charging stations for electric wheelchairs, thus increasing the autonomy of customers with disabilities. Also of significance is the design

of the JuicePole, an infrastructure for the public recharging of electric vehicles designed for positioning in an urban context, and which was awarded the Compasso d'Oro by ADI (Associazione del Design Industriale). To these rights we can add technologies of load optimization of energy assets and smart charging of recharging stations that take into consideration system requirements, customer behavior, environmental factors, and optimization mechanisms for B2B customer energy systems which, through the management of electricity consumption, help to identify the ideal balance point between economic sustainability and efficiency of the system itself.

Global Power Generation patents aim to:

> increase the production efficiency of plants: in this context particularly significant is the method which, by optimizing the different strata of photovoltaic cells, improves the production efficiency of HJT (Heterojunction Technology) cells and of photovoltaic modules; similarly important is the system for detecting the locking status of a two-valve bucket which contributes to the efficiency and safety of the loading and unloading process of solid materials, among which coal in the context of thermal power plants;

> improve the environmental sustainability of the plants. Representative in the pursuit of this aim are: (i) the patent for the method for monitoring and controlling the chemistry in ZLD (Zero Liquid Discharge) processes within power plants, which serves to abate the quantities of calcium sulfate and calcium carbonate from the combustion fumes of thermal power plants before their emission into the atmosphere; (ii) the patent for the device for measuring the analytical concentration of elements present in the gaseous phase in the fumes from coal-fired thermal power plants; (iii) the patent for the microinjection system and dosage of oxygen for waters discharged from hydroelectric plants which, by facilitating the increase in the level of oxygen, avoids the ecological impact associated with this absence;

> digitalization of operating processes: in this regard, the method for automatic evaluation of the efficiency of a Kaplan type hydraulic turbine is representative, as it optimizes output in all operating conditions.

Innovation begins with you: a new culture

We want innovation to be the daily work of everyone, to promote and diffuse the culture, the knowledge and the behaviors of Open Innovability, disseminate methodologies for leveraging innovation and promote the entrepreneurial spirit. Eight Idea Hubs are present in Argentina, Brazil, Chile, Colombia, Italy, Romania, Spain and Peru, which design and manage global and local programs and supply the tools to facilitate the adoption of innovative instruments, thereby favoring creativity. These Hubs promote an approach that allows people to think and act differently, in a non-linear way, as well as encouraging experimentation and supporting the Company in overcoming challenges (new problems or opportunities) using innovative methods.

The main programs

> **Enel Idea Factory** is a service on demand, launched in 2014, that allows the activation of facilitators capable of guiding a process that seeks solutions to company challenges, breaking paradigms, leveraging lateral thinking, stimulating co-creation and tearing down organizational silos. In 2020 over 250 design solution sessions were held globally involving over 2,160 participants (of which 112 external), generating more than 950 ideas and giving rise to different company initiatives.

> **Innovation Academy:** a training journey, launched in 2017 with the aim of training our people up to creativity, to the development of ideas, to collaboration and to customer centricity and to educate future facilitators of the Enel Idea Factory. The following courses are part of Innovation Academy training: Emotional Intelligence, Creative Problem Solving, Design Thinking, Lean Start-ups. The Academy promotes a "Train the Trainer" approach. Therefore a significant part of the courses are given by in-house teachers whereas other key players have been people from the Idea Hub as well as Innovation Ambassadors.

> **Innovation Ambassadors**: The project was launched as a pilot in 2018, and over the years has become a tool for in-house innovation known and used mostly by Company areas. During 2020 the project was extended to three new Countries: Peru, Spain and Argentina, seeing the participation of over 200 people the world over. The Innovation Ambassadors support the mission to "make sure that innovation becomes part of the daily work of everyone in Enel",

covering different roles: they are facilitators of workshops that stimulate lateral thinking, the co-creation of innovative solutions and customer centricity; in-house teachers of Innovation Academy courses; mentors on innovative projects in the development and realization phase and, finally, promoters of events targeted at introducing and encouraging innovation. This Community, based on the voluntary collaboration of participants, further promotes interfunctional collaboration and proactiveness at all levels.

> **MAKE IT HAPPEN!:** This program of Company entrepreneurship aims to make our entrepreneurs emerge by giving them the opportunity to propose and develop new ideas capable of creating value for the Company. In 2020, we received 91 project proposals, which saw the involvement of over 250 people from 11 countries. Three events for the presentation of ideas and projects were held (Pitch Day, during which 7 projects were introduced, 6 of which moved to development phase).

Enel, the universities and the energy of knowledge

A variety of collaborations are active with universities and national and international research centers, with the aim of maintaining a constant, multidisciplinary and focused dialogue on the challenges of the energy transition.

In 2020 we reinforced the partnership with We4U, World Energy 4 Universities, the network of universities coordinated by the Enel Foundation and with which our Group is facing the challenges of the energy transition. The last annual meeting, held in December 2020, had as its title "The power of knowledge for a clean energy future", a theme linked precisely to the global ambition of We4U, which aims to exploit the synergies between the academic and business worlds to ensure a sustainable future for everyone. It is a program, consolidated by over 5 years of activity, which sees among our partners the Polytechnic of Milan, the Polytechnic of Turin, Bocconi University, Sant'Anna High School, Ricerca sul Sistema Energetico (RSE), UC Berkeley, MIT, Columbia University (NYC), Comillas University (Madrid), Strathmore University (Nairobi), University of Genoa, LUISS (Free International University of Social Studies) and, most recently, Venice International University and the University of Salerno.

DIGITAL SUPPORTS AND CYBER SECURITY

102-15

Priorities

- **F** Economic and financial value creation
- **N** Innovation and digital transformation

Plan

Growth accelerators

Target

SDG

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
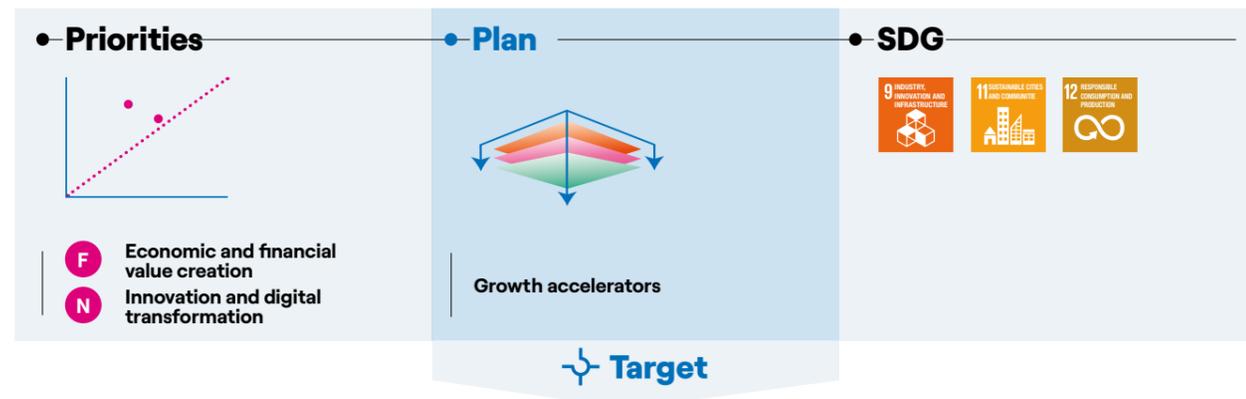
Activities	2020-2022 targets	2020 results	Status	2021-2023 targets	Tag	SDG
Coverage of web applications posted on the internet with advanced cyber security application solutions	100%	100%	ACHIEVED	↻ Target reached and removed	T	9 11
Disseminating the IT security culture and changing people's behaviour in order to reduce risks	15 cyber security knowledge-sharing events held each year	16 events delivered	ON-PLAN	15 cyber security knowledge-sharing events held each year	T	9 11
Information security verification activities (Ethical Hacking, Vulnerability Assessment, etc.)	500 verification activities per year	1,139 verification activities carried out	ON-PLAN	800 verification activities per year ⟳	T	9 11
Execution of cyber exercises[1] involving plants/industrial sites	⊕	⊕		36 cyber exercises[2]	S T	9 11

Activities	2020-2022 targets	2020 results	Status	2021-2023 targets	Tag	SDG
Activities to reduce CO$_2$ emissions	–10 mil printed pages	–48 mil printed pages compared to 2019	ON-PLAN	–13 mil printed pages in 2023 (vs. 2019)[3] ⟳	S T	12
	Extension of the use of videocommunication systems	Intensive use of the "Unified Communications and Collaboration" (UCC) platform[4], with the integration of video communication services; 5 mil meetings held via video communication services	ON-PLAN	Extension of the use of videocommunication systems	S T	12
	Reduction of CO$_2$ produced for optimization of PCs, laptops and monitors in Italy	Enhancement of mobile accessibility, with a further reduction in idle hours; 18 mil hours of downtime	ON-PLAN	Activities to reduce PC, laptop and monitor downtime	S T	12

I Industrial   **E** Environmental   **S** Social   **G** Governance   **T** Technological

Goals
⊕ New   ⟲ Redefined   ↻ Outdated

(1) This refers to training services, carried out by a mixture of cyber and business personnel, which is mandatory and necessary to educate internal stakeholders on the correct use of the Enel CERT in terms of engagement, communication, communication confidentiality and cyber incident response services (detection, analysis, response, recovery).
(2) Cumulative value for the three-year reference period.
(3) The 2020 result has been significantly impacted tied to the pandemic. The target has therefore been redefined from 2019, being a year not affected by this situation.
(4) The use of this platform has encouraged a wider use of laptops and devices offering better energy performance.