

SUSTAINABILITY  
REPORT  
2023

OUR ENERGY FOR  
A SUSTAINABLE  
FUTURE





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# OUR ENERGY, FOR A SUSTAINABLE FUTURE

Renewable sources, particularly photovoltaics, are key to a more sustainable energy future. EF Solare is driving growth in the solar sector through a unique business model, with a focus on the future.

In 2023, we achieved considerable progress bringing to fruition ambitious initiatives capable of generating synergies across sectors.

We believe driving change entails not only decreasing our environmental footprint, but also developing creative solutions, investing in people, and improving the entire supply chain.

A commitment that leads to actual and measurable acts.  
Our energy for a sustainable future.



# LETTER TO STAKEHOLDERS

*We have reached the fifth edition of the Sustainability Report, an account of our work at the service of the energy transition, along with the territories and communities.*

The general context of 2023, characterised by climate issues and conflicts, has rendered the necessity for diversification of energy supply even more vital, with renewables playing an increasingly important role. The aspirations are high and despite challenges, EF Solare Italia intends to remain a leader in the transition to green energy.

For this reason, we continue to pursue **our strategic targets**:

- enhancement of existing assets through revamping and repowering activities;
- promotion of the development of new photovoltaic plants, including innovative solutions such as agrivoltaics;
- implementation of new business models to allow the involvement of photovoltaic plants in the power dispatching services market, with special focus to the utilisation of storage.

EF Solare has successfully exceeded the 1 GW threshold and had a **total capacity of 1,055 MW** divided across 318 plants **at the end of 2023**. The tangible result demonstrates our dedication to renewable energy. Looking ahead, we widen our focus: over 150 MW are presently under construction in Italy and Spain, and **an extensive revamping and repowering programme with a potential of over 400 MW**. The goal is not only to enhance installed capacity, but also to optimise land utilisation. In Spain, EF Solare has begun the building of a new photovoltaic project in Bolarque, in the Guadalajara region, with an installed capacity of 126 MW that will cover the energy needs of 63 thousand Iberian families. Once completed, it will be the company's greatest asset in the country, with around 1 GW of projects now being authorised. In the years ahead, we will continue to work on an important pipeline of new projects, while also improving current photovoltaic plants, to make them more efficient and boost the generation of green energy.

In 2023, EF Solare Italia continued its structural expansion and industrialisation process, **internalising maintenance activities on 112 plants** in four different regions (Puglia, Molise, Campania, and Sicily) **for a total of 268 MW**. An internal revolution aiming to optimise processes: from hybrid plant management to entirely in-house management. The "EF model" is now a set of best practices that strive to ensure the continuous operation

of manufacturing plants, functioning as an indicator of quality for the entire value chain and influencing supplier selection, also based on assessments connected to sustainability topics.

EF Solare has also continued to pursue innovation. **We won a European research tender in early 2023, and we participated through the "Symbiosyst" project**, which aimed to establish standardised and economically advantageous technological methods and solutions to boost agrivoltaics' competitiveness in Europe. The initiative develops a synergistic interaction between agricultural and energy production in order to decrease emissions and strengthen the economy. EF Solare Italia is in charge of directing the working group that will build and test prototype systems created in Italy, Spain, and Holland over the next few years.

Thanks to these research and development experiences, **we have continued to investigate solutions for the evolution of our agrivoltaic model**, resulting in a system characterised by elevated structures that are fixed to the ground without the use of cement and equipped with solar tracking technology, as well as a structure for irrigation systems and a monitoring system for both electricity production and crops and soil. In 2023, we began to harvest the first fruits of our work, receiving **authorisation for the building of a 6 MW advanced agrivoltaic plant in the province of Oristano**.



**During this year, we worked to make the sustainability culture more pervasive throughout the EF Solare group:** we undertook an important process to raise management awareness on sustainability topics, which included dedicated training and the inclusion of these topics as personal goals.

Throughout the year, we continued **to invest in human resources**, strengthening the corporate community through teambuilding and internal engagement activities, as well as expanding our training offerings through workshops and meetings. **We have promoted training programmes** in Italy through post-university master's degrees and professional specialisation courses, as well as in Spain, where Renovalia has partnered with numerous local universities. Through lectures and guided tours, we were able to **meet roughly 250 young talents**, introducing them to the energy industry and providing them the option to join our Group, which this year accomplished a **significant hiring strategy**, employing approximately 180 individuals.

The Spanish subsidiary Renovalia's work has also been characterised by a growing emphasis on sustainability, including participation in a project run by the Government of Castilla - La Mancha to promote environmental respect and conservation among children via a television programme. Regarding the **environmental initiatives**, we recall the partnerships reached with local beekeepers, which resulted in the production of flower honey from our plants.

**Aware of the targets reached so far, thanks to all the individuals who make up the Group, we pledge to contribute even more in the new year to the transition towards an increasingly sustainable world.**

Happy Reading

Paolo Duiella  
President  
*Paolo Duiella*

Andrea Ghiselli  
Chief Executive Officer  
*Andrea Ghiselli*





# 2023 HIGHLIGHTS

2

EUROPEAN COUNTRIES  
WHERE THE PLANTS ARE  
PRESENT

318

PLANTS IN OPERATION

1,055 MW

INSTALLED CAPACITY

1,442 GWh

ENERGY PRODUCED

640,000 tCO<sub>2</sub>

AVOIDED

97.4 MW

OF MODULES  
REVAMPING

27.8 MW

OF INVERTER  
REVAMPING

6 MW

OF ENERGIZED  
REPOWERING

1

EUROPEAN AGRIVOLTAIC  
RESEARCH PROJECT IN  
WHICH WE PARTICIPATE

98%

OF THE ENERGY CONSUMED  
IS RENEWABLE

179

EMPLOYEES

97%

OF EMPLOYEES WITH  
PERMANENT-TERM  
CONTRACT

29%

FEMALE EMPLOYEES

20.7 hours

OF AVERAGE TRAINING  
PER EMPLOYEE

+ 380,000€

OF INVESTMENTS  
IN COMMUNITIES







## PROFILE OF EF SOLARE ITALIA

We enhance and create new photovoltaic systems, incorporating sustainability into our approach and contributing to the decarbonisation of the energy sector.



ETHICS AND INTEGRITY



# SECTOR LEADER

*EF Solare, primary photovoltaic operator in Europe, has consolidated its leadership role in promotion of the energy transition over the years, thanks to its business model focused on technological innovation, operational excellence, and human capital.*

**There are over 300 utility-scale photovoltaic plants that make up the company’s portfolio, for a total installed capacity exceeding 1000 MW.**

The shareholding structure of EF Solare is made of two shareholders that support its growth and development: F2i - Fondo Italiano per le Infrastrutture, the largest infrastructure fund operating in Italy, which owns 70% of the company and Crédit Agricole Assurances-Predica, the leading French institutional investor in renewable energy, which owns the remaining 30%.

In 2023, EF Solare continued to operate at the service of the community and the territories, in the awareness of how crucial its contribution is in achieving the European decarbonisation and energy transition.

## DEVELOPMENT AND INTERNATIONALISATION

With the **acquisition in 2020 of Renovalia**, one of the most important Spanish operators in the field of renewables, EF Solare has started an internationalisation process, with a strong strategic significance, placing the company among the major European producers of solar energy. The activity in Spain continues with maximum attention paid to the development plan for new plants.

**318**  
PLANTS

**1,055** MW



## OUR HISTORY

### 2009

F2i establishes HFV, the JV with the Novenergia fund dedicated to investments in the photovoltaic industry in Italy.

### 2015

The JV with Novenergia ends and EF Solare Italia is established, an equal joint venture between F2i and Enel Green Power with an initial portfolio of 252 MW.

### 2018

F2i acquires and confers on EF Solare Italia, the second largest photovoltaic operator in Italy: RTR, with 134 plants and a total power of 334 MW. The JV with Enel Green Power ends.

### 2020

The acquisition of Renovalia, the leading Spanish solar operator, is concluded by EF Solare Italia. 102 MW of operating plants and 879 MW relating to projects under development are acquired.

Publication of the first Sustainability Report and launch of the action plan to strengthen EF Solare Italia's sustainability profile.

### 2021

Crédit Agricole Assurances, the leading French institutional investor in renewable energy, together with CA Vita, its Italian subsidiary operating in life insurance, acquires 30% of the share capital of EF Solare from F2i Sgr, the leading Italian infrastructure fund.

The installed capacity reached over 1 GW when the new El Bonal photovoltaic plant in Spain came onstream.

ISO 14001 and ISO 45001 certification obtained for the management of environmental impacts and worker health and safety.

### 2022

Revamping and repowering plan continued: 78 MW of module revamping, 28 MW of inverter revamping, 2 MW of repowering.

Confirmed the commitment to disseminate knowledge of agrivoltaics and our innovative model in the open field.

Promotion of a listening process for employees and initiatives dedicated to the training and development of human capital.

### 2023

Revamping and repowering plan continued: 97.4 MW of module revamping, 27.8 MW of inverter revamping and 6 MW of repowering energised. Continuation of O&M internalisation activity: 112 plants involved distributed in 4 regions (Puglia, Molise, Campania and Sicily) for a total of 268 MW.

Award of the European research call dedicated to Agrivoltaics with the Symbiosyst project coordinated by Eurac Research.

Start of construction of the Bolarque plant in Spain in the Guadalajara region, which will have an installed capacity of 126 MW.

We prioritise investing in human resources, building a strong corporate community through team building and engagement, and expanding training opportunities through workshops and meetings, as well as promoting projects like the Accademia del Sole and SAFE Master.



# OUR STRATEGY: PERFORMANCE AND EFFICIENCY

*EF Solare has grown significantly over the years, mostly as a result of the purchase of already-existing plants. The corporation revised its plan today, putting more of an emphasis on the portfolio's organic growth.*

**There are three main strategic priorities for EF Solare Italia:**

- the development of existing assets, through revamping and repowering;
- promotion of the development of new photovoltaic plants, also through innovative formats such as agrivoltaics;
- introduction of new business models to allow the participation of photovoltaic plants in the electricity dispatching services market, with particular attention to the use of storage.

EF Solare Italia continued to work on improving the performance of the assets in its portfolio and optimising their management. **The 2023 program saw the creation of 97.4 MW of revamping modules, 27.8 MW of inverter revamping and 6 MW of energised repowering.**

**The ambitious plan for the development of greenfield plants continued during 2023, with the start of work for the construction of approximately 7 MW in Italy and the Bolarque plant in Spain,** which once completed will be the largest in the Group, with 126 MW of installed power. The construction site is expected to be completed by the end of the year.

At the same time, the expansion and growing activities continued both in Spain, with over 1 GW of new projects, and in Italy, with approximately 640 MW, of which approximately 100 MW already authorised or in the process of starting construction, mainly of agrivoltaics.

**Between Italy and Spain, in 2023 the electricity produced by EF Solare's photovoltaic plants amounted to over 1,400 GWh, thus avoiding the release of over 640,000 tonnes of CO<sub>2</sub>.**

1. Source of the conversion factor for calculating avoided emissions: ISPRA 2023 - gross thermoelectric production



OVER  
**1,400 GWh**  
OF ENERGY  
PRODUCED

OVER  
**640,000<sup>1</sup>**  
tCO<sub>2</sub>  
AVOIDED





OUR PHOTOVOLTAIC ENERGY PRODUCTION



**+1,442 GWh**  
OF ENERGY PRODUCED



Equal to:

- the electricity consumption of the city of Florence 
- power 1 million electric cars for 1 year 



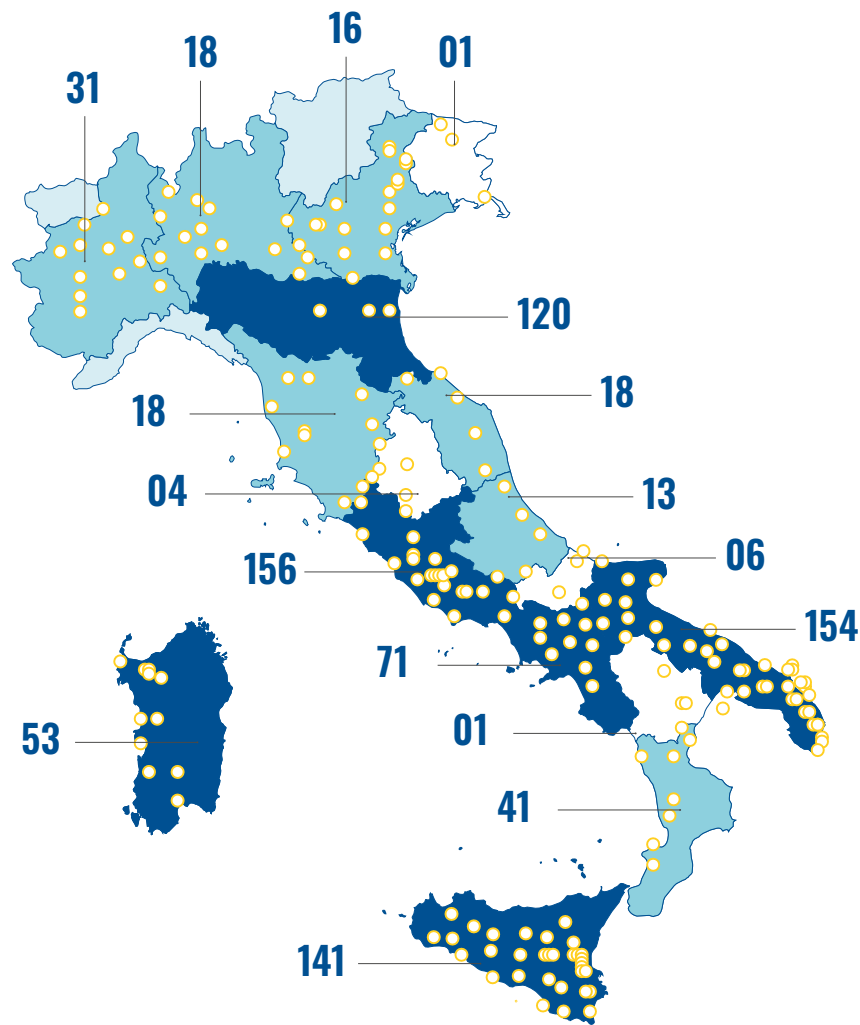
**640,000 tCO<sub>2</sub>**

Equivalent to the emission of CO<sub>2</sub>:

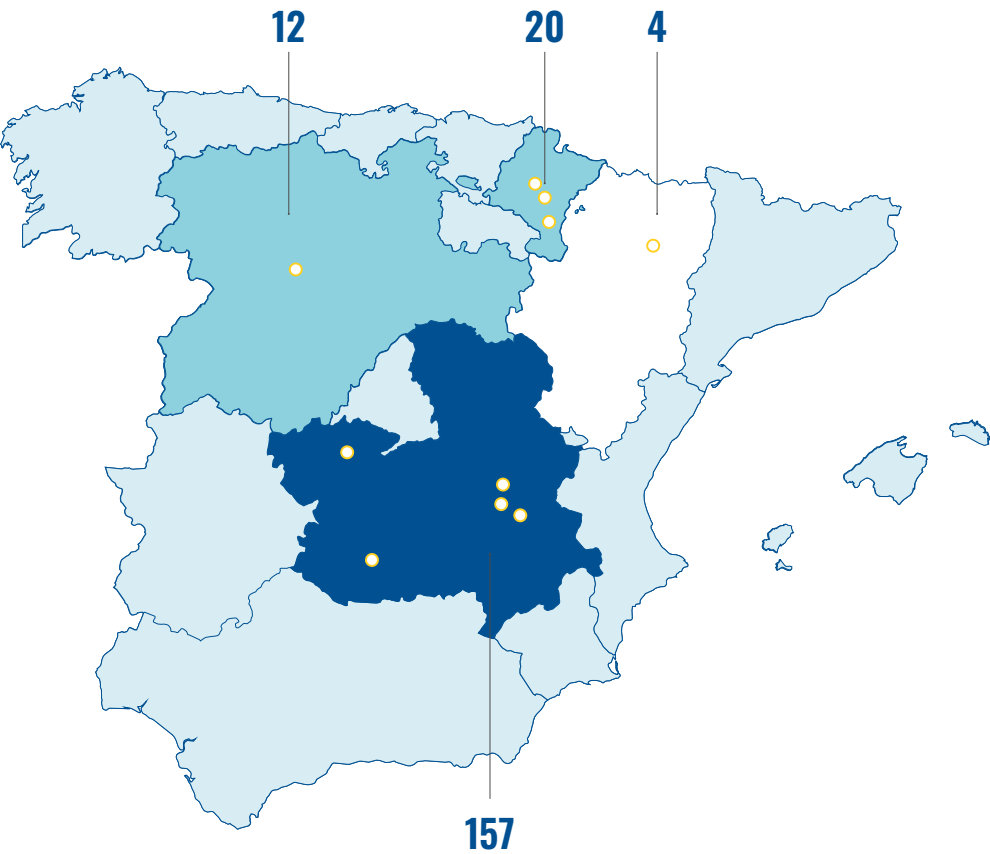
- to the issue of 3.3 million PCs used for work, for one year 
- to 530,000 direct flights from Milan to JFK New York for a single passenger, in economy class 



## PLANTS IN ITALY



## PLANTS IN SPAIN



INSTALLED MW BY REGION

> 50 MW    10 - 50 MW    < 10 MW    PLANTS

## SOLAR ENERGY FOR ACHIEVING THE GOAL OF CARBON NEUTRALITY

*The energy transition is a critical challenge for our future, requiring a revolution in the ways of producing, transporting, storing, and using energy.*

Recent tensions over gas supply and global events highlight the fragility of the traditional energy system. Promoting the transition to a sustainable energy model represents an unprecedented opportunity for growth and investment, which requires a courageous and future-oriented industrial policy.

**Italy is committed to accelerating the installation of renewable energy plants:** the process of updating the National Energy and Climate Plan (PNIEC) began officially in May 2023, with the opening of the public consultation in which EF Solare contributed. Compared to the 2019 Plan, more ambitious objectives are foreseen for renewable sources: **the target for 2030 is more than 130 GW**. Solar power continues to be the protagonist of the decarbonisation process with a 2030 target of around 80 GW. The draft of the new PNIEC was sent to the European Commission in July 2023 and is currently being examined by the Parliament and the Regions, as well as by the Strategic Environmental Assessment process. The approval of the definitive text must be completed by June 2024. As envisioned by the Paris Agreements and in the light of the actions adopted at

European level (RED III), the plan updating marks an advancement in terms of ambition compared to the previous contribution.

As a result, the submitted draft revises the goals of reducing climate-changing emissions and decarbonising the energy sector upwards. **The draft of the new PNIEC, increases the share of energy from RES in gross final energy consumption to 40% by 2030, while the share of energy from RES in final electricity consumption is set at 65%.**

**In April 2023, the so-called PNRR DL was also converted into law** (DL no. 13 of 02/24/2023 approved with amendments by Law no. 41 of 21 April 2023) **which introduces some changes to the rules for authorising plants from renewable energy sources (RES)**. The main changes concern the subject of permitting: the authorisation process for photovoltaic plants in industrial, artisanal and commercial areas, landfills and quarries has been simplified; the threshold for access to the Environmental Impact Assessment (EIA) under state responsibility has been raised for some types of photovoltaic plants; the eligible areas that benefit from authorisation simplifications and

reduced authorisation times have been expanded; A transitional regulation has been introduced (which takes into account the requirements of EU Regulation 2022/2577), that exempts from the EIA until 30 June 2024 (recently extended to 30 June 2025) some projects that fall within the eligible areas, including photovoltaic plants projects with a total power of up to 30 MW, renovation, strengthening, and complete reconstruction projects of existing photovoltaic plants up to a total power of 50 MW and without changes in the occupied area.

2023 was also a year of public consultations and analysis of **two important ministerial decrees** that will mark the development process of RES plants in Italy: the **go-to areas decree**, which defines the general criteria for identifying the areas that will benefit from simplification of the authorisation processes for the installation of RES plants; and the **RES X decree**, which defines the methods of access to incentives for mature RES technologies for the next five years.



**With reference to Spain, in June 2023 it was among the first Countries to send the proposal to update its PNIEC to the EU Commission.** The Energy and Climate Plan sets challenging goals for increasing installed renewable power by 2030, including: **76.3 GW of photovoltaic**; 62 GW of wind; 4.8 GW of solar thermal; 1.4 GW of biomass and 22 GW of storage systems.

**During 2023, the Spanish government addressed the challenges related to the authorisation of projects in development through a series of legislative decrees.** Among the most significant was the RDL 5/2023, which extended by up to 43 months the timetable to acquire authority to build the plants (AAC) originally scheduled in 2020 (RDL 23/2020). This extension was required due to the restricted number of projects holding building permits. However, this approach proved insufficient, prompting calls for a reassessment by operators and industry bodies.

Consequently, the RDL 8/2023 was adopted, which further extended the AAC deadlines to a maximum of 49 months and postponed the deadline for the entry into operation (COD) of projects from 2025 to 2028 at the latest, as well as providing for a staggered process for the commissioning of the systems to promote an orderly integration of the new installations for the benefit of the energy transition path.

PHOTOVOLTAIC DATA FOR ITALY AND SPAIN<sup>2</sup>

GW	ITALY	SPAIN*
INSTALLED 2022	25	25.2
INSTALLED 2023	30.3	31.6
PNIEC 2030 GOAL	79.9	76.3

2. The data and information represent the best estimate available as of 31 March 2024.  
Sources: Terna, Red Eléctrica, UNEF.

\* The data does not take into account the installed share of thermodynamic solar power, equal to approximately 2.3 GW.



## TRENDS IN RENEWABLES

The European Union is fully committed to the transition from a system based on fossil fuels to one in which solar and wind represent the backbone of energy supply. 2023 was an important year in Europe’s energy shift: for the first time, fossil fuels accounted for less than one-third of total production throughout the 27 member states, a 19% decrease from 2022. Furthermore, wind and photovoltaics generated more than a quarter (27%) of the electricity<sup>3</sup>.

In terms of photovoltaic technology, 2023 marked another record year in Europe, with around 56 GW installed, representing a 40% increase compared to 2022<sup>4</sup>. The total amount of solar power in Europe is presently 263 GW, with Germany leading the way with 82. The future projection predicts for double-digit growth, albeit at lower levels than in prior years due to shifting market conditions. An 11% increase is projected in 2024, followed by a 19% increase in 2025.

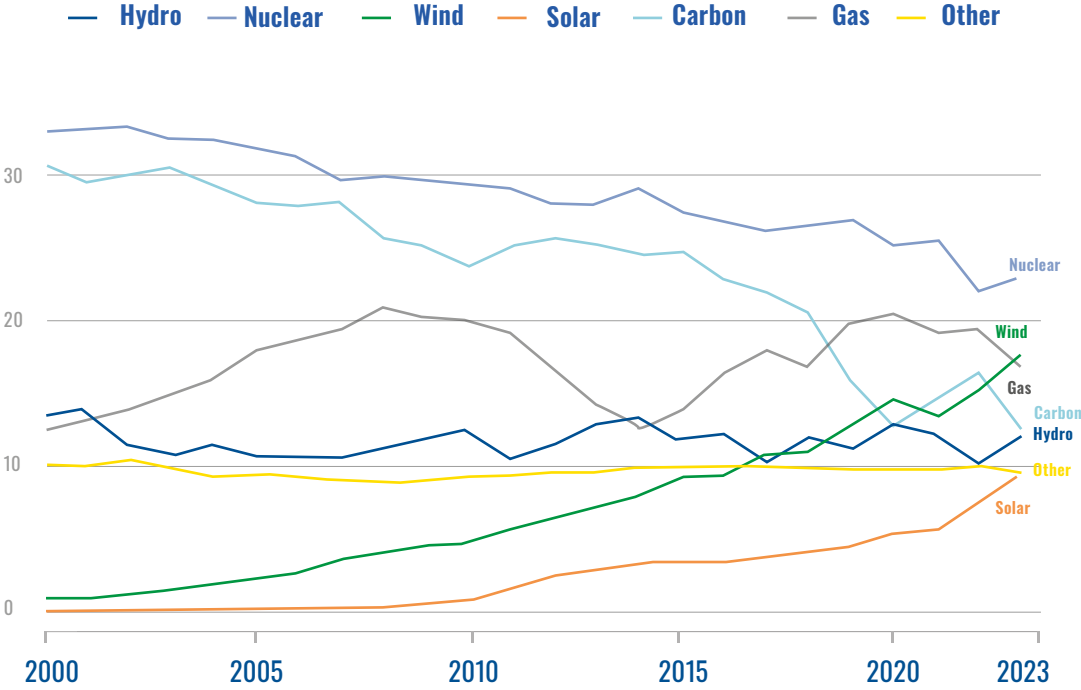


Fig.1 Trend of electricity production in the European Union (2000-2023)  
Source: Annual electricity data, Ember

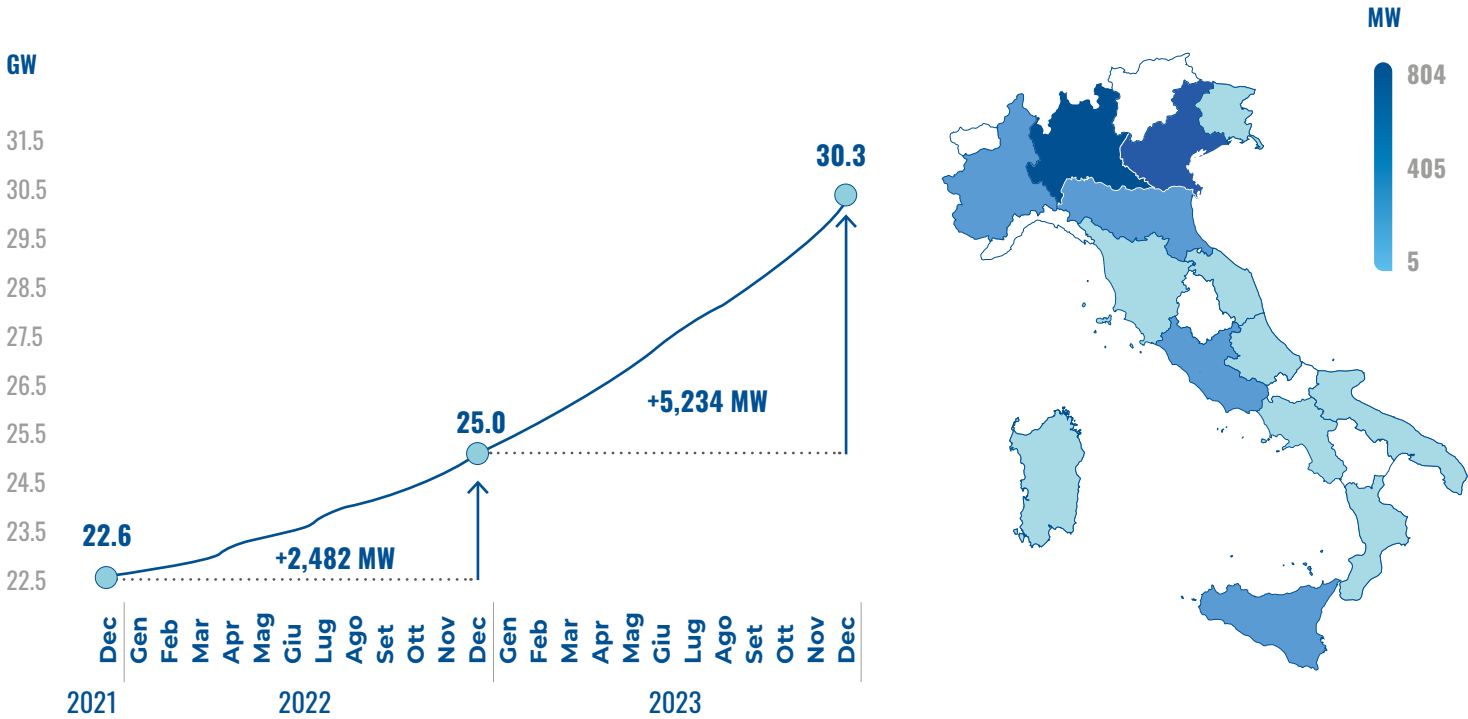
3. Ember, European Electricity Review 2024.  
4. Solar\_Power\_Europe, EU\_Market\_Outlook\_Report 2023-2027.



One of the fastest growing solar markets in 2023 was Italy: **5.3 GW** were installed in our Country almost double the 2.5 GW installed in 2022, for a total cumulative power of photovoltaic plants equal to **30.3 GW** at the end of 2023. Almost 80% of the new installations were carried out by the residential segment under the incentive of the tax relief expected by the so-called *Superbonus*.

At a European level, Spain ranked just after Germany in the installation of new solar plants last year with **6.4 GW<sup>5</sup>**. Ground-mounted photovoltaic installations remain crucial to the Spanish photovoltaic sector, highlighting the country's position as a leader in the solar sector. In fact, more than 70% of new installations involved utility-scale systems.

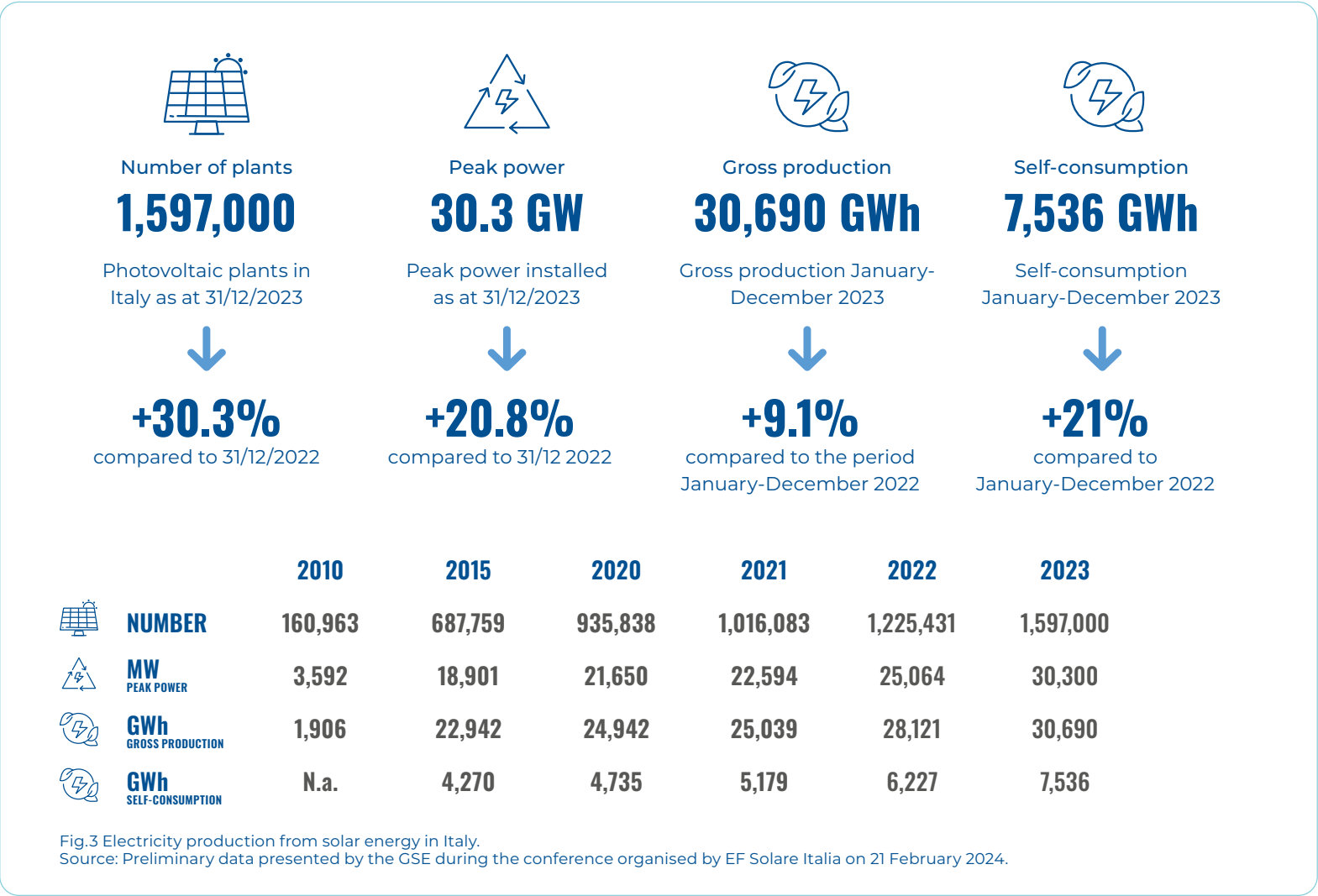
CUMULATIVE CAPACITY IN OPERATION (SX)  
AND DISTRIBUTION OF NEW 2023 ACTIVATIONS (DX)



The region with the greatest increase is Lombardy (+804 MW), followed by Veneto (+621 MW) and Piedmont (+519 MW)

5. Best estimate available as of 31 March 2024.

Figure 2: Cumulative capacity in operation and distribution of new activations 2023 Source: Terna





## GROSS ELECTRICITY PRODUCTION FROM SOLAR PHOTOVOLTAICS

JANUARY-DECEMBER 2023

JANUARY-DECEMBER 2023 PRODUCTION (ITALY: 30,690 GWh)

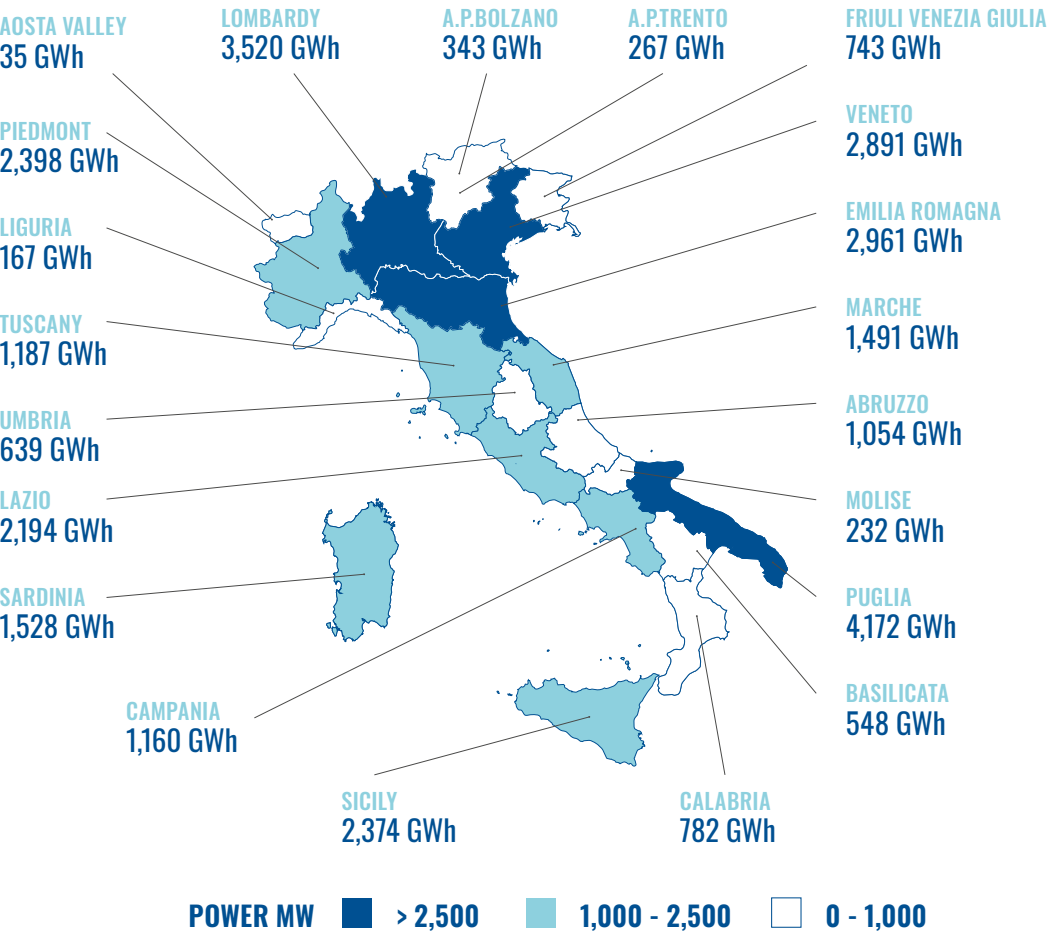


Fig.4 Electricity production from solar energy in Italy.  
Source: Preliminary data presented by the GSE during the conference organised by EF Solare Italia on 21 February 2024.



SOLAR POWER INSTALLED SPAIN\*  
(MW)

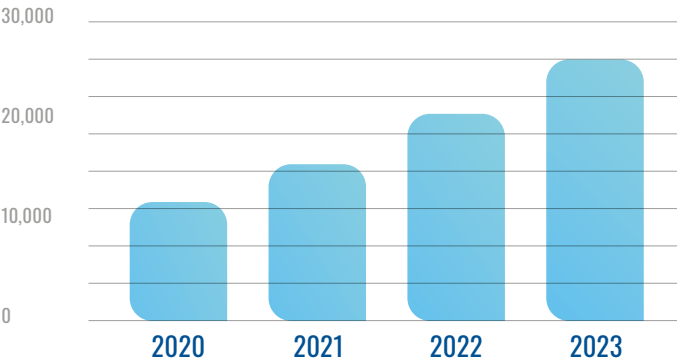


Fig. 5: Evolution of installed solar power in Spain 2020-2023.  
Source: Red Eléctrica.

GENERATION FROM SOLAR SOURCE SPAIN\*  
(GWh)

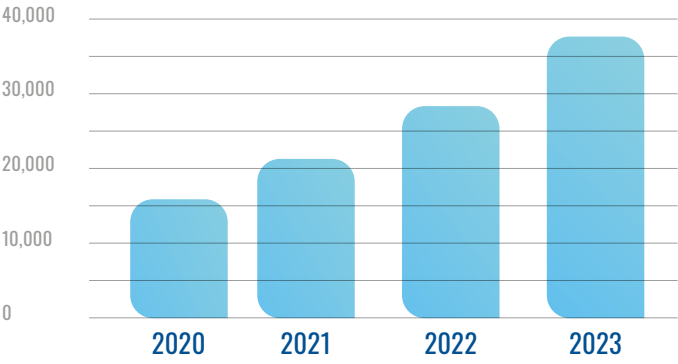


Fig. 6: Evolution of solar production in Spain 2020-2023  
Source: Red Eléctrica.

(\*) The data reported does not consider self-consumption plants.

REGIONAL DISTRIBUTION OF SOLAR SOURCE GENERATION IN SPAIN 2023\*  
37,331,732 MWh

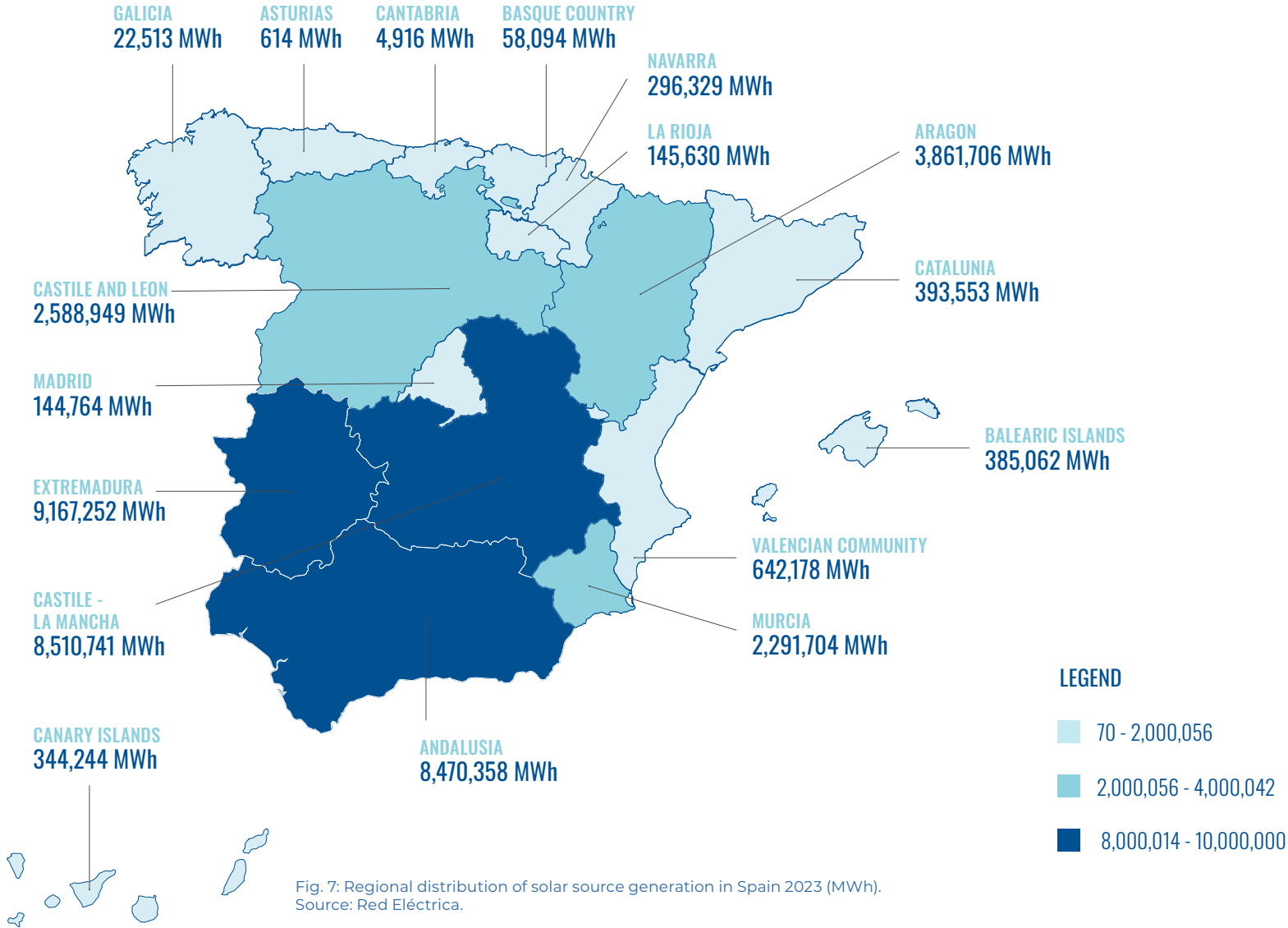


Fig. 7: Regional distribution of solar source generation in Spain 2023 (MWh).  
Source: Red Eléctrica.



# POLICIES AND OBJECTIVES

*At a European level, public policies in recent years have been increasingly aimed at accelerating the growth of renewable energy, to achieve more ambitious decarbonisation goals.*

In 2021, the European Commission published the Fit for 55 package of policies and proposed to increase the share of renewable energy produced by the EU from 32% up to at least 40% of final consumption by 2030, to help the **European Union achieve climate neutrality by 2050**, as defined by the European Green Deal and climate law of June 2021.

After the invasion of Ukraine by Russia in February 2022, energy security was another reason for accelerating the transition and in May 2022 the Commission published the **REPowerEU plan**, which intends to put an end to dependence on Russian fossil fuels by 2027. The plan also aims to **increase the share of renewables in final energy consumption to 45% by 2030**, thereby reviewing the increase to 40% previously negotiated.

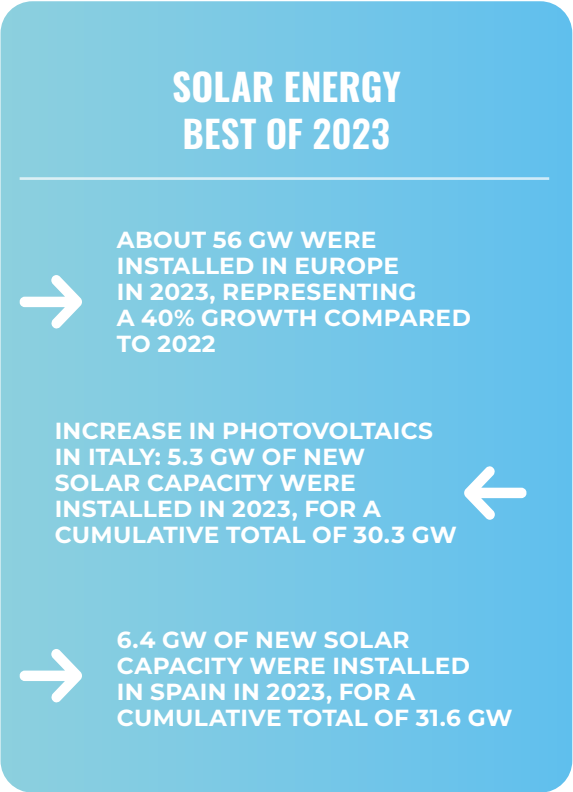
Ahead of COP28 in Dubai, the IEA urged governments to support five pillars of action by 2030, including tripling renewable energy capacity. Although the IEA's priorities were reflected in the COP28 declaration, the projected growth in global renewable capacity through 2028 may fall short of the anticipated target. The goal will require policies tailored to the individual needs of developing nations.

Following the community approach to the energy transition objectives by 2030, the draft revision of the Italian National Integrated Energy and Climate Plan (PNIEC) highlights the need to intensify

efforts at a national level. In general, the challenges concerning regulatory uncertainty, auctions inefficiencies and delayed authorisation processes are still ongoing. It should be noted that achieving the set objectives would result in significant economic and employment opportunities, as well as environmental benefits: a turnover in investments for new installations is estimated to be between 43 and 68 billion of euros with employment implications of 350,000 units. This is without taking into account a reduction in annual CO<sub>2</sub> emissions from energy production of 39 to 52 MtCO<sub>2</sub> starting from 2030<sup>6</sup>.

The revision of the Spanish PNIEC is anticipated to have a significant impact: Spain plans to reduce emissions from 309.8 MtCO<sub>2</sub>eq in 2019 to 194.6 MtCO<sub>2</sub>eq in 2030, removing more than a third of all emissions. The measures will create 294,000 million euros in investments, with renewable energy accounting for 40%. These investments are predicted to have a significant positive impact on employment, with 522,000 people working in industries related to the energy transition by 2030<sup>7</sup>.

It is therefore **essential to significantly update national policies and actions**. In particular, a stronger and more coordinated commitment to reduce greenhouse gas emissions, promote renewable energy and improve energy efficiency is crucial. Such measures are essential to ensure the Country's compliance with international agreements and to mitigate the impacts of climate change<sup>8</sup>.



6. Energy & Strategy, POLIMI, Renewable Energy Report 2023.  
7. Borrador de actualización del Plan Nacional Integrado de Energía y Clima 2023-2030.  
8. Electricity Market Report 2023, Polimi.



## REGULATORY BARRIERS AND KEY ISSUES

**Italy and Spain are currently concentrating in transforming the electricity system with a “fit for RES” perspective.** Although much has been already done, several barriers hinder the achievement of the European decarbonisation objectives for 2030.

The main challenges to be faced to promote the widest possible diffusion of renewable sources concern the legislative-regulatory aspects, economic sustainability and topics relating to the electricity system.

From a regulatory perspective, although steps aimed at easing authorisation processes have just been implemented, their full effectiveness will take time. **In Italy, it will be necessary to draft a Consolidated Law on Renewable Energy that incorporates all of the simplifications implemented in recent years in an orderly and cohesive manner, as well as an effort to harmonise the national and regional legislation of reference.**

In Spain, regular extensions of time milestones targeted at completing the plant authorisation procedure (started with RDL 23/2020) demonstrate the system's real challenges in keeping up with development times. In this sense, it will be crucial to verify whether the changes to the regulations (last approved with RDL

8/2023) will be able to absorb the issues identified so far.

In terms of economic sustainability, the concept of medium- to long-term revenue stabilisation associated with investments in new renewable capacity is being consolidated through both market products, like long-term Power Purchase Agreements (PPA), and regulated mechanisms based on public competitive procedures that offer a fixed remuneration multi-year (through the instrument of two-way contracts for difference).

Unlike Spain which represents the first European market for PPAs (4.67 GW of contracts signed in 2023 alone), the latter are still not widespread in Italy (1 GW)<sup>8</sup>.

In terms of regulated mechanisms, in Italy, the definition of the ministerial decree<sup>9</sup> (the so-called RES X Ministerial Decree) is expected, which will need to sustain the development of mature RES over the course of the next five years (2024–2028). Meanwhile, in Spain, plans are underway to define a new format for RES auctions that, in contrast to other European nations, will allow for the adoption of non-price criteria (up to 30% of the total premium), in line with the provisions of the recently issued European legislation (RED III).

**Regarding the challenges surrounding the electrical system, there are two primary areas of focus: the networks' ability to support a sizable number of plants distributed throughout the region and the market's capacity to control the uncertainty surrounding non-programmable renewable sources by boosting the system's flexibility.**

To this end, both Italy and Spain – at various levels of maturity – are (i) reforming the grid connection process and (ii) promoting system flexibility, inter alia through the development of storage systems (both electrochemical and pumped), real system enablers for full integration of photovoltaics in the national electricity system and through the adoption of new rules for the management of electricity dispatching. Within this context, EF Solare oversees and provides support to industry groups and associations that research and promote the renewable energy culture, in an effort to directly address the obstacles that continue to impede the attainment of European targets. “Active within the public debate” is the paragraph that reports and describes this commitment.

9. European PPA Market Outlook 2024 | Pexapark.



# GOVERNANCE AND ORGANISATIONAL STRUCTURES

The EF Solare Italia Group – aware of the need to ensure conditions of correctness and transparency in the conduct of business and corporate activities, to protect its position and image and those of its subsidiaries, the expectations of its shareholders and the work of its employees - **deemed it compliant with its company policies to proceed with the adoption of the Organisation, Management and Control Model envisaged by Legislative Decree no. 231/2001 and the Code of Ethics which constitutes an indispensable part of it.**

## BOD COMPOSITION OF EF SOLARE

MEMBERS	7
WOMEN	29%
AGE	< 30 (0) 30-50 (2 MEMBERS, 50% WOMEN) > 50 (5 MEMBERS, 20% WOMEN)



## CODE OF ETHICS AND ORGANISATION, MANAGEMENT AND CONTROL MODEL 231

The EF Solare Code of Ethics describes the values and standards of behaviour that direct the company in conducting its operations. It serves as a guide for staff members and everyone else who contributes to the company's goals, including partners and suppliers.

EF Solare Italia closely monitors compliance with the **Code of Ethics**, preparing necessary information, prevention and control tools and procedures. The functions of guarantor have been allocated to EF Solare Italia's **Supervisory Body**. The company document is an essential component of the broader internal control and risk management system, which is based on the Organisation and Control Model in accordance with Legislative Decree 231/2001. The Model is being reviewed on a regular basis to ensure that it is up to current with legislation changes and adaptable to organisational changes. As a result, in July 2023, the Board of Directors amended and approved the **Organisation, Management, and Control Model 231** to adapt it to the new internal organisational structure required by the company's growth. **Directors and executives were interviewed as part of the risk assessment process**, which was conducted with the assistance of an independent consulting firm. The structure of the model has remained unchanged, the contents have been revised, in particular in the special parts relating to the introduction of new crimes, the rationalisation of business processes and activities, relations with the public administration and the management of financial flows.

## WHISTLEBLOWING

**Comunica Whistleblowing is a tool that EF Solare provides to employees, administrators and collaborators** to report suspicions of wrongdoing, illegal practices or violations of laws, regulations, organisation, management and control models pursuant to Legislative Decree. 8 June 2001, n. 231 (the "Model 231"), Code of Ethics adopted by the Company and/or any other policy, provision and/or internal regulation adopted by the Company.

It is the process by which the Company ensures that it is promptly notified of any act or omission, event or claim that has or may have a major impact on the Company and its activities, in compliance with the provisions of the Legislative Decree 10 March 2023, n. 24 addressing Whistleblowing. It was implemented within the timeframe stipulated by the legislator.

## PRIVACY POLICY

EF Solare continued to implement the Privacy Model during 2023, carrying out the following activities:

- drafting of the privacy organisational chart by appointing the privacy contacts for each function, the privacy delegate and the authorised individuals;
- reviewing of privacy policies to adapt to the new organisational structure; reviewing of the processing register through specific interviews with each
- company function to adapt them to the new organisational structure.



# VALUES FOR RESPONSIBLE BUSINESS MANAGEMENT



IMPARTIALITY



HONESTY



CORRECTNESS IN  
CASE OF POTENTIAL  
CONFLICTS OF INTEREST



FAIRNESS WHEN  
EXERCISING  
AUTHORITY



CONFIDENTIALITY



RELATIONS WITH  
SHAREHOLDERS AND  
VALORISATION OF THEIR  
INVESTMENT



VALUE OF HUMAN  
RESOURCES AND  
PROFESSIONAL  
DEVELOPMENT



PERSONAL  
INTEGRITY



TRANSPARENCY  
AND COMPLETENESS  
OF INFORMATION



DUE DILIGENCE  
AND CARE WHEN  
EXECUTING TASKS  
AND CONTRACTS



FAIR COMPETITION

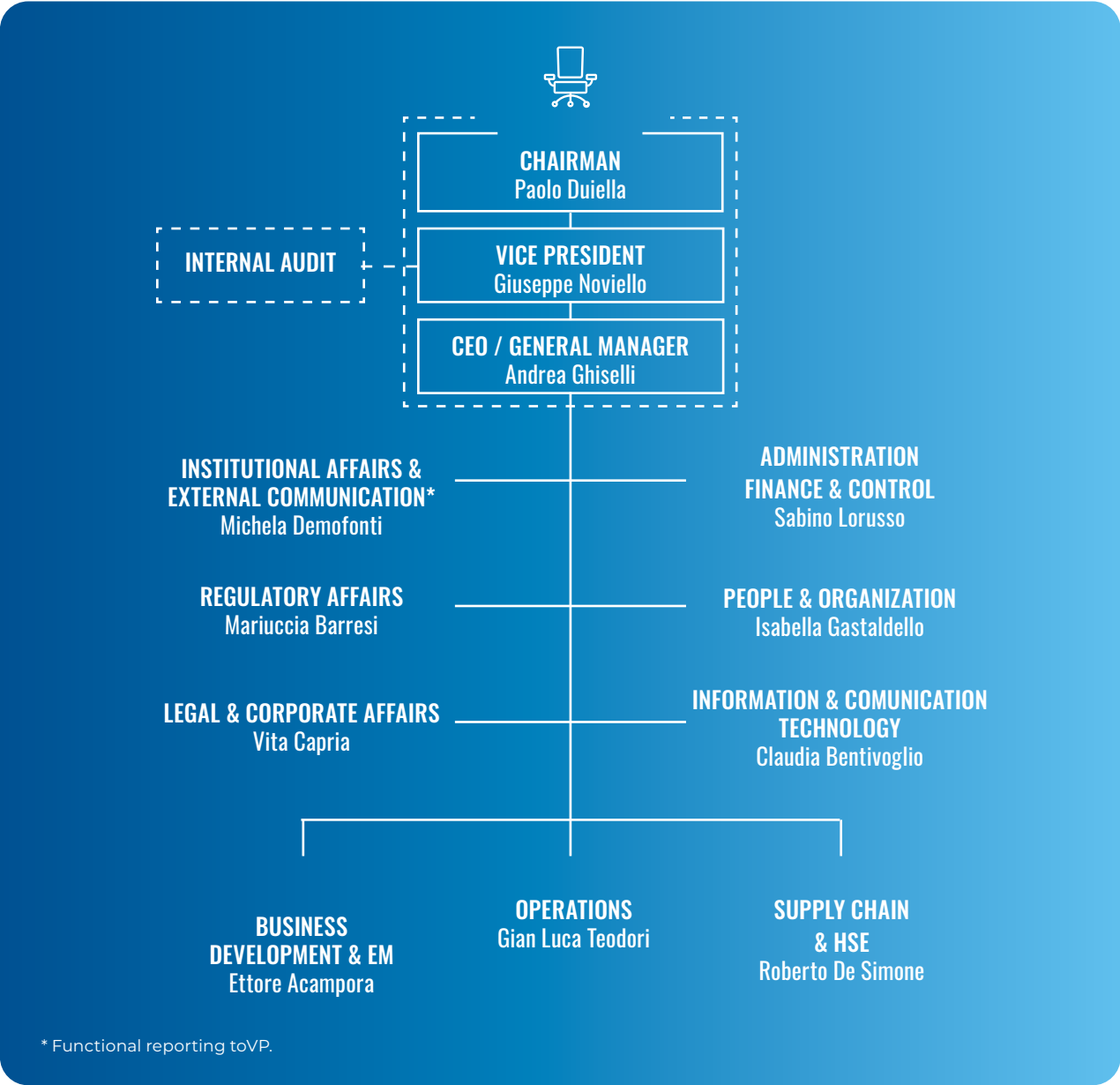


PROTECTION OF THE  
ENVIRONMENT  
AND SUSTAINABLE  
DEVELOPMENT



## ORGANISATIONAL STRUCTURE

At the beginning of 2024, the organisational structure was expanded by introducing the regulatory affairs function and bringing the Information and Communication Technology organisational unit reporting directly to the CEO.





## THE INTEGRATION OF SUSTAINABILITY IN THE STRATEGY

The materiality analysis represents the tool through which the most relevant topics are defined from a social, environmental and governance point of view on which to concentrate the non-financial reporting activity.

With the entry into force of the GRI Standards 2021, the process indicated for the definition of material topics has been reviewed and strengthened especially around the concept of impact. According to the Standards, the key to identify the areas subject to reporting will therefore be that of the impact, understood as the effect (negative or positive) that an organisation has or could have on the economy, the environment, or people, including human rights, as a result of its business activities or relationships (GRI 1).

**For the 2022 Sustainability Report, the adoption of the new method of identifying materiality took place in a hybrid way.** The updating of the topics was carried out following a perspective focused on the impacts in the context of listening to internal and external stakeholders, without however extensively applying the process envisaged by GRI 3 (involvement of sector experts, prioritisation of impacts, etc.).

This year EF Solare has continued the process of **listening**

**and involving stakeholders, who confirmed the impacts and material topics identified in 2022.**

To engage external stakeholders, targeted interviews were performed with selected individuals representing key categories:





- **Alessandra Scognamiglio**, President of the Italian Sustainable Agrivoltaics Association (AIAS), Coordinator Task force Sustainable Agrivoltaics@ ENEA
- **Domenico Borello**, Professor of Energy and Environmental Systems at the University of Rome La Sapienza and Director of the EFER – Master in Energy Efficiency and Renewable Sources
- **Marco Marsico**, CEO of SET Energie
- **Giulio Borgia**, Administrator of the Le Rogaie Agricultural Society

The materiality update was also realised through the study of the analysis carried out by Renovalia, as regards the Spanish context.



2023 MATERIALITY



MATERIAL TOPIC	INTERPRETATION OF THE TOPIC FOR EF SOLARE	IMPACT ON THE ECONOMY, ENVIRONMENT AND SOCIETY
<b>ADVOCACY AND SUPPORT FOR INSTITUTIONS FOR THE ENERGY TRANSITION</b>  	It is vital for EF Solare to maintain an ongoing, constructive dialogue at an institutional level in order to actively collaborate with the authorities to define a clear legislative framework that enables and supports growth in the sector.  <i>Where we talk about it: CAP 2</i>	Placing our experience and expertise on the issue of renewables at the disposal of institutions, clearly and transparently, means raising awareness of their potential and facilitating the energy transition.
<b>DISSEMINATION OF INNOVATION IN THE ENERGY SYSTEM</b>  	Technological and management innovation is for EF Solare Italia, the key for enabling The transition and competitiveness of renewable energy sources.  <i>Where we talk about it: CAP 2-3</i>	Working pursuing technological, organisational and financial innovation, as the leading photovoltaic operator in Europe has positive repercussions on the entire sector, because it allows the widespread dissemination of good practices, which act to facilitate the achievement of decarbonisation targets.
<b>ETHICS AND INTEGRITY</b> 	Ethics and integrity are the core values of EF Solare Italia, which increase credibility and prestige with regard to stakeholders.  <i>Where we talk about it: CAP 1</i>	Taking into consideration the ethical values of the company in all stages of conducting business and at all levels of the organisation, contributes to protecting the reputation and credibility of the entire sector, increasing the confidence of stakeholders.




MATERIAL TOPIC	INTERPRETATION OF THE TOPIC FOR EF SOLARE	IMPACT ON THE ECONOMY, ENVIRONMENT AND SOCIETY
<b>DIGITALISATION OF PROCESSES</b> 	EF Solare has undertaken a program of organic digitalization of its processes in order to optimize them and make them more efficient to better respond to the challenges posed by the context and the sector which is undergoing constant development.  <i>Where we talk about it: CAP 2</i>	The digitalisation of processes aims for an increase in productivity in conducting business and consequently the objectives of increasing the production of energy from renewable sources by the company and indirectly the entire sector.
<b>CIRCULAR ECONOMY</b> 	The transition to a circular economy model, even in the light of difficulties in procurement as a result of the geopolitical situation, represents an enormous challenge, which EF Solare Italia is called upon to respond to, accompanying the innovations from a circular economy perspective which look to technology.  <i>Where we talk about it: CAP 3</i>	According to the Irena estimates - by 2050, 78 million tonnes of waste from photovoltaic solar panels will be produced globally. This figure, combined with the fact that the technologies for the production of renewable energy require the use of rare earth (Critical Raw Materials), making all the efforts aimed at promoting circular business models, which strive to close the circle, urgent. At EF Solare we are aware that our efforts in this direction can be crucial for the entire sector, which can face certain technological challenges creating a critical mass and fostering economies of scale, from which all operators can benefit.
<b>RISPECTING BIODIVERSITY AND THE AREA</b>  	At EF Solare we work to ensure that the photovoltaic plants are in harmony with the areas and ecosystems without removing value or changing the balance, thanks to carefully-considered localisation decisions, minimal environmental impacts during the entire life cycle and the promotion of innovative models such as agrivoltaics.  <i>Where we talk about it: CAP 3</i>	Some of the literature claims that the inclusion of solar plants within an agricultural context can increase biodiversity because with the latter least pesticides are used and there is a smaller presence of human beings (anthropic disturbance). EF Solare pays great attention to the search for models that protect biodiversity in full implementing the most recent industry rules and good practices.

10. Lammerant, L., Laureysens, I. and Driesen, K. (2020) Potential impacts of solar, geothermal and ocean energy on habitats and species protected under the Birds and Habitats Directives. Final report under EC Contract ENV.D.3/SER/2017/0002 Project: "Reviewing and mitigating the impacts of renewable energy developments on habitats and species protected under the Birds and Habitats Directives", Arcadis Belgium, Institute for European Environmental Policy, BirdLife International, NIRAS, Stella Consulting, Ecosystems Ltd, Brussels, pp. 12-20.





MATERIAL TOPIC	INTERPRETATION OF THE TOPIC FOR EF SOLARE	IMPACT ON THE ECONOMY, ENVIRONMENT AND SOCIETY
<b>ATTRACTION, DEVELOPMENT AND MOTIVATION OF HUMAN CAPITAL</b> 	<p>The company is aware of how crucial it is for business continuity, to take care of human capital and work in a way to attract talent. Education, sharing and listening are therefore the words that steer relations with human resources with a view to growth and continuous improvement.</p> <p><i>Where we talk about it:</i> CAP 4</p>	<p>According to Renewable Energy and Jobs: Annual Review 2022, published by IRENA, in spite of the long-lasting effects of COVID-19 and the increasing energy crisis, global employment in the renewable energy sector has continued to rise with a further 700,000 new jobs added in a year. In this context, EF Solare trains highly specialized workers, vital for energy transition and the decarbonisation of the economy.</p>
<b>DIVERSITY AND EQUAL OPPORTUNITIES</b> 	<p>The values guiding EF Solare's relations with human resources are inclusion, diversity and listening, in the awareness that the multitude of stories and voices are key for successfully responding to the challenges that the company is required to respond to on a daily basis.</p> <p><i>Where we talk about it:</i> CAP 4</p>	<p>According to the report "Solar PV: A Gender Perspective" by the International Renewable Energy Agency (IRENA), women constitute 40% of the workforce in the photovoltaic sector, out of a global total of more than 4.3 million people worldwide, namely one third of the total numerical volume of those employed in renewable energy. As stated in the IRENA report, gender equality is not only a fundamental right or development goal, it is also a crucial tool to improve efficiency in the sector. In spite of the large number of women in the sector, there are many significant imbalances from the point of view of roles. The majority of women employed in the photovoltaic industry work in the administrative area, while women are under-represented if managerial and senior management roles are taken into consideration. For EF Solare having policies designed to incentivise diversity and inclusion means encouraging the entire sector to promote and devote increasing attention to the talent of all employees.</p>

MATERIAL TOPIC	INTERPRETATION OF THE TOPIC FOR EF SOLARE	IMPACT ON THE ECONOMY, ENVIRONMENT AND SOCIETY
<b>INVOLVEMENT OF LOCAL COMMUNITIES AND SHARING OF VALUE</b> 	<p>For EF Solare working on the field implies paying special attention to the communities that live in the territories. For this, adopting practices of dialogue and sharing the value generated by the plants with the reference to local communities, are strategic elements in conducting business.</p> <p><i>Where we talk about it:</i> CAP 4</p>	<p>According to the Recommendation of the European Commission on the acceleration of Authorisation procedures for renewable energy products and the facilitation of sales agreements for energy, published in May 2022, states should encourage the participation of citizens, low and middle-income families and energy communities in renewable energy projects and adopt measures aimed at encouraging the transfer of the benefits from energy transition to local communities, thereby strengthening the acceptance and involvement of citizens.</p>
<b>SAFETY OF PLANTS AND OPERATORS</b> 	<p>Guaranteeing the safety of plants and operators is an ongoing and fundamental commitment which EF Solare Italia fulfils through the application of management practices and standards aimed at preventing risks and safeguarding safety in the workplace.</p> <p><i>Where we talk about it:</i> CAP 4</p>	<p>Guaranteeing safety when activities relating to the management, maintenance and administration of the solar plant are carried out is vital for promoting the confidence of the entire sector, called upon to promote a transition that has the care and protection of the well-being of people at its heart.</p>
<b>THE RESILIENCE AND CONTINUITY OF THE SUPPLY CHAIN</b> 	<p>The careful management of the supply chain is a strategic element in business continuity. EF Solare Italia applies the good practices of correctness and transparency in the selection and management of relations with suppliers, guaranteeing high standards of quality and cost-effectiveness.</p> <p><i>Where we talk about it:</i> CAP 4</p>	<p>As a result of the development of the context: geopolitical crisis, increase in the price of raw materials, shortage in components, the careful and informed management of the supply change has become a key element for guaranteeing the rapid dissemination of renewable energy sources. To do this EF Solare supervises and converses with institutions and other sector operators, because we believe that faced with global challenges of this magnitude the responses will be that much more efficient if unanimous and shared.</p>





# INCREASING THE USE OF RENEWABLES

We focus on technological innovation, operational excellence and human capital to develop a sustainable business model.



DIFFUSION OF INNOVATION IN THE ENERGY SYSTEM



ADVOCACY AND SUPPORT TO INSTITUTIONS FOR THE ENERGY TRANSITION



DIGITALISATION OF PROCESSES





# AN INTEGRATED STRATEGY

EF Solare’s integrated strategy is consistently designed to address and exploit solar industry trends and challenges. It is based on four fundamental pillars that guide the company’s overall approach:



### TECHNOLOGY

Increasingly digitalised smart maintenance of plants and significant revamping and repowering operations.



### ECONOMY OF SCALE

To make operational management more efficient through a significant plant portfolio.



### INTEGRATED APPROACH TO THE MARKET

To increase the revenue streams and stabilise cash flows over time.



### FINANCE

Research and development into innovative financial instruments to give access to the financial resources needed to support long-term development.

In summary, EF Solare’s integrated strategy aims to ensure a competitive position in the solar sector, through technological innovation, operational management optimisation, an integrated approach to the market, and an intelligent and sustainable financial management.

**As regards the Operations area, the operational core of the company, 2023 was characterised by the continuation of the internalisation and industrialisation path**, which pushed the Group to define increasingly efficient and effective management of the vast portfolio of plants (only in Italy there are more than 300) and to reorganise the Asset Management area to develop a new model capable of optimising internal processes and ensuring increasingly profitable interaction with internal and external suppliers and stakeholders.

The redesign of the Asset Management area fits into the broader framework of the redefinition of the entire O&M operating model, of which asset management constitutes one of the pieces. The objective of this redesign was to develop a new model capable of optimising internal processes and ensuring increasingly profitable interaction with suppliers and stakeholders.

The new operating model of the Asset Management area envisaged an expansion and redistribution of the work groups, in particular of the Commercial Asset Management area. The latter was divided into three different teams, one of which was called to interface with

EF Maintenance colleagues, while the other two with specific O&M contractors.

This organisational approach allows interaction with suppliers to be more timely and effective, to stimulate the development and dissemination of know-how with experienced partners and to improve the planning of interventions. At the same time, the “Technical Asset Management” area was introduced, a specialised team capable of transversally supporting colleagues in the area on more technical issues and focusing on specific projects involving extraordinary maintenance activities and improving the efficiency of the plants.

**At the same time, the Innovation & Project Execution and Engineering team continued the revamping and repowering programme in 2023, with 226 MW of interventions completed out of the 450 MW planned.**

Of which:

**41.07 MW**

revamping on tracker

**21 MW**

revamping with bifacial modules

**7.3 MW**

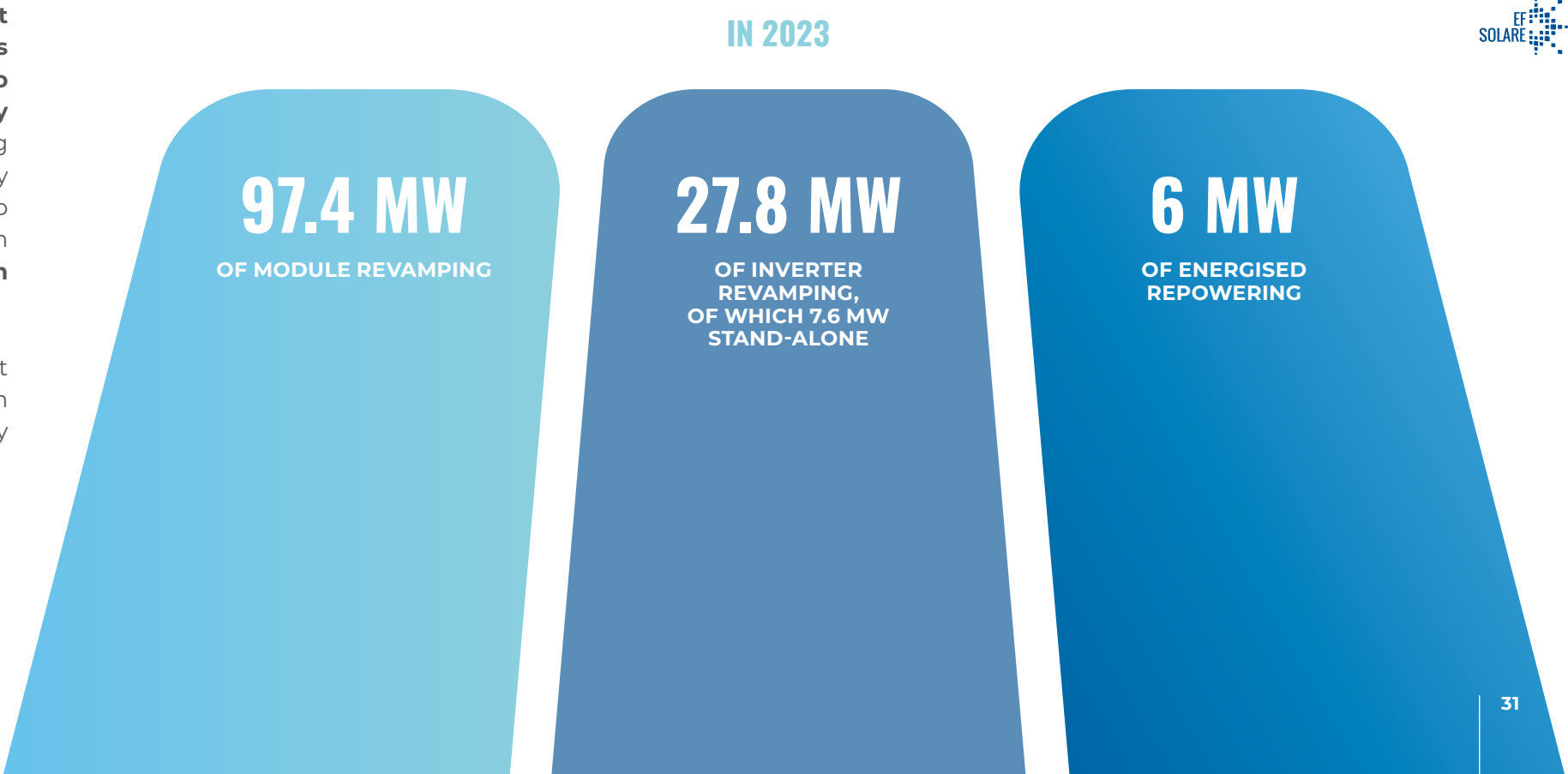
7.3 MW bifacial modules installed on repowering (c.a 27% of installed repowering)

Revamping activities take into account the unique characteristics of each plant in operation. A feasibility study is used to develop an intervention that enhances the plant's performance and eliminates its problems, maximising production, minimising the impact on the territory, and, at the same time, reducing costs. The Operations team constantly strives to learn and explore the best technologies available and all the latest technological innovations in the sector in order to seize and apply all new opportunities.

Alongside the best-known ones, **EF Solare uses the most modern diagnostic and monitoring methodologies (drones, thermography and electro-luminescence) to verify loss of production, malfunctions, and promptly identify the interventions to be implemented.** During 2023, with the support of Above, the thermography activity continued to monitor the state of the plants in order to identify any critical issues on which to intervene also with revamping activities. **The thermographic campaign took place on 64 plants for a power of 175 MW.**

The interventions were designed with the best technologies, installing bifacial photovoltaic modules, with capacities up to three times higher than those previously installed, high efficiency and reduced deterioration.

The improvement activities included plant elements such as inverters, rather than transformers and minor components. Where possible, the plant was converted from fixed to tracker by installing single-axis solar trackers. Furthermore, in some cases, where necessary, the plant surveillance system has also been adapted by employing the latest technologies to protect the investment. **During 2023, revamping and repowering interventions were carried out to replace old modules and components with modern and more efficient technology, as indicated in the table.**







In addition to the entire replacement of plant components planned in the re-vamping programme, EF Solare has started a programme to recondition the inverters in its portfolio.

These retrofit procedures are an essential component of the extraordinary maintenance activities and are part of a multi-year initiative involving about 550 MW of inverters on around 200 plants in Italy. **During 2023, inverter retrofit interventions were carried out on 164.4 MW distributed across 58 plants.**

The internalisation of Operations & Maintenance (O&M) functions continued in 2023. This effort aims to increase operational control over the plants, which will improve technical performance and longevity. **In 2023, EF Solare's internal O&M managed 112 plants located in Sicily, Puglia, Molise and Campania for a total of 268 MW.**

At the same time, the **expansion and growing activity of the pipeline continued both in Spain**, with over 1 GW of new projects, and in Italy, with over 640 MW, of which 100 MW are already authorised or in the process of starting construction, with the majority of them agrivoltaics. Among these is the Milis advanced elevated agrivoltaic project, a 6 MW plant in the province of Oristano. This is the first effort of its kind, capable of assuring the highest level of integration between energy and agricultural production, which will be discussed in the following chapter.



## SKILLS AND INNOVATION FOR MARCHESANA'S PHOTOVOLTAIC REPOWERING



[CLICK HERE](#)

EF Solare's revamping and repowering program is crucial to achieving its growth objectives. Through the analysis and monitoring of the performance of photovoltaic plants in Italy, the Group has developed a plan of targeted interventions to optimise their efficiency. An example is the repowering intervention in Marchesana, Bari. The intervention initially involved the replacement of the photovoltaic modules with new generation components, in order to guarantee an improvement in overall efficiency (revamping). Thanks to the new photovoltaic modules, it was therefore possible to optimise the available surface area, increasing the power of the photovoltaic system from 5 MWp to over 6.7 MWp.

The interventions made it possible to combine the need for innovation with the technical and landscape/environmental characteristics of each photovoltaic plant, in order to maintain the best possible integration with the territories involved. The integrated approach has allowed solar energy production to be significantly improved in Marchesana, with an expected increase of over 3.5 GWh per year, contributing to national decarbonisation.

In light of the need to enhance the energy system through renewables, repowering measures are critical. These interventions are achievable due to the convergence of skills and technology advancement. Operators' investments have permitted quick improvements in solar plant components, resulting in a significant increase in sector quality.



# ROLE OF TECHNOLOGY AND DIGITALISATION

Throughout the year, the process of integrating new technologies and digitalisation continued, with either the strengthening or the launch of new projects. EF Solare is a young company that approaches digitalisation as a business opportunity. The ultimate goal of the digitalisation process is to have more efficient, tailor-made procedures, as well as freeing up space for innovation.

## DIGITALISATION PROJECTS

01

### CMMS (COMPUTERISED MAINTENANCE MANAGEMENT SYSTEM)

The project's ultimate goal is to reduce plant downtime, track maintenance interventions and support field technician activities, as well as ensure standardisation of relationships with maintenance suppliers. This is a complex project that involves various company departments, as well as external and internal maintenance. In 2023, the first tool was implemented: the check-in – check-out system access tool, thus prioritising workplace safety and health.

02

### SIMPLEDO

Solution that covers the entire HSE world, allowing to manage ISO certifications and carry out safety risk assessments (DVR).

03

### JAGGER

Supplier portal useful for managing tenders, it was further developed during 2023. In terms of benefits, there is an improvement in the transparency of the entire tender process and the creation of an initial qualification of suppliers through a voluntary self-assessment questionnaire.

04

### DATA SECURITY

In order to increase the security of company and employee data, the firewall infrastructure and VPN technology have been updated (by inserting a double identification factor). The company is also equipped with a monitoring system for unauthorised access attempts and data theft attempts. In addition, an ad hoc insurance policy for cybersecurity has been stipulated.





# ACTIVE IN THE PUBLIC DEBATE

EF Solare actively participates in the main sector initiatives, contributing, through a constructive and open dialogue with the main reference players and the development of a regulatory framework that is favourable to the growth of the sector and the diffusion of the culture of renewables.

In 2023, the company’s institutional positioning and advocacy activities continued in favour of the development of renewable energy in Italy through three fundamental channels:

— **OFFLINE**

Participation in events as a speaker, sponsorship of sector studies (IREX, PoliMi), articles and interviews (Rivista l’Energia Elettrica, Il Sole 24 Ore, La Repubblica Green & Blue, sector-specific);

— **ONLINE**

Organic growth continues on social media and the production of original content conveyed through the website;

— **ASSOCIATIONS**

Active participation within trade associations in order to promote issues of interest to the company’s business and institutional discussions.

## PARTECIPATION IN INDUSTRY ASSOCIATIONS AND INSTITUTIONS

- AIAS - Associazione Italiana Agrivoltaico Sostenibile [Italian Sustainable Agrivoltaic Association]
- AIET - Associazione Italiana Di Elettrotecnica, Elettronica, Automazione, Informatica e Telecomunicazioni [Italian Association of Electrical Engineering, Electronics, Automation, IT and Telecommunications]
- CEI - Comitato Elettrotecnico Italiano
- Elettricità Futura
- ISES Italia - International Solar Energy Society Italia Solare



**THE CONTRIBUTION TO AWARENESS OF THE SECTOR:  
EF SOLARE ITALIA’S COLLABORATION IN RESEARCH PROJECTS**

01

**IREX ANNUAL REPORT 2023**

Combining the need for innovation with the technical and landscape/ environmental characteristics of each photovoltaic system, in order to maintain the best possible integration with the territories involved

**Althesys**

The Irex Annual Report 2023 monitors the renewables sector, analyses strategies and outlines future trends and does not fail to highlight, however, the continuing authorisation difficulties of the plants, despite the simplification decrees. In this framework, various scenarios of adequacy of the Italian electricity system fit into the design of a roadmap for the transition.

02

**RENEWABLE ENERGY REPORT 2023**

Last call for renewables in our Country

**Energy & Strategy Group  
*Politecnico di Milano***

An accurate survey of the state of development of renewable energies, including the regulatory framework, analysis of energy price trends, reading of technologies from both a Life Cycle Assessment perspective and a future scenarios perspective.

03

**ELECTRICITY MARKET REPORT 2023**

The role of the electricity system for the decarbonisation and energy security of the country

**Energy & Strategy Group  
*Politecnico di Milano***

State of the art, evolutionary scenarios and “enabling tools” of the national electricity system and analysis of some of the technological, legislative-regulatory and market tools necessary to govern the transition: storage systems, the opening of the Ancillary Services Market, and Energy Communities. Market Design revision proposal.

## PUBLIC VOICE FOR THE ENERGY TRANSITION



### Newspaper articles and interviews published in Italy

- ✍ [La Repubblica of 30/01/2023 - Interview with Andrea Ghiselli and Gian Luca Teodori on the launch of Symbiosyst, a European project dedicated to the installation of agrivoltaics in an apple orchard in South Tyrol](#)
- ✍ [Rinnovabili.it of 21/02/2023 - Interview with Andrea Ghiselli on the potential of agrivoltaics](#)
- ✍ [Regions 2030 of 17/03/2023 - Interview with Ettore Acampora on the virtuous agrivoltaics model](#)
- ✍ [Quotidiano Nazionale of 04/03/2023 - Interview with Andrea Ghiselli on renewables in agriculture](#)
- ✍ [Solare B2B of 04/03/2023 - Interview with operators in the sector - including EF Solare with Ettore Acampora - on the potential of agrivoltaics](#)
- ✍ [BBC Future Planet 23/04/2023 - Interview with Antonio Lancellotta from Le Greenhouse \(our agricultural partner\) on the Scalea agrivoltaic project](#)
- ✍ [La Svolta 30/06/2023 - Article on photovoltaic greenhouses and agrivoltaic 2.0 systems](#)
- ✍ [PV Magazine Italia 07/07/2023 - Interview with Andrea Ghiselli on the potential of agrivoltaics](#)
- ✍ [Infobuild Energia 30/08/2023 - Article on the advantages and opportunities of photovoltaic greenhouses](#)
- ✍ [Regions 2030 of 30/11/2023 - Interview with Ettore Acampora on the virtuous agrivoltaic model](#)
- ✍ [Il Sole 24 Ore of 09/12/2023 - Interview with Andrea Ghiselli on the new Bolarque plant under construction in Spain](#)



### Newspaper articles and interviews published in Spain

- ✍ [El Economista of 18/12/2023 - Article on the construction of the new Bolarque plant](#)



**In 2023 EF Solare carried out the following specific institutional positioning and advocacy activities in Spain through the company Renovalia:**

- Participation as a speaker in conferences and educational courses on different subjects such as finance, the development of new plants, ESG issues.
- Active participation in the governing council and other project initiatives launched by the Spanish association for photovoltaics – UNEF, Union Española Fotovoltaica.

**The company's commitment to agrivoltaics was ongoing in 2023.** In addition to the development activities conducted by the Business Development team, EF Solare took part in the public discussion for the creation of a clear and effective regulatory framework and worked to spread awareness of agrivoltaics, joining calls from Europe and laying the foundations for research projects with leading national institutions. The company also continued to take part in association working groups with Elettricità Futura and Italia Solare. EF Solare was also enrolled as a founder member of the Associazione Italiana Agrivoltaico Sostenibile (AIAS) [Italian Association of Sustainable Agrivoltaics], which promotes the virtuous development of agrivoltaics, supporting projects that develop its potential through state-of-the-art technological solutions.

This subject will be covered in greater depth in the Environment chapter.







## FINANCING FOR DEVELOPMENT

*2023 proved to be a strong economic year, with EF Solare continuing to expand. Revenues exceeded €470 million, recording an increase of almost 4% compared to the previous year.*

**In 2021, the financial transactions performed in collaboration with SACE yielded a multi-tranche loan totalling €160 million.** This loan was granted by Crédit Agricole Corporate and Investment Bank, Milan branch office, ING Italia and Intesa Sanpaolo S.p.A. SACE. These resources were used, among the various purposes, for the modernisation and repowering of photovoltaic plants owned in Italy, striving to improve their efficiency and increase productivity.

**This funding enabled the successful continuation of the ambitious repowering and revamping programme of the EF Solare group's plants in 2023.**

The anticipated results of these investment plans will allow the group plants to significantly increase the energy produced and introduced into the network, thereby contributing to the climate change mitigation efforts and alignment with the European Green New Deal targets.

**In 2023 the EF Solare group invested over €130 million to fund revamping and repowering programmes and the development and construction of new plants in Italy and Spain,** which translates into more solar energy produced over the coming years and which will make it possible to significantly increase the group's contribution to improving climate change.





## OUR ENERGY FOR THE ENVIRONMENT

We protect the territory, creating a synergy between the production of electricity and agriculture through innovative solutions such as agrivoltaics.



DIFFUSION OF INNOVATION IN THE ELECTRICAL SYSTEM



RESPECT OF BIODIVERSITY AND THE TERRITORY



CIRCULAR ECONOMY



SAFETY OF PLANTS AND OPERATORS





## AGRIVOLTAICS: A FRONTIER OF INNOVATION CONTRIBUTING TO THE ENERGY TRANSITION

Agrivoltaics is an innovative solution, which became popular internationally from the need to combine energy requirements with the needs of agriculture and sheep farming through plants capable of creating a synergy between these diverse activities.

Thanks to the development of integrated systems, such as photovoltaic greenhouses or elevated support structures for photovoltaic panels, it is actually possible to simultaneously use the land for agriculture and for the production of electricity from solar source, in certain cases even providing the opportunity for land recovery. Starting with observation of the territory, **EF Solare developed the models that can be integrated with the different landscape and agronomic characteristics of the area in which it operates.**

The deep synergy that is established between the two activities produces many benefits, creating a unique and virtuous coexistence, not only for the environment, but also for the communities and local economy, generating systems capable of merging innovation and tradition.

A recent study by the Joint Research Centre of the European Union<sup>11</sup> notes that dedicating just 1% of the European agricultural area to the installation of agrivoltaic plants would add almost 1 TW of renewable new capacity and thereby greatly exceed the 2030 development goals, reducing the use of the land to almost zero.

**Agrivoltaic projects therefore represent a win-win opportunity.** In addition to optimising the use of the land, these projects combat the abandonment of farmlands, promoting investments that improve the competitiveness of agricultural holdings. Additionally, agrivoltaics is associated with positive effects of various sorts, from both an environmental and social perspective.

## BENEFITS

- Allows for dual use of the land.
- Counteracts the abandonment of agricultural land.
- Creates new job opportunities in rural communities.
- Protects crops from extreme weather events due to climate change, high temperatures and parasites.
- Helps to reduce water usage, protecting crops from heat and reducing evapo-transpiration thanks also to mobile shading.
- Promotes greater photosynthetic capacity and improves the yield of high-quality crops.
- Stimulates investments to increase the competitiveness of the farm through digitalisation, also acting as an element of modernisation.
- Increases the efficiency of photovoltaic modules thanks to the cooler microclimate that is generated under the panels.
- Can optimise the operating costs of the photovoltaic plant.
- Represents a tool for sharing value between different parties.

11. Chatzipanagi, A., Taylor, N. and Jaeger-Waldau, A., Overview of the potential and challenges for Agri-Photovoltaics in the European Union., EUR 31482 EN, Publications Office of the European Union, Luxembourg, 2023, ISBN 978-92-68-02431-7, doi:10.2760/208702, JRC132879.

## THE PNRR FOR AGRIVOLTAICS



**The Piano Nazionale Ripresa e Resilienza (PNRR) [National Recovery and Resilience Plan]**, approved in 2021 and aimed at relaunching the domestic economy after the Covid-19 pandemic, by directing and enabling the country's green and digital development, includes Mission 2 “**Green revolution and Ecological transition**”, a line of investment of €1.10 billion dedicated to the development of agrivoltaics. Specifically, the aim of the investment is to implement hybrid agricultural and energy production systems that do not compromise the use of the land devoted to agriculture, but contribute to the environmental and economic sustainability of the businesses involved.



At the same time, it will also be necessary to create plant monitoring systems that are capable of collecting data both on the production of solar energy and on underlying agricultural activities and production, in order to evaluate the micro-climate, water savings, the recovery of soil fertility, resilience to climate change and agricultural productivity for different types of crops.

In February 2024 the Ministry of Environment and Energy Security (MASE) published the Ministerial Decree aimed at defining the access requirements and supply methods for the public supports provided by the PNRR investment line.



# THE EVOLUTION OF THE REFERENCE REGULATION

The legislative and regulatory framework relating to agrivoltaics is currently in formation.

After the introduction in the Legislative Decree 77/2021<sup>12</sup> of an initial definition of agrivoltaics as a *quid novo* compared to ground-mounted photovoltaic systems in agricultural areas which are currently prohibited from accessing incentives, in June 2022 the MiTE (Ministry of the Environment and Energy Security) published the Guidelines on agricultural and subordinate systems in public consultation, the requirements for the granting of incentives aimed at promoting the construction of the plants envisaged by the PNRR. These documents represented an important step in the process for defining what is meant by an agrivoltaic plant and what the required characteristics are. **In February 2022, the Comitato Elettrotecnico Italiano (CEI) [Italian Electrotechnical Committee] published PAS 82-93** which details several definitions and calculation methods of the requirements set out in the ministerial guidelines. Alongside this, **simplifications of the authorisation procedures for some types of photovoltaic plans were introduced in 2022.** The one that involves agrivoltaic

plants with characteristics to access public support and the possibility of using the Procedura Autorizzativa Semplificata (PAS) [Simplified Authorisation Procedure] if they are not further than 3 km from industrial, business and commercial designated use areas regardless of the capacity of the plant is of importance. Added to this is the simplification introduced in 2023 by the PNRR Decree Law, which involves the possibility of free installation of some types of photovoltaic plants following the definition of suitable areas in accordance with the provisions of Legislative Decree 199/2021 implementing the RED II European Directive.

**EF Solare actively contributed to the updating of the PAS in 2023 that led to the publication of the second edition in January 2024.** The Public Available Specification is a technical document of the Italian Electrotechnical Committee that provides technical guidelines regarding agrivoltaic plants.

12. In the Decree Simplifications 77/2021 the ban on access to incentives is waived if the agrivoltaics plant has the following characteristics:

- provides for the adoption of innovative integrative solutions with assembly of the modules elevated from the ground also providing for the rotation of the modules themselves (both fixed structures and trackers are included);
- does not jeopardize the continuity of agricultural and pastoral cultivation activities, also by allowing the application of digital and precision agriculture tools;
- provides for the simultaneous creation of monitoring systems that make it possible to verify the impact on crops, water savings, agricultural productivity for the different types of crops and the continuity of the activities of the farms concerned on the basis of the guidelines adopted by CREA in collaboration with the GSE.





In addition to the CEI PAS, in August 2023 the UNI practice Ente Normativo Italiano [Italian Regulatory Body] dedicated to agrivoltaics was published.

To support the development of the industry and guarantee the security of investments **it is necessary to continue with the definition of a clear legislative and regulatory reference framework, harmonise the regional regulations ensuring consistency with the national guidelines and provisions on the subject, continue with the process of simplifying the authorisation processes, recognising the positive externalities that these projects have on the area.**

For this, **EF Solare Italia regularly takes part in the national and international debate, also participating in European research projects, which confirm the group's role as a leading industrial player.** Thanks to its extensive knowledge of the sector, EF Solare Italia takes part in the European Symbiosyst research project to define the best practices and increase agrivoltaics competitiveness in Europe. The project partners recently published a position paper dedicated precisely to indicating the key elements to consider as the basis of regulatory activity, to consolidate the important progress already achieved by the sector and to achieve the challenging goals that agrivoltaics sets itself.

Lastly, **the group actively takes part in discussions with operators and policy makers**, from technical committees to industry round tables, to national and international events: recently EF Solare Italia participated in the Agrivoltaics Industry Forum Europe in Strasbourg, an important European event that brought together the main industry stakeholders, to contribute with its own voice to the growth of the industry, in conjunction with AIAS – Associazione Italiana Agrivoltaico Sostenibile [Italian Association of Sustainable Agrivoltaics].





# THE PHOTOVOLTAIC GREENHOUSES OF EF SOLARE

EF Solare Italia’s experience in agrivoltaics began over 10 years ago with the construction of photovoltaic greenhouses on the Tyrrhenian and Ionian coast of the province of Cosenza in Calabria. To implement these projects properly, supported by all the necessary agricultural expertise, EF Solare decided to establish a partnership with Le Greenhouse, a family agricultural company that combines two generations of entrepreneurs capable of reconciling the love of the land with innovation.

Thanks to this collaboration and the excellent results achieved by the initial plants, **EF Solare Italia is committed to disseminate the photovoltaic greenhouse model in Umbria and Sardinia as well.**

Currently EF Solare photovoltaic greenhouses in the country have reached 32 MW and annually produce over 42 million kWh of electricity, equal to the average annual consumption of around 16,000 Italian families, with a reduction of about 17,000 tonnes of CO<sub>2</sub> emissions.

In the more than 40 hectares dedicated to EF Solare Italia’s photovoltaic greenhouses lemons, citrons and oranges are grown through a type of farming that combines specific cultivation of the land with innovative solutions.

**There are approximately 15,000 plants in EF Solare Italia’s photovoltaic greenhouses** that, in addition to being cared for by the farmers, are supervised by sensors that allow the growing conditions to be continuously monitored. The structure of the photovoltaic greenhouses actually allows the use of special technologies that guarantee important activities are conducted, including remotely, such as the monitoring of the crops and the panels and irrigation.

This solution not only incentivises the digitalisation of the agricultural company but also a more rational use of resources, specifically water. **At the Scalea photovoltaic greenhouses, up to 70% less water compared with open-field cultivation is actually used** and, thanks to the protection offered by the structure where the panels are positioned, waste in agricultural production is zero and an excellent aesthetic quality is maintained. In addition, thanks to a fresher micro-climate that is created under the panels, the lemons grown in Calabria, in EF Solare Italia’s photovoltaic greenhouses, have the same quality properties as the IGP lemons grown in open fields.

### OUR PV-GREENHOUSES

3

different Regions

+ 42 million kWh

per year of production capable of satisfying the electricity needs of around 16,000 families

-70%

of water consumption

Over 30 MW

of installed capacity

About 17 thousand

tons avoided of CO<sub>2</sub> emissions

About 15,000

plants cultivated

Long-term partnerships

with agricultural operators of excellence



## RESPECTING THE SPECIAL FEATURES OF THE AREAS AND BIODIVERSITY

The constant involvement of the community in all phases is vital for guaranteeing a harmonious coexistence between the production of clean energy and agricultural activities.

EF Solare always begins its projects with research into the characteristics of the area, including natural, geomorphological, production and human. To preserve biodiversity, EF Solare cultivates native species in its greenhouses, like citrus in Calabria and Sardinian pompia in Milis, thereby helping to maintain centuries-old traditions and enhance the areas and their history.

In order to monitor the biological and environmental parameters, **smart hives** have been installed in the photovoltaic greenhouses of Scalea and Orsomarso in order to control the presence of bees, a species particularly threatened by climate change. These hives make it possible to remotely monitor the weight and other parameters to assess the well-being of the bees. The results of the monitoring of the activities of the bees, including pollination, have been positive, confirming a virtuous coexistence between photovoltaic greenhouses and the surrounding biodiversity. In addition, these efforts have contributed in making the greenhouse operators aware of the importance of biodiversity and bees for the ecosystem.

## THE NEW 2.0 AGRIVOLTAIC MODEL: THE SCALEA PROTOTYPE

EF Solare Italia's commitment, combined with technological development, has led to the implementation of a new zero land consumption agrivoltaic model, introduced in Scalea. The system, suitable for all types of solar panels, consists of structures secured to the ground without the use of concrete, about 3 metres raised off the ground, equipped with systems that track the sun, in suitably spaced rows.

The new configuration developed by EF Solare Italia permits the complete reversibility of the installation and the almost complete cultivation of the areas involved guaranteeing the simultaneous and ongoing presence of agricultural and electricity production activities in the same area.

The new agrivoltaic plant includes a sophisticated monitoring system, that can also be controlled remotely, that measures different factors such as the humidity and temperature of the air and the soil and also plant growth. In addition, this configuration also guarantees the correct supply of direct light and diffused light, from which the crops derive benefit.

Thanks to the work of all the people involved, it has been possible to create an innovative agrivoltaic model capable of also satisfying the requirements of open-field crops and helping maintain traditional agricultural activity, innovating it and making it sustainable.



# THE NEW 2.0 AGRIVOLTAIC MODEL AT A GLANCE

## BIFACIAL PANELS AND SUN TRACKED SYSTEMS

to capture as much energy as possible.

## THREE-METRES TALL GROUND-MOUNTED STRUCTURES

with no concrete foundations: to allow cultivation under panels and the complete reversibility of the installation.

## ADEQUATE SPACING BETWEEN THE ROWS

to allow agricultural activity also with mechanised means.

## IRRIGATION AND NEBULISATION SYSTEMS INTEGRATED IN THE PANNEL SUPPORT STRUCTURE

to fully exploit the integration between the two sectors.

## REMOTELY MANAGEABLE DIGITAL MONITORING SYSTEMS

to trace the agronomic parameters of the plants and those relating to electricity production.

## CROPS CHOSEN ON THE BASIS OF CHARACTERISTICS AND THE TRADITION OF THE AREA

to respect and enhance the territory.



## SYMBIOSYST: THE EUROPEAN AGRICULTURAL RESEARCH PROJECT

EF Solare, along with eighteen organisations including businesses and research centres, has joined the international consortium coordinated by Eurac Research, charged with implementing the European research project into agrivoltaics “Symbiosyst”<sup>13</sup>, selected and funded by Horizon Europe for four years from January 2023, with the aim of reconciling the provision of energy with the needs of the agricultural sector, creating a symbiotic and mutually beneficial relationship in order to reduce emissions, safeguard the landscape and support the economy.

The project seeks to develop standardised, economically advantageous technological strategies and solutions to increase the competitiveness of agrivoltaics in Europe. **The task of EF Solare will be to coordinate the Work Package 5 group**, responsible for designing, applying and field-testing the innovative agrivoltaic solutions studied and developed in the project. The new systems will be developed in Spain, the Netherlands and Italy and are also inspired by existing demonstration models such as the prototype developed by EF Solare in 2021 in Scalea, which has a solar tracking structure about 3 metres tall, where the rows of panels are suitably spaced and installed on traditional local citrus crops.

**EF Solare will also design and implement a new demonstration agrivoltaic plant in Bolzano which will be developed on a “Guyot” apple orchard.** The plant, complementary to the one in Scalea, will be equipped with advanced technologies for irrigation and protection from hail and ice. In addition, courtesy of specific monitoring systems, data will be collected on electricity

production and agriculture, as well as environmental data, used to define the guidelines for new agrivoltaic plants capable of guaranteeing green energy and sustainable agriculture in the same area, protecting biodiversity.

The definitive planning stage concluded at the end of 2023 and the executive stage was launched for all the planned demos:

- Open Agri-PV in Barcelona (65kWp) and Bolzano (88kW), with trackers;
- Closed Agri-PV (greenhouses) in the Netherlands (65kWp)

A series of operating and technical points were closed, including the management of anti-hail nets and ice control sprayers attached to trackers, especially for existing apple orchards. The modelling phase was launched for the evaluation of electrical and agronomic performance and the identification of any optimisation elements to implement in the demos.

13. Grant Agreement N.101096352



The main activity of the first part of the project, which involved the whole of 2023, was the design of demonstration prototypes. EF Solare carried out high-level coordination activities, managing stakeholders: manufacturer of photovoltaic modules in identifying modules with the most suitable characteristics, and the supplier of trackers to determine the technical specifications (height of the shaft, minimum height, length of the aisle, ground fastening methods, distance between the rows), taking into account the agronomic constraints and requirements (height and size of the plants, radiation requirements, protection from hail, ice control, distance between the rows). The supervision activities also involved the correct identification of specific sites.

**The correct positioning of the sensors for monitoring and controlling the irrigation system were defined under the scope of the project.** EF Solare's main operational focus was the Bolzano prototype, while its coordination efforts involved all the sites included in the project. The design took into account elements from the driver demos (other agrivoltaic plants that joined the project, including EF Solare's Scalea), regulations and known best practices.

**The goal is always to identify solutions that can be replicated and scaled and are competitive on the market.**

Lastly, in June 2023 the General Assembly was held at Bolzano and all the coordinators and task leaders attended. The second General Assembly was held in Barcelona in January 2024. Both gatherings included a visit to the site of a different prototype.







## MILIS: THE HISTORICAL GREENHOUSES AND THE NEW ADVANCED AGRIVOLTAIC IN DEVELOPMENT

Under the management of the previous owners the Milis greenhouses lost the greenhouse rate as a result of lack of cultivation. EF therefore acquired the SPV that owned the Milis plant with a ground system rate. **EF Solare developed the structures and relaunched them:** today they represent an example of virtuous integration into an area that has been devoted to agriculture for centuries. It involves a project that takes up the **historical citrus heritage of the area**, starting with Sa Pompi, the historical citrus fruit of Sardinia. Together with Sa Pompi, lemons, limes and finger limes are grown in the greenhouses, as well as other experimental crops such as almonds and aromatics. The bees are used for biomonitoring: the health parameters of the hive give sustainability and environmental protection parameters.

The **project also includes a new educational garden** (learning centre) with information material and posters, for events in the area and at the disposal of research organisations for projects dedicated to agrivoltaics.



# THE LIFE CYCLE OF PLANTS: ENVIRONMENTAL IMPACTS AND SUSTAINABILITY



## EMBODIED CARBON

The solar plant in operation does not generate climate-changing emissions; the main impacts in environmental terms concern other phases of the life cycle of the plant, i.e. the production of panels, components and support structures, transport, construction, and maintenance of the plant itself and, lastly, end-of-life treatment of photovoltaic cells, on average after 25-30 years. The production of electricity using photovoltaic technology has an embodied carbon that does not exceed 50 gCO<sub>2</sub>eq/kWh<sup>14</sup>, thus respecting the threshold of 100g CO<sub>2</sub> for the production of 1kWh of electricity set by the European Taxonomy<sup>15</sup>.

*EF Solare Italia is launching a study on the embodied carbon of some types of plants in its portfolio, with the aim of increasing transparency and awareness on the subject and representing a cutting-edge model for the entire supply chain.*



## CIRCULARITY

The sector has to deal with a constant increase in the volume of decommissioned photovoltaic panels, both in current and prospective terms. This phenomenon represents an environmental challenge to face, but also offers the opportunity to generate new value through the recovery of materials and the adoption of business models oriented towards reuse and the integration of the principles of the circular economy.

*EF Solare has established a framework agreement this year which has made it possible to identify the most reliable subjects to efficiently manage the end-of-life of the panels*



## USE OF NATURAL RESOURCES

With regard to the use of resources, the impact on water resources should be noted, which concerns the washing phase of the panel surfaces, carried out approximately once a year: for each megawatt installed, the estimated water consumption is around 6,000 litres.

*EF Solare is committed to minimising its water footprint throughout the life cycle of the plant.*

14. IPCC, Chapter 7 - Energy Systems.  
15. The Taxonomy of sustainable investments (European Regulation n. 2020/852) will condition the flow of financial resources towards the sector in the near future. In fact, the Taxonomy sets a maximum carbon footprint of 100g CO<sub>2</sub> for the production of 1kWh of electricity for the energy sector, which will then have to be written off by 2050. In addition to compliance with this threshold, under penalty of ineligibility for the Taxonomy, it is naturally necessary not to damage ("do not significant harm") the other objectives set by the Regulation, such as the protection of biodiversity and compliance with the principles of the circular economy, guaranteeing that panels and associated components are manufactured with the longest possible life in mind, designed for easy dismantling, refurbishment, and recycling.

# AN INNOVATIVE APPROACH FOR MANAGING THE END OF LIFE OF THE PANELS

Over the last two years EF Solare has dealt with the challenge of managing the end of life of a vast quantity of photovoltaic modules in the context of a market that is still developing.

**To tackle the challenge posed by the ambitious revamping plan, the company has implemented actions aimed at defining the requirements of suppliers and subsequent monitoring criteria.**

During 2022, EF Solare conducted a selection process to identify the most reliable and competitive suppliers, with whom framework agreements were concluded to efficiently manage the end of life of the modules. The company also carried out control and audit activities into financial, management and compliance properties as well as the treatment plants. These activities continued in 2023, leading to the expansion of the contracted treatment centres.

**This approach allowed EF Solare to acquire in-depth knowledge of supply chain and to mitigate the risks associated with the incorrect management of the end of life of the modules, thus strengthening the company's reputation.**

The selection of operators focused on innovation and investment in technology has also contributed to improving recovery processes and reducing costs.

Last year the company managed over 8,000 tonnes of waste, including more than 400,000 solar panels, equivalent to 85 MW of power treated. To date, EF Solare has replaced approximately 25% of its stock of modules, aiming for 60% by 2026.

EF Solare Italia's strategy is in line with the goal of supporting the growth of the supply chain, improving the quality and quantity of materials recovered and pursuing the goals of a circular economy. This will be crucial in coming years to deal with growing demand and improve the overall efficiency of the process.

## DATI 2023



400 thousand

PROCESSED PV MODULES  
(7% THIN FILM AND 93% CRYSTALLINE)

85 MWp  
PROCESSED POWER



# THE SUSTAINABILITY OF CORPORATE ACTIVITIES

The company is committed to making also its corporate activities more eco-compatible, with the implementation of various initiatives: the goal is to produce clean energy in a sustainable manner, adopting practices that ensure a significant reduction in greenhouse gas emissions attributable directly and indirectly to the business.



## CONTRACT FOR HYBRID CAR RENTAL

Introduction of car rental contract with the possibility of renting hybrid cars at more favourable conditions in order to promote the use of sustainable vehicles.



## ADAPTATION OF PRINTERS TO ECO-COMPATIBLE SYSTEMS (PRINT AND SHARE AND WITHHELD PRINTING)

Introduction of printers with a console dedicated to keep track of consumption, to raise awareness of their environmental impact.



## WATER DISPENSERS IN THE OFFICE AND A SUPPLY OF ALUMINUM BOTTLES

to reduce the use of plastic.



## BICYCLE RACKS AT THE TRENTO OFFICE

for employees who want to travel by bicycle to facilitate sustainable mobility.



## DIGITALISATION, UPGRADE AND MODERNISATION OF VIDEOCONFERENCE SYSTEMS

- strengthening and modernising videoconferencing systems, to improve remote collaboration and reduce the need for travel
- release of the company document system, to index and share documents in digital format

2023 ENVIRONMENTAL HIGHLIGHTS

**3.4 million**

litres of water used per year  
for washing the panels

**100%**

of waste produced by maintenance  
and revamping activities sent for recovery

**~ 1 million euro**

for investments (€661,000) and expenses  
(€352,000) in environmental management

**100%**

of the electricity supplied for offices in Italy comes  
from renewable sources with GO

THE CARBON FOOTPRINT OF EF SOLARE GROUP

SCOPE 1

**345 tco<sub>2</sub>**

Direct emissions from:

- use of fuel for heating;
- use of fuel for the company fleet.

SCOPE 2  
market based\*\*

**495 tco<sub>2</sub>**

Indirect emissions from the  
purchase of electricity intended  
for the operation of:

- offices;
- auxiliary facilities.

SCOPE 3 (Italy)

**3,846 tco<sub>2</sub>**

Indirect emissions as a result  
of the organisation's activities:

- caper consumption;
- business travel;
- business travel accommodation;
- estimated mileage for O&M activities.

\*\* All our energy (Italy) is covered by Guarantees of Origin, including both what we produce and what we import from the grid for use.







## PEOPLE AND COMMUNITIES: NURTURING TALENT TO GROW TOGETHER

We promote the growth of people and communities, always putting their well-being first and generating shared value.



ATTRACTION,  
DEVELOPMENT,  
AND MOTIVATION  
OF HUMAN CAPITAL,  
FOCUSING ON  
DIVERSITY AND EQUAL  
OPPORTUNITIES



SAFETY OF PLANTS  
AND OPERATORS



INVOLVEMENT OF LOCAL  
COMMUNITIES AND  
SHARED VALUE



DIVERSITY AND EQUAL  
OPPORTUNITIES



RESILIENCE AND  
CONTINUITY  
OF THE SUPPLY CHAIN



# GROWTH THAT STARTS WITH PEOPLE

## EMPLOYEE WELL-BEING, LISTENING, ENGAGEMENT

EF Solare, since its inception, has always paid attention to the valorisation and development of its human capital.

As at 31 December 2023, the company workforce stood at 179 people, with a young average age, with over 80% of employees under the age of 50.

**The company promotes active strategies for attracting new talents and recruiting professionals most suited to its requirements.** Selection is based on skills and the compatibility of values between the company and the individual. The introduction of new resources is supported by training processes, with particular emphasis on induction training for new employees.

A survey was conducted in 2022 with the intention of determining the demands and specifications of every employee. The high participation percentage showed how eager and willing people were to help enhance the corporate environment. The results of the survey were used as a basis to define and plan future interventions: as a first step, various working groups were launched on different themes, with the task of carrying forward specific projects and initiatives. **The creation, development and supervision of specific activities aimed at engaging colleagues were managed by the WE4EF team, a transversal working group in which numerous employees took part on a voluntary basis.**

A few of these projects, like **the introduction of the company intranet and the “Conoscerci” [Knowing each other] project**—which consists of regular meetings accessible to all staff members with the goal of promoting interaction among coworkers and facilitating knowledge of the areas and primary company procedures—saw the light of day in the first few months of 2023.

In 2023, the welcome kits were distributed and an induction plan for new hires was developed.

Throughout the year, two **corporate team-building activities** were carried out in person. In addition, EF Solare participated in the “SAFE Cup” sports competition in June, which brought together all the SAFE companies and partners with the master’s students to compete together on the beach volleyball, football, and padel fields while also joining to face the upcoming challenges in renewable energy.

EF Solare is dedicated to fostering a more supportive and cohesive workplace culture, which involves training its management. **The Feedback project**, which was introduced at the end of 2022, was crucial in this regard. Every area manager attended a training programme, which was enhanced by the release of a manual, to learn how to give their coworkers the proper attention and start a productive conversation that would benefit the team.

Lastly, the **Mentoring project** has begun: an opportunity that involves the company’s front lines, who, following a specific training course, will make their wealth of knowledge and experience available to a group of employees eager to undertake a path of professional growth, with the aim of promoting integration into the company culture.

**In 2023, 100% of Spanish employees followed a course on Diversity & Inclusion.**

At the end of the year, D&I risks were incorporated into the business risk assessment process. **Renovalia has adopted a protocol against discrimination** called “Protocolo de prevención de acoso laboral y de discriminación por razones de sexo, estado civil, edad, origen racial o étnico, condición social, religión o convicciones, ideas políticas, orientación sexual, afiliación o no a sindicatos, de lengua o discapacidad”.



Throughout the year, a dedicated internal engagement function was put into place with the intention of creating a plan to enhance the company environment and involve staff members more actively. The ability to recruit, retain, and locate the requisite skills in the labour market assumes enormous relevance in a sector as dynamic as renewable energy.

The training, team-building, and internal engagement programmes that EF Solare has implemented are meant to provide an efficient solution to this problem.

**The company welfare programme**, which gives workers the option to use a designated budget to help daily needs including travel, training, and family support, **was confirmed by EF Solare in 2023**. Regarding well-being and work-life balance, EF Solare has implemented a specific policy that allows to work remotely two days a week starting in 2021. This effort has been well-received by the employees. The company decided to prolong this opportunity, giving a total of 10 working days per month of agile working beginning in February 2023, in light of the excellent feedback.

**EF is dedicated to creating a healthy work environment by supporting employees’ professional growth and cohesion and effectively managing the acquisition and integration processes.**

In fact, **the integration process between EF Solare and Renovalia** continues, which began in 2020 following the acquisition. Sharing tables have been organised to ensure coherent and integrated management of the business.

## POST-SURVEY INITIATIVES



DEFINITION OF ACTIONS TO FACILITATE THE INCLUSION OF NEW HIRES AND THE ENGAGEMENT OF EMPLOYEES



DESIGN AND DEVELOPMENT OF A COMPANY INTRANET



DEFINITION OF BEST PRACTICES FOR TEAMWORK AND STRATEGIC ALIGNMENT, ALSO INCLUDING GOLDEN RULES FOR THE MANAGEMENT OF MEETINGS BETWEEN DIFFERENT TEAMS



ESTABLISHMENT OF DEDICATED MOMENTS OF INTERACTION BETWEEN COLLEAGUES TO INCREASE RELATIONSHIPS NOT STRICTLY RELATED TO OPERATIONS

# ATTENTION TO HEALTH AND SAFETY

EF Solare has implemented a series of initiatives to improve corporate safety and employee engagement:

- **Certifications and Standards:** EF Solare is ISO45001 certified. The renewal of the certification is scheduled for 2024.
- **Organisational structure:** EF Solare has developed a new employer model, starting from 2023, with greater emphasis on empowerment, employer delegations and active controls.
- **PPE:** In 2023, the use of GPS tracker devices was consolidated, to monitor the position and well-being of the company's O&M technicians, in case of emergencies on assets maintained by EF. The distribution of PPE will be managed internally by O&M starting from 2024, consistently with the process of internalisation of skills.
- **Training and Emergency:** during 2023, 1,246 hours of training were provided, with mandatory courses such as behaviour in the event of an emergency and non-mandatory courses such as safe driving courses, first aid and BLSD defibrillation, and a MT cabin course.
- **Digital transformation using Simpledo:** as was previously indicated, software for overseeing employee health and safety continued to be developed. To track incidents (near misses, injuries), new modules have been put in place to generate statistics that enable appropriate preventive measures.
- **Supplier selection:** the process of introducing supplier selection criteria based on the rating of safety aspects is being implemented.

These actions demonstrate an important commitment to safety, training and the use of technological tools to improve risk management and accident prevention. **In 2023, no injuries were recorded, compared to 24 near misses.**







## PROMOTION OF KNOWLEDGE AND SKILL DEVELOPMENT IN THE RENEWABLES SECTOR

*EF Solare interprets the training and development of its employees' skills as strategic levers and is therefore committed to advancing them with all its resources.*

In this regard, a mapping of the organization's technical competencies was completed in 2020 with the aim of developing employee training programmes that integrate the requirements of the Group and each Organisational Unit. In 2023, this evaluation procedure was extended.

General training exercises aimed at enhancing professional and technical knowledge of environmental and safety matters were offered simultaneously. **Following an evaluation of each Group employee's level of security awareness, courses on general and industry-specific cybersecurity for the energy sector were added to the proposed training package in 2022.** Overall, 3,816 hours of training were provided in 2023, including mandatory and voluntary training.

ESG goals were added to the front-line business objectives system in 2023. To accomplish this, all front lines in Spain and Italy received four hours of ESG education.

There is now a direct correlation between the timely accomplishment of the ESG objectives outlined in the sustainability plan and a portion of each manager's variable incentive. In addition to being the plan's owner, the CEO's key performance indicators include that all managers complete at least four hours of ESG training annually.

EF Solare's commitment is not limited to the development of internal skills. **Thanks to everyone's dedication, EF Solare was able to participate in a number of training programmes this year**, including lectures, workshops, and field trips with students from colleges, universities, and specialised master's programmes. These activities aimed to promote a culture of renewable energy and increase public awareness of the subject of environmental sustainability in the energy sector, thereby fostering an ongoing and ever-new dialogue. **Overall, EF Solare hosted around 250 visitors at its plants in Italy and Spain.**

**For many years, EF Solare has contributed to the SAFE Master in Energy Resources Management through the testimonies of its professionals, as well as by participating in lessons, visits, and special meetings that allow young students to become acquainted with the world of solar energy while also learning about the Group's activities and photovoltaic plants.** EF Solare took part in the opening and closing events of the latest edition of the master's degree and contributed to the teaching with a lesson on the photovoltaic sector. It also hosted younger students at the Cassiopea plant and at the Rome offices, to introduce them to the different areas that animate the company and allow it to achieve the Group's ambitious objectives.

**In 2023 some EF Solare employees had the opportunity to meet students from various elementary and middle schools with the aim of spreading the culture of sustainability and promoting the importance of renewable energy, also thanks to the support of teachers.** The Monteboli plant hosted students from the Istituto Comprensivo di Padula (SA), who were able to see a photovoltaic system up close for the first time and thus learn the solar energy production process. At the photovoltaic greenhouses of Scalea, the agricultural partner Le Greenhouse had the pleasure of welcoming a class from the primary school of the Istituto Comprensivo di Santa Maria del Cedro, in order to also raise awareness among children about respect for the environment and importance of natural resources.

**EF Solare has been a partner of the Accademia del Sole and the entire ELIS community for years,** supporting it also through the direct participation of CEO Andrea Ghiselli in the ELIS Fellow project. Thanks to these initiatives, the company has the opportunity to share with the participants the importance of the decarbonisation challenges and the role that EF Solare plays in these as a primary operator in the sector. At the same time, EF Solare has the opportunity to train young technicians on best practices regarding system maintenance and safety.

EF Solare's commitment to training concerns all levels of education and training. At the S. Alberto plant in Ravenna, the company hosted professors and students from the Bologna Business School's Global MBA programme in Green Energy and Sustainable Businesses. Speaking with the lecturers of the University of Bologna's international training programme, the company managers presented EF Solare's initiatives for asset management that are becoming more secure and efficient.

**EF Solare's commitment to developing a culture of renewables is also evident in Spain.** Renovalia regularly offers internships to students and collaborates with several universities in Madrid and the rest of the country. Field visits are organized with schools and universities and plans are underway for participation in two career days at the universities of Valencia and Madrid.

In 2023, as part of the activities of the Our Future is Green ("OFG") project, a visit to the Renovalia offices in Villarrobledo was organized for the students of the sixth class of the Graciano Atienza school. All OFG activities are aimed at education on environmental protection and raising awareness of climate change. In collaboration with the Municipality of Puertollano (Ciudad Real), Renovalia has developed "Mi Ciudad Verde" at the Vicente Aleixandre school, a social and environmental project that focuses on the renovation of children's parks, as well as providing various awareness-raising actions and activities. Furthermore, within the same initiative, Renovalia organised a day at the FESB Sagrado Corazón Chamartín school in Madrid with fifth year primary school students, in which one hundred children participated.



# TOWARDS A RESPONSIBLE SUPPLY CHAIN

For EF Solare, sustainability is also part of the choice and supplier management, with the aim of creating and maintaining a responsible supply chain.

An organic approach to develop an ESG assessment of suppliers has been in place, through collaboration with an external partner, which considers their environmental and social performances (primarily health and safety), as well as economic and financial ones.

A digital procurement platform was launched during 2022, which integrates the social and environmental assessment of suppliers into an overall rating system. As a general rule, the objective is to evaluate suppliers - starting

from the first moment of qualification – according to the principles of the circular economy and on the basis of their dedication to decarbonisation concerns.

A pilot action was launched in 2023 which involved the inclusion of ESG evaluation criteria among the technical parameters used in the tender procedure. The project currently solely addresses OPEX, but it will eventually be expanded to include other kinds of purchases. Currently, providers of modules and inverters with excellent

manufacturing and financial ratings are given preference in the CAPEX area.

This in itself is not a guarantee of attention to ESG aspects, but we still find a positive correlation.

At the same time, the review of both the supplier qualification procedure, which involves the introduction of the main ESG criteria within the general questionnaire, and the purchasing procedure, where a focus dedicated to these matters will be inserted, has begun.

During 2023, clauses relating to respect for workers' rights and Diversity & Inclusion criteria were included in the contractual documents.

The resilience of the supply chain, particularly that of the two primary plant components (modules and inverters), was identified as the sector's key theme for 2023. The main challenge with sourcing photovoltaic modules from China was not so much the delivery capacity as it was the cost, and the biggest challenge with inverters was finding enough chips to meet demand. EF Solare is putting diversification-based mitigation policies into practice.

## OUR SUPPLIERS – ITALY 2023

560

SUPPLIERS IN THE REGISTER

172

SUPPLIERS QUALIFIED DURING THE YEAR

572

ACTIVE SUPPLIERS

# STAKEHOLDER ENGAGEMENT AND RELATIONS WITH THE COMMUNITY

EF Solare is present in 17 regions in Italy and, starting from 2020, also in 4 regions in Spain. In the areas where its plants are located, it maintains active communication channels with local communities, administrations and other local stakeholders.

**EF Solare is present in 17 regions in Italy and, starting from 2020, also in 4 regions in Spain. In the areas where its plants are located, it maintains active communication channels with local communities, administrations and other local stakeholders.** In recent years, the Group has adopted an approach that aims at harmonious collaboration with social and economic parts, based on openness to dialogue, mutual recognition, and reduction of conflict, through the development of loyal and transparent relationships, with the ultimate goal of establishing a partnership with local communities for the creation and distribution of increasingly shared value.

**In 2022, the foundations were laid for a first pilot initiative in Campania, as part of an early-stage development, aimed at involving local stakeholders and evaluating the conditions for designing and implementing socio-cultural initiatives benefitting local communities.** Project which then developed during 2023 bringing interesting results. With its activity, EF Solare provides support to the local economy, providing the use of local workforce in construction and maintenance processes, and actively promoting local events and initiatives through various communication projects. The activities promoted in Spain are an example of this: starting from the projects aimed at improving the well-being of the community through the creation of inclusive and accessible spaces, such as those created in the city of Puertollano, where the El Bonal photovoltaic plant came into operation in 2021.

Overall, considering all the sponsorships, donations and collaborations activated, **EF Solare Italia has allocated over 380 thousand euros to the community during 2023.**

The stakeholder engagement and sponsorship activities of local initiatives carried out in Italy and Spain are listed below.





## SUPPORT FOR THE DEVELOPMENT OF LOCAL ACTIVITIES

### Stakeholder engagement initiatives

- The **“Morra - De Sanctis” pilot project** was conducted during 2023, functional to the definition of a stakeholder engagement strategy, to ensure the effective involvement of local institutions and communities in the development of a photovoltaic system in the municipal area.
- In 2023, **new agreements were concluded with local shepherds** to promote sheep grazing within the facilities. Renovalia signed agreements with:
  - Puertollano (Ciudad Real) at the “El Quintillo” and “El Bonal” photovoltaic farms;
  - Zorita de los Canes and Yebra (Guadalajara) for the plants under construction in “Bolarque 1”, “Bolarque 2” and “Bolarque 3”.
- Renovalia also signed **agreements with local beekeepers in 2023**:
  - Puertollano (Ciudad Real) at the “El Quintillo” and “El Bonal” photovoltaic parks; Albacete at the “Casa Grande” park;
  - Villarrobledo (Albacete) at the “Casa del Ángel” park.







## EDUCATION AND AWARENESS ABOUT ENVIRONMENTAL PROTECTION AND SOCIAL INCLUSION

### Stakeholder engagement initiatives

- In September 2023 in Gurrea de Gállego (Huesca), as part of the activities of **“Our future is green - educating about environmental awareness” project**, the Ntra Club organised an exhibition of horse acrobatics.
- Since October 2023, Renovalia has become a sponsor of the **“Equipo Planeta” project**, implemented by the Government of Castilla - La Mancha, through the Regional Ministry of Sustainable Development. Equipo Planeta is a television program for children, created to promote respect and conservation of nature.
- In October 2023, Renovalia **signed a collaboration agreement with the Fundación Baloncesto Colegial (FBC)** to become a sponsor of the Copa Colegial and thus jointly promote school education in environmental awareness and protection, through sport and basketball.
- In October 2023, the “Plaza del Ayuntamiento” park was inaugurated, a new park that is part of the **“Mi Ciudad Verde” project in Puertollano** (Ciudad Real), of which Renovalia was a sponsor and collaborator together with the Municipality.
- To maintain clean and uncontaminated environments to protect biodiversity, a team of Renovalia volunteers helped **collect waste on the “Collina Malagana”** in Villarrobledo (Albacete)."
- In 2023, two projects created and developed by the La Caixa Foundation and CaixaBank were included in the social responsibility projects towards the territory: **Incorpora**, aimed at helping to find a job those people at risk of social exclusion, and **ReUtilizame**, which encourages companies to donate surplus materials in good condition to non-profit social organisations.



## EDUCATION AND AWARENESS OF PERSONAL AND PROFESSIONAL TRAINING OF YOUNG PEOPLE

### Stakeholder engagement initiatives

- Since 2022, the CEO of EF Solare has been a member of the **ELIS Fellow community**, devoting his time to the network's educational activities and contributing to the personal and professional development of future generations through his experiences and knowledge. The project presented by the ELIS consortium has, indeed, the objective of enriching the students' learning experience through the direct involvement of managers from different companies.
- **Visits to the plant**, often accompanied by classroom lessons, for school groups of different levels of education for a total of around 250 visitors.
- Provision of classroom lessons at the **post-university Master organized by SAFE** and the training course **Accademia del sole** for maintenance technicians organised by the Elis Consortium.
- EF Solare took part in an introduction to sport organised by SAFE - the **SAFE cup**, a tournament which aims to promote sport and aggregation starting from the partner companies of the SAFE master.





**2023 was a year of tangible progress, where growth and innovation were intertwined with the development of cutting-edge solutions such as agrivoltaics and the modernization of plants.**

**But our gaze is not limited to the present: it looks to the future with audacity. A future powered by clean energy, attentive to the community and capable of generating shared value. Our energy, for a sustainable future.**





# APPENDIX



# MAIN ENVIRONMENTAL AND SOCIAL PERFORMANCE DATA

## PERSONNEL DATA

	GRI standard	Unit of measurement	Total 2021	Total 2022	Total 2023
PERSONNEL CONSISTENCY					
Number of employees at 01/01	2.7	n.	146	136	161
Total entries		n.	27	56	52
Total departures		n.	37	31	34
Total number of employees as at 31/12		n.	136	161	179
EMPLOYEES BY TYPE OF CONTRACT					
Employees with fixed-term contracts	2.7	n.	9	11	5
Employees with permanent contracts		n.	127	150	174
EMPLOYEES BY TYPE OF EMPLOYMENT					
Employees with full-time contract	2.7	n.	132	158	176
Employees with part-time contract		n.	4	3	3
FREEDOM OF ASSOCIATION AND COLLECTIVE BARGAINING					
COLLECTIVE BARGAINING AGREEMENTS					
% of employees covered by collective bargaining agreements	2.30	%	100% <sup>16</sup>	100%	100%

16. The figure refers only to the Italian perimeter.





	GRI standard	Unit of measurement	Total 2021	Total 2022	Total 2023
EMPLOYEE TURNOVER					
NEW HIRES AND PERSONNEL TURNOVER					
Total new entries	401-1	n.	27	56	52
New entries rate		%	20%	35%	29%
Total number of departures		n.	37	31	34
Departures turnover		%	27%	19%	19%
Average length of work		years	4,11 <sup>17</sup>	4,6	5
EMPLOYEE TURNOVER BY GENDER					
New entries	401-1	n.	27	56	52
Men		n.	22	42	42
Women		n.	5	14	10
New entries rate		%	20%	35%	29%
Men		%	23%	36%	33%
Women		%	12%	31%	19%
Departures		n.	37	31	34
Men		n.	30	21	31
Women		n.	7	10	3
Departures turnover rate		%	27%	19%	19%
Men		%	32%	18%	24%
Women		%	17%	22%	6%

17. The figure refers only to the Italian perimeter.



GRI standard		Unit of measurement	Total 2021	Total 2022	Total 2023
EMPLOYEE TURNOVER					
EMPLOYEE TURNOVER BY AGE					
New entries	401-1	n.	27	56	52
<30 years		n.	12	19	23
between 30 and 50 years		n.	11	35	23
>50 years		n.	4	2	6
New entries rate		%	20%	35%	29%
<30 years		%	57%	76%	74%
between 30 and 50 years		%	12%	32%	20%
>50 years		%	17%	13%	19%
Departures		n.	37	31	34
<30 years		n.	10	9	13
between 30 and 50 years		n.	18	20	16
>50 years		n.	9	2	5
Departures turnover rate		%	27%	19%	19%
<30 years		%	48%	36%	42%
between 30 and 50 years		%	20%	18%	14%
>50 years		%	39%	13%	16%





	GRI standard	Unit of measurement	Total 2021	Total 2022	Total 2023
TRAINING <sup>18</sup>					
Technical and professional skills	404-1	n.	729	1,584	1,400
Environment and safety		n.	512	944	1,850
Management skills		n.	85	501	566
Total hours of training provided		n.	1,541	3,029	3,816
Average hours of training per trained employee		n.	11.2	18.7	20.7
HOURS OF TRAINING BY CATEGORY					
Total	404-1	n.	1,541	3,029	3,816
Top Managers		n.	304	159	238
Middle Managers		n.	426	634	913
White Collars		n.	533	1,125	1,403
Blue Collars		n.	278	1,112	1,262
EMPLOYEES TRAINED BY CATEGORY					
Total	404-1	n.	137	162	184
Top Managers		n.	9	8	9
Middle Managers		n.	34	39	41
White Collars		n.	64	87	92
Blue Collars		n.	30	28	42

18. The 2021 data relating to the type of training refer only to the Italian scope. The total hours of training in 2021 also includes the hours provided in Spain.

	GRI standard	Unit of measurement	Total 2021	Total 2022	Total 2023
DIVERSITY AND EQUAL OPPORTUNITY					
EMPLOYEES BY GENDER					
Men	102-8	n.	95	116	127
Women		n.	41	45	52
EMPLOYEES BY AGE GROUP					
<30 years	405-1	n.	21	25	31
between 30 and 50 years		n.	92	111	116
>50 years		n.	23	25	32
EMPLOYEES BY CATEGORY AND BY AGE					
Top Managers	405-1	n.	8	9	9
of which <30 years		n.	0	0	0
of which between 30 and 50 years		n.	5	6	4
of which >50 years		n.	3	3	5
Middle Managers		n.	34	38	40
of which <30 years		n.	0	0	0
of which between 30 and 50 years		n.	29	29	30
of which >50 years		n.	5	9	10
White Collars		n.	66	78	92
of which <30 years		n.	15	20	23
of which between 30 and 50 years		n.	39	48	56
of which >50 years		n.	12	10	13
Blue Collars		n.	28	36	38
of which <30 years		n.	6	5	8
of which between 30 and 50 years		n.	19	28	26
of which >50 years		n.	3	3	4





GRI standard		Unit of measurement	Total 2021	Total 2022	Total 2023
DIVERSITY AND EQUAL OPPORTUNITY					
EMPLOYEES BY CATEGORY AND GENDER					
Top Managers	405-1	n.	8	9	9
of which men		n.	7	8	8
of which women		n.	1	1	1
Middle Managers		n.	34	38	40
of which men		n.	24	27	28
of which women		n.	10	11	12
White Collars		n.	66	78	92
of which men		n.	36	45	53
of which women		n.	30	33	39
Blue Collars		n.	28	36	38
of which men		n.	28	36	38
of which women		n.	0	0	0
EMPLOYEES BY TYPE OF CONTRACT AND GENDER					
Permanent contract	2.7	n.	127	150	174
of which men		n.	87	108	123
of which women		n.	40	42	51
Fixed-term contract		n.	9	11	5
of which men		n.	8	8	4
of which women		n.	1	3	1

GRI standard		Unit of measurement	Total 2021	Total 2022	Total 2023
DIVERSITY AND EQUAL OPPORTUNITY					
EMPLOYEES BY TYPE OF EMPLOYMENT AND GENDER					
Full-time	102.8	n.	132	158	176
of which men		n.	95	116	127
of which women		n.	37	42	49
Part-time		n.	4	3	3
of which men		n.	0	0	0
of which women		n.	4	3	3
GENDER PAY GAP					
REMUNERATION DIFFERENTIAL (RATIO BETWEEN AVERAGE HOURLY WAGES FOR MEN / WOMEN)					
Top Managers	405-2	%	5%	-54%	-1%
Middle Managers		%	6%	-3%	-5%
White Collars		%	-12%	-10%	+3%





HEALTH AND SAFETY

	GRI standard	Unit of measurement	Total 2021	Total 2022	Total 2023
EXPENSES AND INVESTMENTS FOR SAFETY <sup>19</sup>					
Security expenses (opex)		k€	428	217	335
Security investments (capex)		k€	265	68	698
<b>Total expenses and investments</b>		<b>k€</b>	<b>693</b>	<b>285</b>	<b>1,033</b>
HEALTH AND SAFETY MANAGEMENT POLICIES AND SYSTEMS					
Employees covered by health and safety management policies or procedures	403-8	n.	136	161	179
		%	100%	100%	100%
Employees covered by health and safety management policies or systems certified according to international standards (OHSAS 18001 - ISO45001)		n.	78	161	179
		%	57%	100%	100%
WORKPLACE INJURIES					
<b>Total employee injuries</b>	403-9	<b>n.</b>	<b>3</b>	<b>3</b>	<b>1</b>
- of which during commuting			0	0	0
- of which with lost days			1	3	0
- of which without lost days			2	0	1
Hours worked		n.	252,245	265,744	295,048
<b>Injury frequency index (without commuting)</b>			<b>11.9</b>	<b>11.7</b>	<b>3</b>
Days lost due to injury		n.	103	62	56
<b>Injury severity index (without commuting)</b>			<b>0.4</b>	<b>0.24</b>	<b>0.19</b>
Near misses		n.	3 <sup>20</sup>	11	24

19. Expenses and investments for safety refer only to the Italian perimeter.  
20. The figure refers only to the Italian perimeter.



PLANTS

	GRI standard	Unit of measurement	Total 2021	Total 2022	Total 2023
PLANT DATA					
Total number of photovoltaic plants	EU-1	n.	318	318	318
Installed capacity		MW	1,046	1,048	1,055
Average age of operational plants		years	11 <sup>21</sup>	12	13
Land occupied by photovoltaic plants		conventional m²	19,701,482 <sup>22</sup>	23,561,482	23,561,482
OPERATING DATA					
Energy produced	EU-2	MWh	1,379,477	1,503,317	1,441,611
Energy fed into the grid		MWh	1,342,121	1,470,251	1,410,736
AVAILABILITY					
Average availability factor <sup>23</sup>	EU-30	%	96.9%	96.7%	96.5%
EFFICIENCY					
Average performance ratio of the plants <sup>24</sup>	EU-11	%	75.1%	75.6%	74.6%

21. The figure refers only to the Italian perimeter.  
22. The figure refers only to the Italian perimeter.  
23. The figure refers only to the Italian perimeter.  
24. The figure refers only to the Italian perimeter.





# PHOTOVOLTAIC GREENHOUSES<sup>25</sup>

	GRI standard	Unit of measurement	Total 2021	Total 2022	Total 2023
Total number of photovoltaic plants	EU-1	n.	10	10	10
Installed capacity		MW	32	32	32
Average age of operational plants		years	11	12	13
OPERATIONAL DATA					
Energy produced	EU-2	GWh	42.4	43.16	40.4
Energy fed into the grid		GWh	41.6	42.13	39.5
AVAILABILITY					
Average availability factor	EU-30	%	98.7%	99.1%	99.4%
EFFICIENCY					
Average performance ratio of the plants	EU-11	%	71.4%	70%	67.2%

25. The figure refers only to the Italian perimeter.



ENVIRONMENTAL DATA

	GRI standard	Unit of measurement	Total 2021	Total 2022	Total 2023
EXPENSES AND INVESTMENTS <sup>26</sup>					
Expenses (opex)		k euro	302.6	600	352
Investments (capex)		k euro	124.1	1,016.44	661
Total		k euro	426.7	1,616.44	1,013
ON SITE AUDIT					
HSE audits		n	40	137	194
Third party audits		n	159	40	112
ENVIRONMENTAL COMPLIANCE					
Monetary value of the sanctions suffered	307-1	k euro	0	0	0
Provisions of a non-monetary nature		n.	0	0	0
PLANTS AND ENERGY PRODUCTION					
CHEMICAL SUBSTANCES					
SF6 present in electrical equipment		kg	n.a.	n.a.	n.a.
SF6 top up		kg	0	0	0
WATER RESOURCES					
Water used for washing the panels <sup>27</sup>	303-5	lt	8,300,000	5,100,000	3,400,000
WASTE					
WASTE PRODUCED					
Hazardous <sup>28</sup>	306-3	t	1.6	11.1	1.1
Not hazardous		t	2,312.3	11,275.5	8,005.4

26. The figure refers only to the Italian perimeter.  
27. The figure refers only to the Italian perimeter.  
28. Hazardous waste present only in the Spanish scope.





ENVIRONMENTAL IMPACTS OF OFFICES

	GRI standard	Unit of measurement	Total 2021	Total 2022	Total 2023
MATERIAL USED BY WEIGHT OR VOLUME					
Paper	301-1	Kg	6,300 <sup>29</sup>	1,057	915
ENERGY					
DIRECT CONSUMPTION BY SOURCE					
Natural gas	302-1	Sm <sup>3</sup>	0	0	0
Diesel		Lt	84,257	83,090	111,618
Petrol		Lt	19,236	20,218	26,384
GPL		Kg	0	0	0
INDIRECT CONSUMPTION					
Electricity supplied from the grid <sup>30</sup>	302-1	MWh	19,502	17,943	17,091
- of which from renewable sources		MWh	842	16,385	16,013
- of which from non-renewable sources		MWh	18,660	1,558	1,078
SELF-PRODUCTION AND CONSUMPTION					
Electricity produced and self-consumed	302-1	MWh	37,356	33,066	30,875
WATER RESOURCES					
Total water withdrawals	303-3	m <sup>3</sup>	780	369	628

CARBON FOOTPRINT

	GRI standard	Unit of measurement	Total 2021	Total 2022	Total 2023
tCO <sub>2</sub> emissions (scope 1)	305-1	t CO <sub>2</sub>	268	267	345
tCO <sub>2</sub> emissions (scope 2)		t CO <sub>2</sub>	8,358	403	495
tCO <sub>2</sub> emissions (scope 3)		t CO <sub>2</sub>	2,240 <sup>31</sup>	2,596	3,846

29. The figure refers only to the Italian perimeter.    30. Electricity for the functioning of auxiliary services and for the offices.    31. The figure refers only to the Italian perimeter.



SUPPLIERS<sup>32</sup>

	GRI standard	Unit of measurement	Total 2021	Total 2022	Total 2023
Total value of supplies	102-9	k€	94,900	86,400	119,400
of which goods		k€	28,800	26,300	38,000
of which services		k€	66,100	60,100	81,400
of which works		k€	0	0	0
Ordered value from local institutions <sup>33</sup>	204-1	k€	70,200	57,600	83,000
Percentage of orders from local institutions		%	74%	66%	69%
SELECTION AND QUALIFICATION OF SUPPLIERS					
Total suppliers in the register	102-9	n	464	500	560
Suppliers qualified during the year <sup>34</sup>		n	85	146	172
Active suppliers <sup>35</sup>		n	540	316	572
ENVIRONMENTAL ASSESSMENT OF SUPPLIERS					
Percentage of new suppliers that were evaluated using environmental criteria	308-1	%	0%	0%	14%
SOCIAL ASSESSMENT OF SUPPLIERS					
Percentage of new suppliers that were evaluated using social criteria	414-1	%	0%	0%	14%

32. The data in this section refer only to the Italian perimeter.  
33. Value of orders from suppliers based in the provinces where the plants are located.  
34. New qualified suppliers and also suppliers who have renewed their qualification.  
35. Suppliers who have received at least one order or contract during the year.





COMMUNITY

	GRI standard	Unit of measurement	Total 2021 <sup>36</sup>	Total 2022	Total 2023
INVESTMENTS IN THE COMMUNITY					
Total investments	203-1	€	111,000	92,744	382,246
<i>of which sponsorships and monetary donations</i>		€	106,000	57,744	360,996
<i>of which in kind donation value</i>		€	0	0	0
<i>of which in man time value</i>		€	5,000	5,000	21,250
<i>other</i>		€	0	30,000	0
BREAKDOWN OF INVESTMENTS BY FIELD OF INTERVENTION					
<i>For education and cultural activities</i>		%	95%	100%	85%
<i>For environmental protection</i>		%	0%	0%	7%
<i>For social welfare</i>		%	5%	0%	2%
<i>For sports support</i>		%	0%	0%	5%

36. The 2021 data in this section refer only to the Italian perimeter.



COMPLIANCE

	GRI standard	Unit of measurement	Total 2021	Total 2022	Total 2023
ANTI-CORRUPTION					
EMPLOYEE ANTI-CORRUPTION COMMUNICATION AND TRAINING					
% of total employees who have been notified of anti-corruption policies and procedures		%	100%	100%	100%
ANTI-CORRUPTION TRAINING FOR EMPLOYEES					
Total employees trained on anti-corruption policies and procedures		n.	58	33	38
Total percentage of employees who have been provided with anti-corruption policies and procedures	205-2	%	43% <sup>37</sup>	20%	21%
CONFIRMED CASES OF CORRUPTION AND ACTIONS TAKEN					
Confirmed episodes of corruption		n.	0	0	0
Proceedings against the organization or employees for corruption	205-3	n.	0	0	0
ANTITRUST					
Pending or completed lawsuits related to anticompetitive behaviour and violations of antitrust and monopolistic laws against the company	206-1	n.	0	0	0
SOCIO-ECONOMIC COMPLIANCE					
Monetary value of the sanctions suffered	419-1	K euro	0	0	0
Provisions of a non-monetary nature		n.	0	0	0

37. This figure has been updated with respect to the 2021 edition.





# METHODOLOGICAL NOTE

Through the Sustainability Report, the fifth edition of which is being published this year, EF Solare Italia is reporting to all its stakeholders on the company’s commitment to energy transition and the sustainable development of its activities. The document illustrates operating activities and the results achieved with reference to the financial year 1 January - 31 December 2023.

## SCOPE AND APPLICATION OF GRI STANDARDS

The scope used for drafting the report is in continuity with the 2022 edition and covers both the Italian and Spanish operations in their entirety, presenting the data in an aggregated way, with some exceptions pointed out in the test and data tables.

The Report was prepared using the GRI Standards 2021 as a methodological reference, recently published by the Global Reporting Initiative (GRI), integrated with some indicators envisaged by the “GRI Electric Utilities Sector Supplement”, recognizable in the document by the prefix “EU”. The application of the standard took place according to the self-declared “with reference” level of conformity. The complete list of GRI Standards applied is given in the correlation table published on page 85.

## MATERIALITY ANALYSIS AND REPORTING

This year, in addition to hearing from internal stakeholders and revising the materiality process, several external

stakeholders directly participated through targeted interviews.

The contents of the report were provided by the entire corporate organisational structure through a collection process based on dedicated forms, for quantitative data, and direct interviews with function representatives for the qualitative side, in line with the approach required by the GRI Standards. The preparation of the document was coordinated by the operational unit Institutional Affairs & External Communication. The report was presented to the Board of Directors of EF Solare Italia at the meeting of 29 April 2024 and then published on the company website ([www.efsolareitalia.com](http://www.efsolareitalia.com)). It was not subjected to external auditing. However, note that the most important economic and financial data and operating data were already included within the scope of the audit conducted on the financial statements. The reconciliation tables for material topics and associated GRI scopes is illustrated below.



Material topics	GRI standards (topics)	Limitation of the topic in the internal scope	Extension of the topic to the external scope
<ul style="list-style-type: none"><li>- Diffusion of innovation in the energy system</li><li>- Resilience and continuity of the supply chain</li><li>- Involvement of local communities and sharing of value</li><li>- Digitisation of processes</li></ul>	201: Economic performance		
	203: Indirect economic impacts		
<ul style="list-style-type: none"><li>- Ethics and integrity</li><li>- Advocacy and support to institutions for the energy transition</li></ul>	205: Anti-corruption		
	419: Socio-economic compliance		
<ul style="list-style-type: none"><li>- Attraction, valorisation and motivation of human capital</li><li>- Diversity and gender equality</li></ul>	401: Employment:		
	404: Training and education		
	405: Diversity and equal opportunities		
	406: Non-discrimination		
<ul style="list-style-type: none"><li>- Safety of plants and operators</li></ul>	403: Occupational health and safety		Suppliers (contracting work and services)
<ul style="list-style-type: none"><li>- Respect of biodiversity and the area</li></ul>	302: Energy		
	303: Water		Suppliers (contracting work and services)
	305: Emissions		Suppliers (contracting work and services)
	306: Waste		
	307: Environmental compliance		
<ul style="list-style-type: none"><li>- Circular economy</li></ul>	306: Waste		





# GRI REFERENCES

GRI standard	Disclosure	Description	References
GRI 2 – GENERAL DISCLOSURES			
Organisation profile	2-1, a	Name of the organisation	EF Solare Italia
	2-6, b	Activities conducted, brands, products and services	Pp. 8, 10-12
	2-1, c	Location of headquarters	Trento, Italy
	2-1, d	Location of operations	P. 12
	2-1, b	Ownership structure	P. 8
	2-6, a	Markets served and scale of the organisation	Pp. 6 ,8, 12
	2-7, 8	Information on employees and other workers	Pp. 56-57; 68-70
	2-8	Non-employee workers	Pp. 68-70
	2-6, b	Description of the supply chain	P. 61
	2-6, d	Significant changes to the organisation and the supply chain	P. 61
	2-28	Membership of associations and external initiatives	Pp. 35-38
Strategy	2-22	Statement from senior decision-maker	Pp. 4-5
	2-25	Impacts, risks and key opportunities	Pp. 27-28



GRI standard	Disclosure	Description	References
GRI 102 – GENERAL DISCLOSURES			
Ethics and integrity	2-26	Membership of associations and external initiatives	P. 23
Governance	2-9	Statement from senior decision-maker	P. 22
Stakeholder engagement	2-30	Percentage of employees covered by collective bargaining agreements	100% of employees are covered by the CCNL
	2-29	Identifying and selecting stakeholders	P. 26
Reporting process	2-2	Entities included in the consolidated financial statements and not included in the sustainability report	The scope of the Report coincides with that of the Financial Statements
	2-3, a	Reporting period	The report refers to the period from 1 January 2023 to 31 December 2023
	2-3, c	Date of the most recent report	2022
	2-3, c	Reporting frequency	Annual
	2-3, d	Contacts for requesting the report	Contact: info@efsolareitalia.com
	2-5	External audit	Not present



GRI standard	Disclosure	Description	Description
GRI 3 – MATERIAL TOPICS			
	3-1	Process of determining material topics	P. 26
	3-2	List of material topics	Pp. 27-28
	3-3	Management of material topics	Pp. 27-28
GRI 200 – ECONOMIC ASPECTS			
<b>GRI 201</b> Economic performance	3-3	Approach to management	Pp. 27-28
	201-1	Direct economic value generated and distributed	P. 39
<b>GRI 203</b> Indirect economic impacts	3-3	Approach to management	Pp. 27-28; 62-65
	203-1	Infrastructure investments and services supported	Pp. 62-65
	203-2	Significant indirect economic impacts	Pp. 62-65
<b>GRI 205</b> Anti-corruption	3-3	Approach to management	Pp. 23, 27-28
	205-1	Operations assessed for risks related to corruption	P. 82
	205-2	Communication and training about anti-corruption policies and procedures	P. 82
	205-3	Confirmed incidents of corruption and actions taken	In 2023 there were no confirmed cases of corruption or reports received in this regard
GRI 300 – ENVIRONMENTAL ASPECTS			
<b>GRI 302</b> Energy	3-3	Approach to management	Pp. 10-11, 27-28
	302-1	Energy consumed within the organisation	Pp. 78-79
<b>GRI 303</b> Water	3-3	Approach to management	Pp. 27-28
	303-1	Withdrawals of water by source	Pp. 78-79

GRI standard	Disclosure	Description	References
GRI 300 – ENVIRONMENTAL ASPECTS			
GRI 305 Emissions	3-3	Approach to management	Pp. 27-28
	305-1	Direct emissions of greenhouse gases (Scope I)	Pp. 54, 79
	305-2	Indirect emissions of greenhouse gases (Scope II)	Pp. 54, 79
	305-3	Other indirect emissions of greenhouses gases (Scope III)	Pp. 54, 79
	305-4	Intensity of greenhouse gas emissions	P. 79
GRI 306 Dumps and waste	3-3	Approach to management	Pp. 27-28, 52
	306-2	Waste by type and disposal method	P. 78
GRI 307 Environmental compliance	307-1	Sanctions and cases of non-compliance with environmental laws and regulations	In 2023 there were no confirmed cases of corruption or reports received in this regard
GRI 400 – SOCIAL ASPECTS			
GRI 401 Occupation	3-3	Approach to management	Pp. 27-28, 56-57
	401-1	New employee hires and employee turnover	Pp. 68-70
GRI 403 Health and safety at work	3-3	Approach to management	Pp. 27-28, 58
	403-1	Occupational health and safety management system	P. 58
	403-2	Identifying dangers, assessing risks and enquiries into incidents	Managed in accordance with the guidelines of Legislative Decree 81/08
	403-3	Workplace medical services	Managed in accordance with the guidelines of Legislative Decree 81/08
	403-4	Worker participation and consultation and communication on health and safety at work	Managed in accordance with the guidelines of Legislative Decree 81/08





GRI standard	Disclosure	Description	References
GRI 400 – SOCIAL ASPECTS			
GRI 403 Health and safety at work	403-5	Worker training on occupational health and safety	P. 58
	403-6	Promotion of worker health	P. 58
	403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	There are occupational health and safety management procedures that apply to all employees
	403-8	Work-related injuries	P. 75
	403-9	Employees covered by an occupational health and safety management system	P. 75
	403-10	Work-related ill health	In the last three-year period, there were no confirmed cases of work-related ill health or reports in this regard
GRI 404 Training and education	3-3	Approach to management	Pp. 27-28, 56-57
	404-1	Average annual training hours per employee	P. 71
	404-3	Percentage of workers who receives career development evaluations and performance reviews on a regular basis	Pp. 56-57
GRI 405 Diversity and equal opportunities	3-3	Approach to management	Pp. 27-28, 56-57
	405-1	Diversity of governance bodies and employees	Pp. 72-74
	405-2	Ratio of basic salary and remuneration of women to men	P. 74
GRI 406 Non-discrimination	406-1	Incidents of discrimination and corrective actions taken	No incidents of discriminatory behaviour were reported in 2023
GRI 419 Socio-economic compliance	419-1	Non-compliance with laws and regulations in the social and economic area	There were no confirmed cases of non-compliance with socio-economic regulations in 2023
ENERGY AND UTILITIES SECTOR SUPPLEMENT			
	EU-1	Installed power	P. 76
	EU-2	Energy input	P. 76
	EU-11	Average efficiency	P. 76
	EU-30	Availability factor	P. 76



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