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**WORK  
ING  
PAPER  
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*ENERGY FOR A JUST AND GREEN  
RECOVERY DEAL: THE ROLE OF THE  
INDUSTRIAL RELATIONS IN THE ENERGY  
SECTOR FOR A RESILIENT EUROPE  
ITALIAN PRELIMINARY REPORT*

JANUARY 2023

**REJENERAXION:  
Italian National Baseline Report  
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## LIST OF ACRONYMS

AWU	Annual Work Unit
CCS	Carbon Capture and Storage
CCUS	Carbon Capture Utilisation and Storage
CGIL	Confederazione Generale Italiana del Lavoro
CISL	Confederazione Italiana Sindacati Lavoratori
CITE	Interministerial Committee for the Ecological Transition
CNEL	National Economic and Labour Council
CVTS	Continuing Vocational Training Survey
ENEA	Agenzia nazionale per le tecnologie, l'energia e lo sviluppo economico sostenibile
ESR	Effort Sharing Regulation
ETP	Plan for the Ecological Transition
ETS	Emission Trading System
FILCTEM	Federazione Italiana Lavoratori Chimica Tessile Energia e Manifatture
GDP	Gross Domestic Product
GHG	Greenhouse gases
INVITALIA	National Agency for the Attraction of Investments and Enterprise Development
ISPRA	Istituto Superiore per la Protezione e la Ricerca Ambientale
ITUC	International Trade Union Confederation
JTF	Just Transition Fund
LNG	Liquefied Natural Gas
LULUCF	Land Use, Land Use Change and Forestry
MASE (ex MiTE)	Ministero dell'Ambiente e della Sicurezza Energetica
NCBA	National Collective Bargaining Agreement
NIPEC	National Integrated Plan for Energy and Climate
NRRP	National Recovery and Resilience Plan
PRIMES	Price-induced market equilibrium system
RES	Renewable Energy Sources
TAP	Trans Adriatic Pipeline
toe	tonne of oil equivalent
TWh	Terawatt hour
UIL	Unione Italiana del Lavoro
VA	Value Added

## REJEnerAXION Project National Report Italy

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### Abstract

*The report aims to analyse the role of industrial relations in the energy transition in Italy. The purpose is to provide a socio-economic analysis of the industry and an overview of the transition's impacts at the socio-territorial level. The reference framework is that of the Just Transition, which allows us to observe how the negative effects of the Transition can be balanced, guaranteeing the creation of 'decent jobs' and better development conditions for the territories. The research made use of data and literature analysis and interviews with selected experts such as business organisations, trade unions, associations, institutions and scholars.*

*The sector is being called upon to progressively abandon fossil fuels in favour of renewable sources, in a historical and geopolitical framework troubled by the effects of the pandemic crisis and ongoing wars. Moreover, the changing geography of production and technological innovation will have significant impacts not only on the world of work, but also on local development.*

*Industrial relations, which are already oriented towards a participatory and anticipatory model, are called upon to manage a transition that has several dimensions, from the reorganisation of work in a decentralised manner, to protection from new risks related to safety in the workplace, to the management of the environment-labour conflict. In this complexity, the union finds itself working on several fronts, from bargaining for job protection to social and territorial bargaining for sustainable development.*

*JEL Classification:*

*Q30; J50; Q56; J50; Q58; L52*

*Keywords:*

*energy transition, industrial relations, just transition, social dialogue, industrial policy, social risks.*

# THE ENERGY SECTOR IN ITALY<sup>1</sup>

## 1. AN INTRODUCTION

The purpose of this paper is to analyse the challenges and opportunities for strengthening the role of innovative industrial relations and social dialogue structures in support of the energy transition in Italy. The transition process brings with it the need to define as clearly as possible which paths the social partners can follow so that energy change, but also ecological change, is guided and managed in a socially fair and balanced way. In this sense, the objective of the social partners, and in particular the trade unions, is not only to safeguard the rights of workers and local communities with close links to fossil-fuel economies, but also to propose new models of development that arise from the participation of workers and communities in the decision-making processes.

The need for a just transition for the energy sector appears even more urgent today in light of the effects of the pandemic crisis and the worsening geopolitical situation following the Russian aggression in Ukraine. On the one hand, the pandemic and war have affected all energy markets, causing significant job losses and exacerbating long-term decarbonisation challenges. On the other, these crises offer an opportunity to accelerate the achievement of the objectives of the European Green Deal through the Recovery and Resilience Plans and *RePower* EU, mitigating the economic and social impact of the crises and ensuring a long-term sustainable and inclusive recovery that promotes a just ecological transition. In 2021, the Italian energy system is responsible for the production of 1.9% of Italy's GDP and employs about 100,000 people in the sectors of coke and refined products manufacture, and the supply of electricity, gas, steam and air conditioning. From an environmental point of view, the energy sector accounts for 78.4% of total national greenhouse gas emissions. 59.7% of the domestic production of electricity comes from non-renewable sources (of which about 50% are from natural gas plants) and 40.3% from renewable energy sources.

While this first introductory chapter provides an overview of the objectives and contents of this paper, the second offers a detailed analysis of the main legal and regulatory interventions relating to the ecological and energy transition. Outlining the regulatory framework can help in

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<sup>1</sup> This paper is part of the project "REJenerAXion - Energy for a just and green recovery deal: the role of the industrial relations in the energy sector for a resilient Europe", a European Union co-funded research project (101052341/SOCPL-2021-IND-REL) aimed at analyzing and strengthening the role of innovative industrial relations structures, including social dialogue, to respond in a socially fair and balanced way to the main challenges and opportunities offered by a clean-energy transition at national and European level.

The project partners are: Fondazione Di Vittorio (Italy, project coordinator); Federazione Italiana Lavoratori Chimica Tessile Energia Manifatturo – FILCTEM CGIL (Italy); Fundacion 1° de Mayo (Spain); Association travail emploi Europe société-ASTREES (France); wmp consult – Wilke Maack (Germany); Laboratoire d'Etudes sur les Nouvelles formes de Travail, l'Innovation et le Changement, LENTIC, Université de Liège (Belgium); Instytut Spraw Publicznych (Poland); Central European Labour Studies Institute CELSI (Slovakia (and Hungary)). Supporters are: European Federation of Public Service Unions- EPSU (EU); European Trade Union Institute – ETUI (EU). Website: <https://www.rejeneraxion.com/>.

The aim of the paper is to provide the main results of research reports at a national level based on desk analysis and qualitative research (in-depth interviews with stakeholders) considering the transformations taking place in the energy sector oriented towards clean energy and their impacts on the world of work and the role of industrial relations and social dialogue for a just transition.

understanding the objectives and resources available to the union to redefine its negotiating activities. This work shows how trade union action at international level has been of fundamental importance in applying Just Transition principles to ecological transition objectives.

The third chapter deals with the structure of the national energy system in detail, focusing on the economic, environmental and employment dynamics that characterise the sector, with reference to other economic sectors as well.

The fourth chapter proposes an analysis of the collective action of the trade union in climate policies and the innovative practices adopted in dealing with the social demands that arise from the transition processes. This analysis makes it possible to outline a new role of labour representation and representativeness that has to come to terms with the recomposition of the environment/labour fracture and with the unprecedented forms that relations between state, market and society assume in a different model of development, one that is compatible with environmental sustainability (Rugiero, 2021).

Overall, this work helps us to understand how the transformations taking place in the energy system are having an effect on the social structure of labour and local communities, and then to analyse in detail which practices trade unions can use to intervene to enforce the principles of economic, environmental and social justice.

This document is the updated version (to June 2024) against the one finalized past January 2024. It includes a selection of relevant data and information resulting from the qualitative interviews delivered from March to May 2024 to thirteen Italian key informants (referred to in the text as “respondents” or “interviewees”). Previously reported data and information (gathered till January 2024) remain unchanged.

## 2. NATIONAL POLITICAL FRAMEWORK FOR ENERGY TRANSITION

### 2.1. Overview of relevant policy and legal framework

The national economic system has adopted three main instruments to respond to the challenges posed by the environmental and energy crisis, in line with European economic and climate strategies. The national regulatory framework, targets and action strategies are addressed in three plans: **the Integrated National Energy and Climate Plan (NIPEC, 2019), the Italian Long-Term Strategy on Reducing Greenhouse Gas Emissions (2021) and the National Recovery and Resilience Plan (NRRP, 2021).**

Following the crisis linked to the COVID-19 pandemic and the creation of the recovery strategy (Next Generation EU plan), Italy benefited from a significant share of the resources allocated by the EU for recovery and resilience, which, if the Complementary Fund and the Development and Cohesion Fund are taken into consideration as well, amount to a total of **248 billion euros**. The energy sector is one of the main beneficiaries of the resources of the **NRRP**; the specific components that affect the sector within Measure 2 “Green Revolution and Ecological Transition” are: i. Component 2 with 23.78 billion euros: renewable energy, hydrogen, grid and sustainable mobility; ii. Component 3 with 15.36 billion euros: energy efficiency and rehabilitation of buildings, efficiency upgrading of the housing stock, stimulation of local investments for social resilience.

Among the reforms envisaged by the NRRP to improve the energy system, the one dedicated to the **“Simplification and Rationalisation of Environmental Regulations”** deserves to be highlighted. The main objective is to bring about a substantial simplification of the provisions concerning environmental impact assessment and consequently streamline the procedures for the installation of renewable energy plant.

With regard to **labour policies**, Mission 5 “Inclusion and Cohesion” provides for action across the whole plan to stimulate employment prospects for young people and, more generally, for workers who have been impacted by the transition. In particular, Component 1 “employment policies” (6.01 billion euros), allocates funds to support the employability of workers, through the **New Skills Fund**. The fund could be a useful instrument for involving trade unions in labour policy initiatives. In fact, the governance of training activities by the fund provides for the promotion of the same on the basis of detailed collective agreements at company, sectoral or territorial level (Bednorz & al., 2022). Respondents pointed out some critical issues with regard to the fund concerning, on the one hand, the fact that only larger companies with a structured work organisation and significant trade union participation are able to access the fund and, on the other hand, an apparent lack of attention by this instrument to green skills and the adoption of a cross-sectoral approach.

The CGIL has actively participated in the drawing up of the PNRR proposal with its reflections<sup>2</sup>, raising a number of critical points on the contents and its capacity to implement

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<sup>2</sup> “First Assessments on the NRP by the CGIL National Secretariat” and “Update on the NRP and Assessments on the Report Approved by Parliament”, 2021



the objectives of the plan, such as: the institutional and administrative inability to decide spending; the simplification of bureaucratic formalities; the lack of exploitation of synergies between the various projects of the plan; an insufficient assessment of the economic and social impact of the proposed projects; the poor definition of the governance system (Rugiero, 2021). Indeed, trade unions and employers' associations in the utilities sector recognise that although much of the NRP's investments focus on the electrification of processes and consumption, the timing of the investments is still uncertain, especially those related to the abandonment of fossil fuels through an acceleration of RES.

The **INECP**, which predates the pandemic and energy crisis, comprehensively addresses energy system issues by providing for five dimensions of action: decarbonisation, energy efficiency, energy security, the internal energy market, and research, innovation and competitiveness. The following table shows some of the most important targets, which have also been updated following the EU RePower Plan, but not so far in the National Energy and Climate Plan<sup>3</sup>:

**Tab 1 – Goals and targets of the Integrated National Energy and Climate Plan, 2020**

<b>National Objectives and Targets, NIPEC 2020</b>
ETS emissions -43% compared to 2005
ESR emissions -33% compared to 2005
RES share by 2030 30% of which: 55% in electricity, 33.9% in heat, 22% in transport
Primary energy consumption -43% compared to PRIMES 2007 scenario of reference
Final energy consumption -39.7% compared to PRIMES 2007 scenario of reference
Energy dependency from 77.7% in 2016 to around 68% in 2030

Source: Integrated National Energy and Climate Plan, Ministries of Economic Development, Environment, and Infrastructure

The INECP sets the date of 2025 as the year for ending the use of coal for electricity generation, accompanying the phase-out target with the promotion of the extensive use of RES with gas as a transitional source. TERNA's latest Adequacy Report<sup>4</sup> highlighted how, with respect to the 2025 target, structural difficulties persist in the Italian electricity system that hinder the complete achievement of the phase-out objectives. These obstacles stem from i. the strong dependence of the Northern and Central-Northern areas on the availability of imports at the border, and ii. the inadequacy of transmission capacity between the two largest islands (Sicily and Sardinia) and the mainland. Currently, TERNA's plan and strategies envisage overcoming these critical issues through the holding of capacity market auctions<sup>5</sup> and the entry into service

<sup>3</sup> By 30 June 2023, Member States will submit to the Commission draft updated NECPs. The Commission has published [guidance](#) to Member States on the process and scope of this update.

<sup>4</sup> The report is prepared by the national electricity grid company and assesses the adequacy of the energy system and electricity grids in transition scenarios using technical indicators, paying particular attention to structural differences between the regions of the country.

<sup>5</sup> The capacity market is a mechanism by which Terna procures electricity capacity through forward contracts awarded through competitive auctions. The rules of operation of the market are defined in the Discipline and its annexes approved by Ministerial Decree of 28 June 2019. The capacity market provides long-term price signals, pegged to the availability of the resource, which the system needs to guarantee a renewal of performance and consequently a better adaptation to future system needs.

of new resources such as Unplanned Renewable Sources (FRNP, wind and solar) and the Tyrrhenian Link<sup>6</sup>.

The Italian plan recognises and evaluates the impacts of the energy transition, identifying the most affected occupations and associated skills, and considering a negative impact on employment in the phase-out of the coal sector. Consequently, the same plan defines several measures to counteract the impact on more than 3,800 direct and indirect workers employed in the production of electricity from eight coal-fired power plants<sup>7</sup> (Mandelli, 2022).

On the operational level, **Italy's long-term strategy for the reduction of greenhouse gas emissions** was developed in continuity with the work on the INECP, establishing an inter-institutional "steering committee" made up of the Ministries of the Environment and Economic Development, supplemented by the Ministries of Infrastructure and of Agricultural, Food and Forestry Policies. As with the INECP, the strategy is also being updated to adapt the national objectives to the transposition of the common European objectives. The strategy identifies possible pathways that could achieve emission neutrality by 2050 with the possible use of geological capture and storage or reuse. It was only later that the European Commission presented the "Fit for 55" package, which aims to profoundly reform the set of directives and regulations that to date have set targets for ETS, ESR, LULUCF, energy efficiency and renewables for Member States. The **emission scenarios of the strategy** consider the following macro-objectives: i. reduction of final energy demand, in particular in the transport sector (reduction of demand for private mobility) and in the civil sector; ii. renewal of the energy mix in favour of renewable sources, combined with an extensive electrification of end uses and hydrogen production; iii. increases in absorption achieved through sustainable forest management and innovative agricultural practices; iv. innovation in industrial processes the emissions of which are not otherwise containable (e.g., cement); v. innovation in agricultural and livestock farming practices; vi. use of CCS-CCUs for the share of emissions exceeding emission neutrality (Peschi & al., 2021).

## 2.2. Institutional initiatives to support a just energy transition

In March 2022, the Interministerial Committee for the Ecological Transition (CITE) approved the **Plan for the Ecological Transition (ETP)**, with the aim of providing a general framework for Italy's ecological transition strategy. The plan is an instrument to connect policies concerning: emission reduction, sustainable mobility, the fight against hydrogeological instability, water resources, air quality and the circular economy. The ETP sets more ambitious planning goals than previous plans with a deadline of 2050. Moreover, **the ETP focuses in particular on the processes of social inclusion, on the employment dimension and on**

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<sup>6</sup> The Tyrrhenian Link will connect Sicily with Sardinia and the Italian peninsula via a double submarine cable. The infrastructure work will be approximately 970 kilometres long and have a capacity of 1,000 MW. The overall project includes two sections: the EAST section from Sicily to the Peninsula and the WEST section from Sicily to Sardinia.

<sup>7</sup> Decree-Law no. 101 of 3 September 2019 Urgent provisions for the protection of employment and the resolution of company crises, which stipulates that, from 2020 to 2024, the amount exceeding 1,000 million euros of the proceeds from the auctions for the allocation of EU ETS allowances, up to a maximum of 20 million euros per year, will be allocated to a fund for retraining in areas where coal-fired power plants are located; Enel Futur-e project.

**the need for upskilling and reskilling the workforce:** *“the investments destined for the energy and environmental transition, [...], will necessarily have to concern people and welfare instruments and active policies to modernise the labour market and labour law, adopting a perspective of worker protection capable of enhancing their skills, defining and protecting their rights and, consequently, promoting their wellbeing”.* (CITE, 2021).

As far as the national application of the **JTF Plan** is concerned, the European Commission has identified the areas of the Province of Taranto and Sulcis Iglesiente as being among the territories hardest hit by the transition. Investment projects are concentrated in these two areas of the country through the implementation of a **National JTF Programme** managed by the Agency for Territorial Cohesion. Territorial Investment Plans have been developed for each area. Of the total resources made available at European level (EUR 17.5 billion), with national co-financing, **Italy has been allocated 1.211 billion euros**<sup>8</sup>. Among the priorities of the **territorial plans** are: combating the effects of transition by increasing the share of energy produced by RES for businesses and individuals (124 million for Sulcis Iglesiente, 149.7 million for Taranto); diversification of the local production system aimed at counteracting the effects of transition (127.7 million for Sulcis Iglesiente, 365.8 million for Taranto); and mitigation of the social and employment effects of transition (115.5 million for Sulcis Iglesiente, 280 million for Taranto).

### 2.3 The geopolitical implications of energy transition

The national energy system has been hard hit by the effects of Russian aggression in Ukraine, given Italy's heavy dependence on Russian gas imports. Italy's strategy of diversification of energy supplies is in line with the joint action of the EU Member States. In particular, Italy, given its central position at the heart of the Mediterranean, is adopting the following instruments to respond to the crisis: the diversification of natural gas and LNG supply countries (especially in the Mediterranean/African basin), the reduction of energy taxation, and the stimulation of renewable energy installations. In particular, the use of RES is of paramount importance to **increase the country's energy security** as well as to combat climate change. Despite this, the complexity and length of authorisation procedures have been a major obstacle for investments in RES energy production. For this reason, several authorisation simplifications for the construction of RES plants have been approved, including the extension of the Simplified Authorisation Procedure to some categories of photovoltaic plants.

Overall, the RePower EU plan represents the unified response of the EU to strengthen the common energy policy adopted in the wake of the energy price crisis and to rapidly reduce dependence on imports from Russia, increasing the energy security of Member States (starting with the Fit for 55 targets). **For Italy, the Commission recommends:** i. reducing dependence on fossil fuels and diversifying energy imports; ii. resolving the problem of bottlenecks to increase internal gas transport capacity; iii. developing electricity grid interconnections; iv.

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<sup>8</sup> Under Heading 3 of the Structural Funds Agreement (Natural Resources and Environment), the just transition resources earmarked for Italy amount to approximately 500 million euros at current prices, plus resources from Next Generation EU and national co-financing. These resources will finance territorial strategies to foster, within the framework of cohesion policies, just and environmentally compatible transitions in the Taranto and Sulcis areas. With regard to the Structural Funds Partnership Agreement 2021-2027, the available resources amount to approximately 83 billion (including co-financing). In addition, adequate resources will be invested in targeted actions and structural reforms in support of youth employment, education and training, which will complement the youth employment initiative in the European Social Fund Plus (ESF+).

accelerating the deployment of additional renewable energy capacity; v. taking measures to increase energy efficiency and promote sustainable mobility.

### **3. MAJOR TRENDS IN THE ENERGY SECTOR**

#### **3.1. Main characteristics of the country's energy system**

In 2021, in line with the growth of the overall added value of the production sectors, the energy sector grew by +4.9%. The table below shows the main variables that describe the national energy system.

**Tab. 2 – The Italian energy system, key data**

Primary energy demand	153.0 ktoe (+6.2% compared to 2020)
Gross energy availability	<ul style="list-style-type: none"> <li>● 40.9% natural gas</li> <li>● 32.9% oil and petroleum products</li> <li>● 19.5% renewables and bioliquids</li> <li>● 3.6% solid fuels</li> <li>● 2.4% electricity</li> <li>● 0.8% non-renewable waste</li> </ul>
Change in national energy production compared to 2020	-3.4%
Change in net energy imports compared to 2020	+8,3%
Share of net imports in gross energy availability 2021	74.9% (73.5% in 2020)
Final energy consumption	114.8 ktoe (+11.4% vs. 2020)
Electricity demand	317.6 TWh (+5.5% vs. 2020, -0.6% vs. 2019)
<i>National electricity production</i>	274.8 TWh (+2.2% vs. 2020)
<i>Net imports of electricity</i>	42.8 TWh (+32.9% vs. 2020)
Non-renewable sources of electricity production	59.7% non-renewable thermoelectric <ul style="list-style-type: none"> <li>● 6.1% Solid fuel plants</li> <li>● 3.8% Plants with petroleum products and other fuels</li> <li>● 49.9% natural gas installations</li> </ul>
RES of electricity production <sup>9</sup>	40.3% RES <ul style="list-style-type: none"> <li>● 15.7% hydroelectric</li> <li>● 16.1% wind power and photovoltaics</li> <li>● 8.5% geothermal and bioenergy</li> </ul>
Effect of RES on final energy consumption	19%
Effect of RES on Gross Domestic Consumption	35%
Cumulative energy savings (2014-2020)	23,241 ktoe <sup>10</sup>

<sup>9</sup> Italy's system of incentives for renewable energies, particularly in the electricity sector, has played a decisive role over the last decade in the spread of plants across the territory and the achievement of high levels of penetration of renewables in the electricity sector. By the end of

Household energy consumption	49,479 ktoe (+5.8% compared to 2020) <ul style="list-style-type: none"> <li>● 65.9% domestic use</li> <li>● 34.1% private transport</li> </ul>
Household energy expenditure <sup>11</sup>	€ 75.9 bn (+17.4% vs. 2020) <ul style="list-style-type: none"> <li>● 57.6% domestic use</li> <li>● 42.4% transport</li> </ul>

Source: National Energy Situation in 2021, MiTE and Statistical Report 2020. Renewable energy in Italy, GSE

An important index to consider in assessing the country's level of energy security is **energy import dependency**, calculated as the difference between imports and exports compared to total gross energy availability; it is, therefore, the share of a country's energy needs satisfied by imports from other countries. Fig. 1 compares the trend of Italy's dependence on energy imports with that of the EU27, highlighting, on the one hand, the significant distance between the two series and, on the other, the increase in the dependence on natural gas imports (92.8% in 2020 compared to 64.9% in 1990) and the decrease in Italy's dependence on imports of oil and petroleum products (88.7% in 2020 compared to 97.3% in 1990). As regards crude oil imports (MiTE, 2022) the countries from which we import the most are: Azerbaijan (23.0%), Libya (18.4%), Iraq (14.4%) and Russia (10.1%). For natural gas imports (MiTE, 2022), Italy turns principally to: Russia (39.9%), Algeria (30.8%), Azerbaijan (9.9%) and Qatar (9.4%). Figure 1 allows us to emphasise the significant and growing role, in terms of energy security, of renewable sources, where the dependence on imports is still less than 10%.

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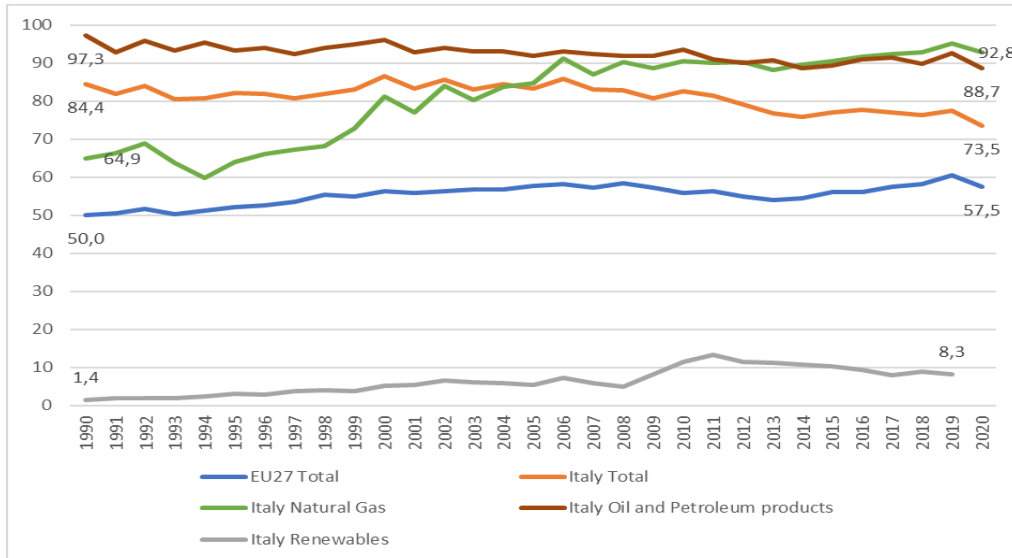
2021, the total number of incentivised renewable electricity generation plants had reached one million units, for a capacity of about 38 GW and incentivised renewable energy of 65 TWh.

<sup>10</sup> The cumulative savings amount to 91% of the obligation set by Article 7 of the Energy Efficiency Directive. This result is partly due to the rapid change in the EU policy framework on energy efficiency in 2021.

<sup>11</sup> The energy expenditure of the typical household amounts to €3,308 (an increase of €462 compared to 2020), of which 46% is attributable to the purchase of fuel (an increase in expenditure of €164), 34% to gas bills (an increase of €151) and 19% to electricity bills (an increase of €148). In the same year, the typical household contributed 3% of its total energy expenditure to finance incentives to promote sustainability. In 2020, just over 2 million Italian households were in energy poverty, or about 8.0%. Source: National energy situation in 2021, MiTE.

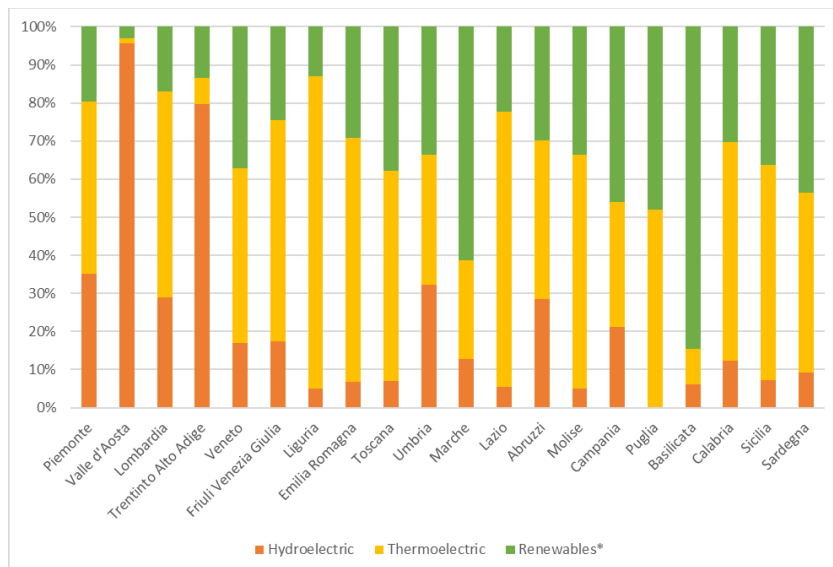
**Fig. 1 – Energy import dependency Italy and EU27 (1990-2020, %)**

Source: FdV elaboration on Eurostat and Ispra data



As regards the distribution of electricity production plants in Italy, the graph in Figure 2 shows, on the one hand, the prevalence in terms of Mw produced of the thermoelectric energy source and, on the other, a heterogeneous distribution of RES in the different regions. In particular, out of the total energy produced, RES have a significant presence in Valle d’Aosta and Trentino Alto Adige for hydroelectricity and in Basilicata and Marche for other RES<sup>12</sup>.

**Fig 2 – Regional distribution of gross efficient power of energy plants, 2021 (% MW)**



Source: FdV elaboration on Terna data

From a juridical-administrative point of view, the governance of the Italian energy system is regulated by Article 117 of the Italian Constitution (following the reform introduced by

<sup>12</sup> \*Wind, photovoltaic, geothermal, bioenergy.



Constitutional Law 3/2001), which indicates the production, transport and national distribution of energy as matters of concurrent legislation. This means that the regions have legislative power over energy matters while the State defines guidelines and fundamental principles guaranteeing, consistent with what is laid down in the Constitution, the balance between energy availability in the regions, international relations relating to energy supplies with third countries, and the infrastructural works necessary for the development of RES. The assignment of the energy sphere to concurrent competence has been repeatedly indicated as a critical issue in **the relationship between the State and the regions**, given the importance of the matter in the field of international obligations, supply and territorial cohesion (Sciarra, 2017). Moreover, according to the same author, who argues that there is gradual re-centralisation of competences in energy matters is taking place, “*a second driving force behind the principle of unity in energy matters has undoubtedly been the awareness that this sphere is among those where the European Union's supranational policies are most penetrating*” (*ibid.*). The supranational dimension of energy policies, which has also acquired greater relevance following the Russian aggression in Ukraine, directly affects the uncertain structure of State-regions competences with the consequent creation of regional imbalances (also due to the slowness of the legislative processes) and slowdowns in the definition of national energy planning.

At the State-Regions and United Conference, coordination and discussion take place between the various regional and state levels of government involved in energy policy: these are governing bodies provided for by law and composed of representatives of the various institutions involved (ENEA, 2005).

### 3.2. Environmental trends in the energy sector

In 2020, the energy sector is responsible for 95.3% of CO<sub>2</sub> emissions, 15.6% of CH<sub>4</sub> and 21.7% of N<sub>2</sub>O. In terms of CO<sub>2</sub> equivalent, **the energy sector accounts for 78.4% of total national GHG emissions**, excluding LULUCF.

**Tab. 3 – Total emissions from the energy sector by source (kt CO<sub>2</sub> eq.)** Source: ISPRA,

	1990	1995	2000	2005	2010	2015	2018	2019	2020
	<i>kt CO<sub>2</sub> eq.</i>								
<b>Total emissions</b>	<b>425,298</b>	<b>437,938</b>	<b>459,631</b>	<b>487,640</b>	<b>428,903</b>	<b>416,018</b>	<b>345,416</b>	<b>335,081</b>	<b>298,900</b>
Fuel Combustion (Sectoral Approach)	412,180	425,564	448,484	477,885	420,007	406,948	338,491	328,469	292,909
Energy Industries	137,646	140,631	144,906	159,934	137,507	133,403	96,068	91,894	81,797
Manufacturing Industries and Construction	92,278	90,312	96,373	92,444	70,165	70,987	54,279	49,991	45,856
Transport	102,191	114,289	123,830	128,260	115,527	114,460	104,276	105,322	85,436
Other Sectors	78,924	78,767	82,494	95,924	96,115	87,552	83,517	80,794	79,178
Other	1,143	1,566	881	1,323	692	546	351	467	642
Fugitive Emissions from Fuels	13,117	12,374	11,147	9,755	8,897	9,070	6,925	6,612	5,991
Solid Fuels	132	74	97	90	86	92	-	-	-
Oil and Natural Gas	12,985	12,300	11,050	9,665	8,810	8,979	6,890	6,580	5,966

National Greenhouse Gas Inventory Report 2022

Since 2005, greenhouse gas emissions from the energy sector have decreased due to policies adopted at European and national level to implement energy production from renewable sources and to incentivise energy efficiency and savings. Since 2009, a further decline in sectoral emissions is due to the economic recession. In 2020, there is a further significant decrease in emissions due to the pandemic and the resulting lockdown. Overall, for the sector, the decrease in emissions from 1990 to 2020 is driven by reductions in energy industries (27.4 % in 2020) and manufacturing and construction industries (15.3 % in 2020).

### Energy industries

The “independent” producers<sup>13</sup> of electricity and heat for the national grid will account for **92.8% of all electricity produced** by combustion processes in Italy in 2020.

**Tab 4 – Energy data (Tj) and GHG emissions for public electricity and heat production**

	1990	1995	2000	2005	2010	2015	2016	2017	2018	2019	2020
Fuel consumption (TJ)	1,441,741	1,472,753	1,554,810	1,709,208	1,480,778	1,205,336	1,205,807	1,260,762	1,147,923	1,146,779	1,056,626
GHG (Gg)	109,072	110,730	109,546	115,849	97,553	79,339	76,678	78,506	70,560	67,353	60,217
CO <sub>2</sub> (Gg)	108,670	110,335	109,193	115,445	97,195	78,922	76,289	78,127	70,207	67,034	59,921
CH <sub>4</sub> (Gg)	3.8	4.0	3.6	4.0	3.6	4.2	4.3	4.3	4.1	4.1	4.1
N <sub>2</sub> O (Gg)	1.0	1.0	0.9	1.0	0.9	1.0	0.9	0.9	0.8	0.7	0.7

Source: ISPRA, National Greenhouse Gas Inventory Report 2022

The table shows a decrease in fuel consumption and an overall decrease in greenhouse gas emissions. With regard to the **refinery** sector<sup>14</sup>, in 2020, power plants included in this category of sources generated **6.7% of all electricity produced** by combustion processes. From 1990 to 2010, an upward trend in emission levels was observed, explained by the increase in the amount of crude oil processed. The consumption of liquid fuels peaked in 2010 and then showed a downward trend due to the reduction in the quantities of crude oil processed and its substitution by natural gas. For the sector of **solid fuel production and other energy industries**<sup>15</sup> in 2020, power plants included in this category generated about **1.6 % of all electricity generated** by combustion processes. In 2009, a significant reduction in emissions was observed because of the economic recession; in 2012 there was a further drop due to the economic crisis and the environmental constraints of the main integrated steel plants, which are expected to reduce production (in particular, the major reduction in activities at the Taranto site).

### Manufacturing, construction, transport and other industries

This category includes emissions from energy use in **manufacturing industries**. In 2020, **manufacturing industry accounts for 12.0% of total national CO<sub>2</sub> equivalent emissions**.

<sup>13</sup> From 1998 onwards, the expansion of industrial electricity cogeneration and the break-up of the national monopoly turned many industrial producers into “independent producers”, who regularly supply the national grid.

<sup>14</sup> The sector includes energy emissions from domestic refineries (14 plants in 2020).

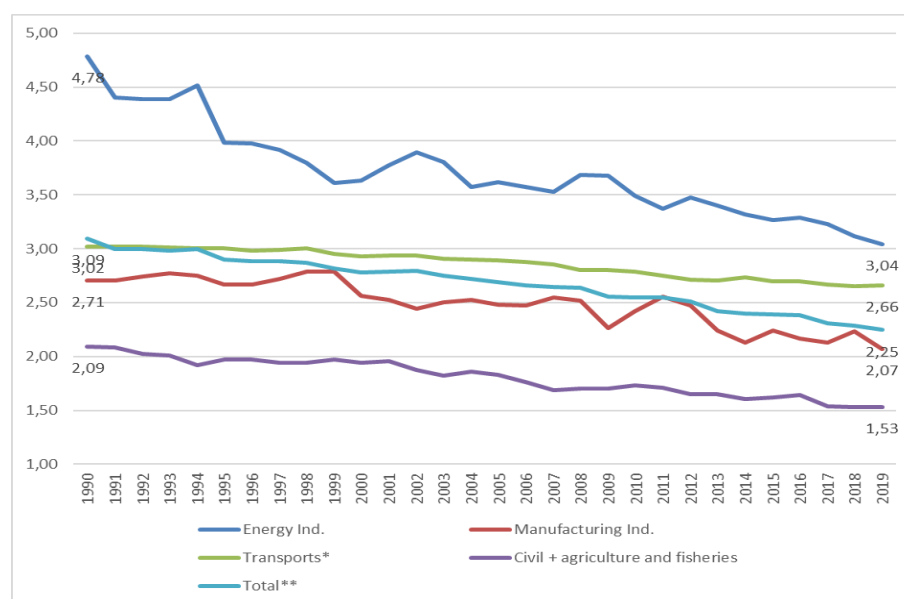
<sup>15</sup> The sector mainly comprises steel plants that generate electricity.

Tab 5 – GHG emission time series in manufacturing industry, Italy

	1990	1995	2000	2005	2010	2015	2016	2017	2018	2019	2020
CO <sub>2</sub> emissions, Gg	90,772	88,969	94,893	90,786	68,900	54,552	53,365	52,143	53,228	48,957	44,879
CH <sub>4</sub> emissions, Gg	6.69	6.92	6.01	6.48	5.68	11.21	11.30	11.17	10.97	11.46	11.01
N <sub>2</sub> O emissions, Gg	4.49	3.92	4.46	5.02	3.77	2.69	2.55	2.51	2.61	2.51	2.36
Industry, total, Gg CO <sub>2</sub> eq	92,278	90,312	96,373	92,444	70,165	55,634	54,407	53,172	54,279	49,991	45,856

Source: ISPRA, National Greenhouse Gas Inventory Report 2022

From 1990 to 2020, there is a general downward trend in emissions; some subsectors decreased sharply (iron and steel, non-metallic minerals), while other subsectors (non-ferrous metals, pulp and paper) increased their emissions. The trend in non-metallic mineral emissions is led by the **cement** industry, which has sharply reduced its production levels since 2009 connected the economic recession and the crisis in the construction sector. The upward trend in CH<sub>4</sub> emissions in recent years is driven by the increase in biomass used as fuel. With regard to the **transport** sector, there has only been a decrease in emissions in recent years, reflecting the trend observed in road transport fuel consumption, which accounts for more than 92% of sectoral GHG emissions. In 2020, the sector is responsible for **22.4% of total national GHG emissions and 28.6% of energy sector emissions**. In addition to the sectors analysed so far, emissions from energy use in the **civil** sector (commercial, institutional, residential, agricultural, forestry, fishing) must also be taken into account. In terms of CO<sub>2</sub> equivalent, these sectors generate **20.9% of total national GHG emissions and 26.7% of total energy sector GHG emissions**. As far as emission efficiency is concerned, the average value of emission intensities (Fig. 3) shows a marked difference between economic sectors in relation to the different diffusion of renewable sources. Overall, **the emission intensity for final uses decreased by -27.4% from 1990 to 2019**. In 2019, the overall emission intensity is 2.25 tCO<sub>2</sub>eq/toe, a decrease of -1.7% compared to the previous year.

Fig 3 – GHG emission intensity from energy consumption (1990-2019, tCO<sub>2</sub>eq/tep)

Source: FdV elaboration on ISPRA data

### 3.3. Economic trends in the energy sector

Table 6 shows the main economic aggregates for the energy sector (those concerning the economic and employment structure will be discussed in more detail later):

**Tab. 6 – Energy sector value added, Italy 2021**

VA increase in all sectors	+6.5% compared to 2020
VA increase in the energy sector	+4.9% compared to 2020 <ul style="list-style-type: none"> <li>● +2.4% for the supply of electricity, gas, steam and air conditioning</li> <li>● +145.6% for the manufacture of coke and refined petroleum products</li> </ul>
VA in the energy sector (current prices)	€33.9 billion (1.9 % of GDP)
Incentives for electricity production from RES and similar	€5.8 billion

Source: FdV elaboration on MiTE and ISTAT data

The **total value added of the manufacturing sectors** increased in volume by +6.5% (in 2020 it had decreased by 8.8%). The energy sector showed a less pronounced growth of +4.9%: the “supply of electricity, gas, steam and air conditioning” sector recorded an increase of +2.4%; while the “manufacture of coke and refined petroleum products” sector recorded an extraordinary increase (+145.6%), more than doubling the level of added value (1.1 billion euros). In absolute terms, at current prices, the two sectors generated an added value of approximately 33.9 billion euros with a **contribution to the GDP of 1.9%**. In 2021, electricity-producing companies benefited from incentives related to the production of renewable and assimilated sources, amounting to an estimated 5.8 billion euros, out of a total value of incentives paid out of 9.8 billion euros.

**Tab. 7 – Energy intensity of value added (Tj/value added in millions)**

<b>Energy intensity</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
Manufacture of coke and refined products	182.2	347.0	392.0
<i>Added value (% on total manufacturing)</i>	<i>1</i>	<i>0.6</i>	<i>0.7</i>
Supply of electricity, gas, steam and air conditioning	42.3	37.2	35.1
<i>Added value (% on total manufacturing)</i>	<i>8.0</i>	<i>8.1</i>	<i>8.4</i>

Source: FdV elaboration on ISTAT data

**The energy intensity of value added** (Table 7) makes it possible to identify the “energy intensive” sectors, i.e., those that consume the most energy per million of value added generated. In 2019, the “manufacture of coke and refined petroleum products” sector ranked first. Between 2017 and 2019, the sector experienced a significant increase in energy intensity (+115.2%) due, in particular, to the collapse in value added (-43.3%). In 2019, the sector produced **0.7% of the total value added of the manufacturing sector**. As for the “electricity, gas, steam and air conditioning supply” sector, this ranked fifth among the top 10 “energy intensive” sectors, despite the fact that between 2017 and 2019, the sector reduced its energy consumption per million of value added generated (-15.2%). This reduction is attributable to the decrease in energy consumption. In structural terms, this sector produced **8.4% of manufacturing value added**.

#### **Box – The energy sector during the war in Ukraine**

Italy is one of the European countries most exposed to potential disruptions due to its dependence on the Ukrainian gas corridor and the significant role of gas in the Italian energy mix. Italy, therefore, like its EU allies, has worked to ensure an adequate supply and new and immediate alternatives. Although Italy is very exposed, it is potentially better equipped than other Member States because it has a number of alternatives, notably direct infrastructure connections with Algeria (TransMed), Libya (Greenstream pipeline) and Azerbaijan (TAP pipeline), as well as three LNG regasification terminals (Panigaglia, Adriatic LNG in Porto Levante and OLT Offshore LNG off Livorno). The pipelines connected to Algeria and Libya are under-utilised and currently supply only 22.5 bcm and 3.2 bcm respectively in 2021 and increased use of this infrastructure could replace some Russian gas imports. However, increased supplies from North Africa are hampered by major constraints (growth in domestic

consumption in Algeria, political and security instability in Libya). Moreover, if Italy were to invest in new regasification plants, it would have to overcome the bureaucratic obstacles that have historically prevented the development of additional LNG terminals beyond the three existing ones, working with the EU to invest in new pipelines in order to increase domestic flexibility to redistribute new LNG and network gas supplies. Finally, Italy is in a favourable position in terms of gas storage: the gas storage rate in Italy is slightly below 40%, compared to a European average of 30% (Bianchi & Raimondi, 2022). The outbreak and continuation of the war in Ukraine has also kept the price of gas and, consequently, that of electricity high. Although the development of renewables is expected to lead to a penetration of the electricity sector at 65% by 2030 or 90% in 2050, with the consequent decrease in the importance of gas in the energy mix, in energy dependence on foreign countries and in energy prices, it is plausible that gas will remain fundamental in Italy for many years. The resilience of the Italian production fabric, with particular reference to micro and small- and medium-sized enterprises (SMEs), could be compromised by the continuation of the Russian-Ukrainian conflict. According to Confindustria, more than 26,000 jobs are at risk, especially in the North-East, due to difficulties in manufacturing, from steel production to household appliances and jewellery. Most affected are the energy-intensive manufacturing sectors: petrochemicals, metallurgy, glass and ceramics, and paper (D'Amico, 2022).

### 3.4. Employment trends in the energy sector

#### 3.4.1 The impacts of the energy transition on employment (direct and indirect)

As shown in Table 8, from a structural point of view, the coke manufacturing sector has 284 enterprises employing 10,339 workers in 2019. The electricity supply sector has 11,856 enterprises in 2019 and employs 65,808 workers.

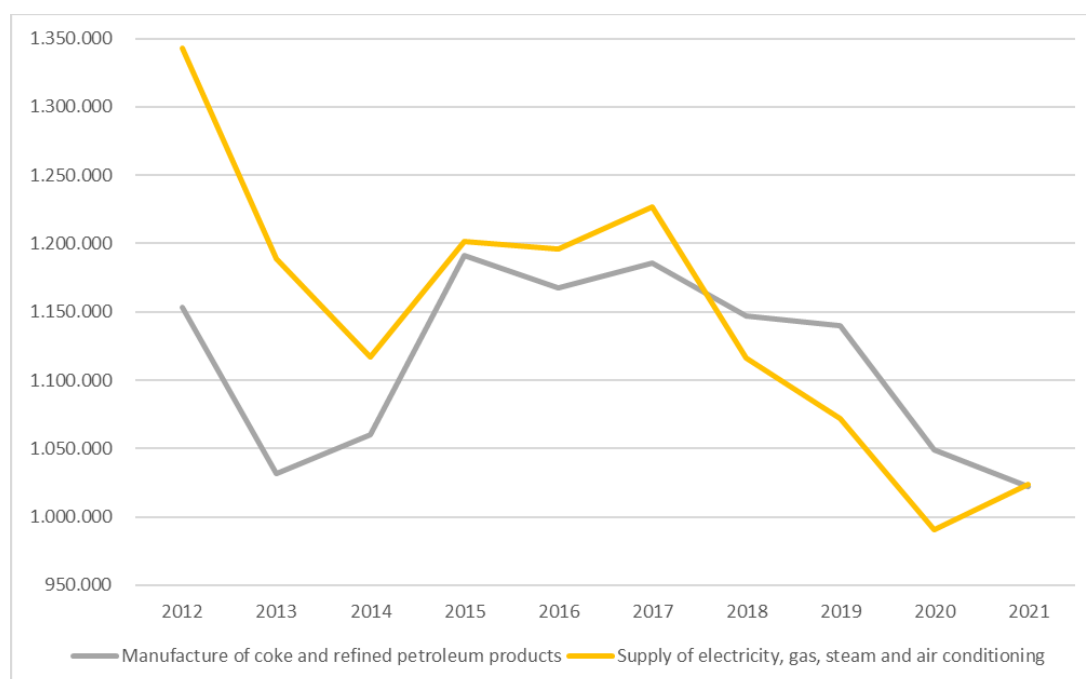
**Tab 8 – Number of enterprises, employees and value added of the main energy industries in Italy**

	Manufacture of coke and refined products			Supply of electricity, gas, steam and air conditioning		
	2017	2018	2019	2017	2018	2019
<b>Number of enterprises</b>	297	296	284	11,271	11,794	12,433
<b>Number of employees</b>	10,607	10,325	10,339	88,222	83,743	84,133
<b>Value added per employee (thousands €)</b>	214.4	124.7	143.7	276.0	304.9	324.8

Source: FdV elaboration on ISTAT data

Figure 4 shows the emissive intensity of employment in the main energy industries, calculated as the ratio of tonnes of CO<sub>2</sub> emitted by the sector to the number of working units employed. A common negative trend in emission intensity can be seen for both sectors. Between 2017 and 2019, the intensity decreases again after a period of growth (2014-2017): this trend is mainly due to the reduction in emissions, as the number of employees in the activities of the sector over the same period increases or remains stable.

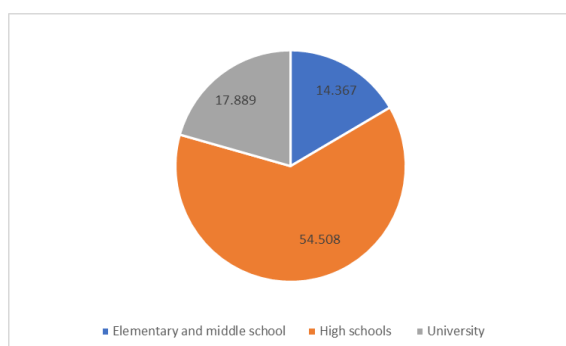
**Fig. 4 – Emission intensity of employment (tonnes CO<sub>2</sub>/thousand units, 2012-2021)**



Source: FdV elaboration on ISTAT and ISPRA data

With regard to some of the qualitative aspects of employment in the sector, the following graphs provide further analysis. Figure 5 shows the level of education attained by employees in the energy supply sector: most of them have a high school qualification, while 16.5% of employees have a primary or middle school qualification.

**Fig. 5 - Number of employees by educational qualification in supply of electricity, gas, steam and air conditioning (Italy, 2017)**



Source: FdV elaboration on ISTAT data

The two pie charts in Figure 6 instead show the composition of employees in the oil and oil-products manufacturing sector and in the energy supply sector by occupational qualification. In both sectors, most of the employees are clerical workers (43.9% in the first, 52.8% in the second). This is followed by manual workers, with a higher percentage of the total in the oil sector (37.7%) than in the energy supply sector (29.2%).

**Fig. 6 - Number of employees by professional qualification (Italy, 2017)**



Source: FdV elaboration on ISTAT data

A study by the Enel Foundation assesses positively **the effect of the energy transition on technology value chains** in 2030. Considering the extended value chain (from research and development to production, distribution, sales and aftermarket) and based on the evolution of final energy demand in three different scenarios, which imply a different growth in electrification, the study predicts an increase in the production value of electrification-related technologies of between +11 billion euros and +25 billion euros in the period 2017-2030. The expected increases are higher than the decrease in the value of production for thermal technologies, which for Italy is expected to be between -3 billion euros and -8 billion euros over the same period. Furthermore, it is also important to consider the growth of the production value to 2030 of the additional digital services that could be created in the near future (6 billion euros in Italy). From the point of view of employment impact, the same study estimates a net increase in employment of between +98,000 and +173,000 by 2030 (Enel Foundation, 2019) while, a more recent study (ENEL Foundation 2023) esteems an increase from current 120.000 workers to 540.000 by 2030. As per employment outcomes the interviewees agree that these depend on technological investments, which affect not only the energy chain but also other manufacturing sectors (such as the automotive sector) and that they are slowed down by regulatory and legislative uncertainties.

It is also important to consider that with the widespread development of renewable energy plants, **workers will be less concentrated in specific production sites** and are more widely distributed geographically. Moreover, as Italy is considered to be lagging far behind in the construction of the renewables value chain, employment growth is currently concentrated in the installation, operation and maintenance phases of RES plants.

### 3.4.2 Skill needs and training

According to the preliminary assessments of the Ministry of the Environment, **in 2021, employment related to the construction and installation of RES plants is in the order of**



**14,000 labour units (AWU) for electrical RES and 29,300 AWU for thermal RES.** Employment related to the operation and maintenance of existing plants is in the order of 34,000 AWU for the electricity sector and 28,000 AWU for the thermal sector (MiTE, 2022). The added value for the entire economy generated by all investments associated with the various renewable energy sources in the electricity sector in 2021 totalled more than 2.9 billion euros, an increase over the previous year, due in particular to the growth in investments in certain technologies. The added value for the entire economy generated by the investments associated with the various renewable sources in the thermal sector in 2021 totalled around 4.8 billion euros, up from the figure recorded in 2020. As far as investments in energy efficiency are concerned, these amounted to about 4 billion euros in 2020, mainly related (84%) to tax deductions for the energy requalification of buildings. In the same year, according to GSE estimates, **the temporary employment effects related to energy efficiency measures will be close to 47,000 AWU** with an associated added value of around €2.7 billion. In addition, between 2020 and 2021, investments in energy efficiency in the public administration increase from €153 million to over €185 million. As a result of the INECP targets for decommissioning coal-fired thermal power plants, about 1 GW of coal-fired thermal power capacity has already been decommissioned, of which 605 MW in 2020 and 300 MW in 2021. The remaining approximately 6 GW of coal-fired thermoelectric capacity will be gradually decommissioned over the next few years and by 2025: in particular, in Sardinia, in order to allow the phase-out of coal, it will be necessary to build new capacity for about 500 MW of Available Capacity in Probability distributed appropriately over the island and to construct the new Centre South-Sicily-Sardinia electricity link (*Tyrrhenian Link*).

From the point of view of the **impact on workers' profiles**, interviewees point out that most profiles will have to be updated to adapt to changes and, above all, to facilitate redeployment within the sector. In fact, the sector has sufficient and highly qualified professional figures in terms of tasks and qualifications that can also be exploited in other value chains and in renewables.

With a view to employment transition, profiles that can be easily relocated, due to the need for similar skills, include downstream production operators in refineries who can be relocated to upstream production in oil/gas plants; maintenance operators in complex plants who can work in photovoltaic or wind power maintenance; technical operators in petrochemical plants who can be relocated to the chemical recycling chain; power plant operators (maintenance) who can be relocated as distribution network electricians. Profiles at risk include oil well drillers and miners. New emerging profiles for the energy sector include data scientists.

As regards the involvement of workers' representatives in the management of vocational training (at company level), data from the European Continuing Vocational Training Survey (CVTS) show that the involvement of trade union representatives on this issue is high in Italy. According to the classification elaborated in the study by Adapt Servizi (2021), **the involvement of the Italian social partners in the governance of education and training systems has the objective of defining and managing corporate training activities as a whole** (Adapt Servizi, 2021, Tab. 1). The same study emphasises the importance in the Italian continuous training system of a number of training funding schemes managed in collaboration with the

social partners, such as the interprofessional funds. These funds, which are financed through employers' contributions, cover the costs of local, sectoral and corporate training plans and, to date, are aimed at a very wide range of workers, including fixed-term and temporary workers and apprentices (Adapt Servizi, 2021). Another important tool used by the social partners to define the instruments for the development of workers' skills is that of **participation in monitoring committees** that control operational company training programmes. On the bargaining side, the renewal of the electricity NCLA (2022) provided for the establishment of an Observatory on new skills and a commission to update the classification of profiles that do not reflect the changes of the twin transition. The renewal of the gas-water NCLA (2022) also introduced a commission to examine the sector's classification system, focusing on the autonomy, knowledge and experience of workers and on the economic recognition of horizontal pay increases.

In general, contractual renewals claim the legal right to training for the growth of workers' professional skills, with attention to the certification of skills through the establishment of the training booklet. The union emphasises that the certification of skills is also functional for on site relocation.

### **3.4.3 The impact of the energy transition on work organisation and working conditions**

The transition from the fossil energy model to renewable energy sources clearly has an impact on the organisational model of work as technological innovations and the capillarisation of energy production sites (RES energy production plants are more widely distributed throughout the territory than thermoelectric plants) and the evolution of workers' skills require energy companies to reform their organisational model.

Changes in the business models and organisational strategies of energy companies depend to a large extent on the digitalisation of the grid and production processes, the creation of new supply chains, technological investments and the transition to the new fragmented and geographically distributed power generation system. In fact, the union refers to the need to put work organisation back at the centre of bargaining. On the whole, the social partners see the anticipatory element as necessary for introducing organisational changes.

With regard to the conditions and quality of work, a number of processes related to the energy transition raise the question of the correct contractual classification of workers. This concern particularly affects the renewables sector, which is very often only protected through company bargaining. Interviewees reiterated that from the perspective of a just transition it is essential to make the protections for renewable energy workers equivalent with those of fossil energy workers by offering them the same opportunities, conditions and advantages.

### **3.4.4 The territorial and regional impacts of the energy transition (also from an intersectoral perspective)**

The effects of the decarbonisation of the energy system not only concern employment in the sector proper, but employment in all manufacturing sectors. In particular, research by the Di Vittorio Foundation focuses on the impact on employment of decarbonisation processes in the hard-to-abate sectors, i.e., those manufacturing sectors where the decarbonisation challenges

are more stringent and impactful (cement, ceramics, chemicals and pharmaceuticals, metallurgy, rubber and plastics, glass). The COVID-19 crisis, affecting all energy markets (but with particularly serious implications for the countries most dependent on fossil fuel income), has caused unprecedented job losses. In addition, the problem of workers at decommissioned energy sites is becoming increasingly important. The productive reutilisation of sites does not only concern the thermoelectric sector, but also the **refining industry**, which will continue to be affected by the decline in the consumption of traditional fuels, no longer only due to the economic crisis but also to the demand for new environmentally friendly fuels and carriers. Moreover, this implies an increasing **use of sustainable biofuels and LNG** (liquefied natural gas) instead of oil derivatives. In Italy, the two sites of Gela and Porto Marghera have been reconverted into biorefineries, while the construction of a third biorefinery in the industrial area of Livorno is the subject of a feasibility study.

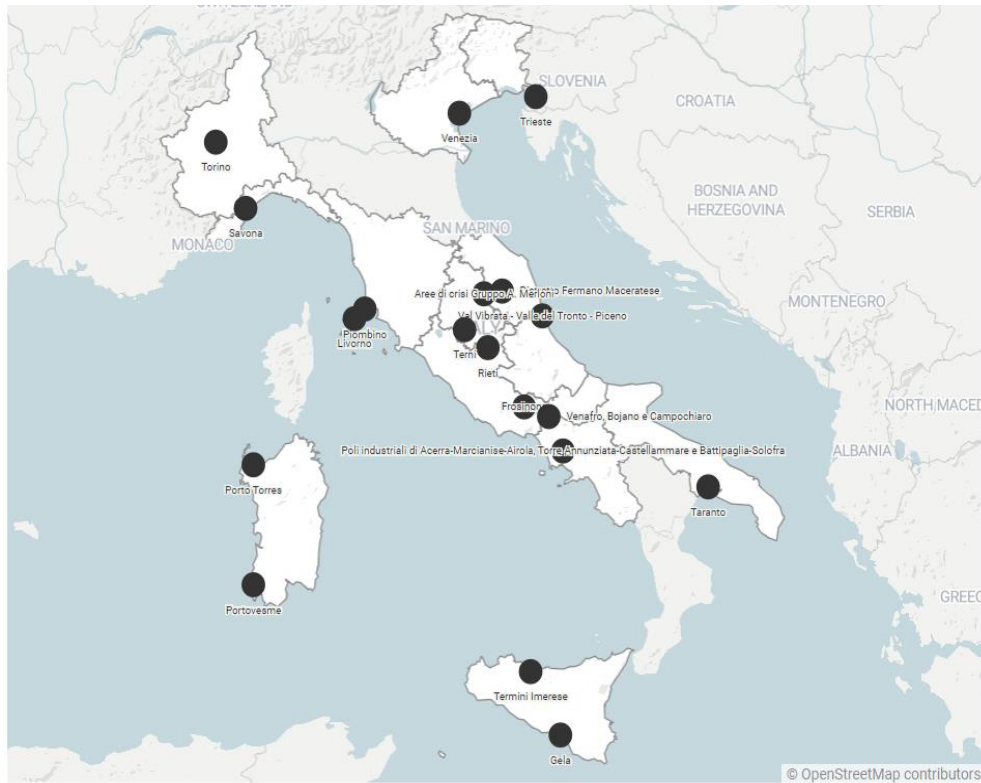
The transition of the system towards the use of RES involves a change in the geography of production, linked to the dispersion of the availability of natural resources. Businesses, trade unions and associations agree that these changes have an even more direct impact on territories that are often already characterised by great economic and social difficulties and depressions and that risk turning into industrial wastelands with no alternative development prospects. For employers in the electricity sector, moreover, in territories where it is more difficult to have alternative energy carriers to fossil fuels due to their location (e.g. Sardinia), the closure and decommissioning of coal and thermoelectric plants could lead to greater difficulties in the redeployment of workers.

### 3.5. Drivers, barriers and dilemmas to the energy transition

Obstacles to the decarbonisation of the energy system can be found at the national, local and company level. At the **national level** main barriers include the lack of i. a systemic and unique direction from the public player; ii. a plan devoted to the Just Energy Transition; iii. relevant industrial and energy policies; iv. a regulatory and legislative framework; v. public investments. Lengthy, complicated and cumbersome administrative and authorization procedures (above all for generation plants) were highlighted too. Furthermore, decarbonisation policies need to be weighed, on the one hand, in terms of the real possibilities of technological advancement towards a zero-emission productive system and, on the other, of a detailed programme of active policies to support workers towards training for the acquisition of new skills or their reinforcement.

At the **local level**, the main obstacles are linked to the **environment-labour dilemma**: the large energy and industrial sites that have ensured the development of local territories and economies are now faced with the major transformational challenges that we have repeatedly referred to, which put some important employment assets at risk. In this sense, the definition of local programmes for the transition **areas of complex industrial crisis** represents an interesting political strategy to stimulate investment in the revitalisation of local industrial and craft economies. The map shows the areas identified at national level.

**Fig. 7 – Map of complex industrial crisis areas**



Source: FdV elaboration on INVITALIA data

Another relevant obstacle at local level is represented by the allocation of competences between State and Regions on the energy issues.

At the **corporate level** as well, there are many issues to be dealt with, both in terms of challenges and opportunities. Among the most important challenges is undoubtedly that of the technologies available to increase the energy and emission efficiency of plants: investment in R&D is central to enabling companies to overcome these obstacles and achieve decarbonisation targets. At the same time, companies, also through national and European funding programmes, need to support continuous training and refresher courses for workers in order to be able to deal with process or product changes resulting from technological innovations with the least possible impact.

## 4. SOCIAL DIALOGUE, INDUSTRIAL RELATIONS, AND INNOVATIVE PRACTICES IN SUPPORT OF THE ENERGY TRANSITION

As we have seen in the previous chapters, the processes of economic, environmental and geopolitical change affecting the energy sector are multiple and have large-scale effects. To be managed in a balanced way, such transformations require “*a form of governance based on agreement between all stakeholders and founded on a structural and integrated approach*” (Rugiero, 2019, p. 110) in order to control the continuous evolution of economic, technical, institutional and social relations in the context of an increasingly complex energy system. In particular, “*thanks to its ability to address the multidimensional conditions, complex dynamics and differentiated impacts of the changes taking place, social dialogue – at the European, national and local levels – [represents] a crucial factor in addressing the challenges arising from the transition*” (Rugiero, 2019, p. 110). This tool is of fundamental importance for the action of the social partners who tend to identify and assess the consequences of transition, but also the risks associated with it, such as the possible effects on employment, workers’ health and safety, inequalities and social exclusion, energy security and local communities.

Precisely because of this set of interests at stake in the transition process, **social dialogue is developed on multiple levels of interlocution** starting from the international and European level (in particular with the action of ITUC<sup>16</sup> and IndustriAll<sup>17</sup>) to territorial dialogue where the trade union categories (in particular FILCTEM<sup>18</sup> for CGIL) play a role of primary importance as they have the territorial structures capable of interpreting and organising the demands of workers in the sector. While social dialogue at the international level is therefore useful for the integration of workers’ protection measures into global agreements on the transition to a low-emission economy, at the territorial level social dialogue is an open space where the social partners very often have to deal with the employment-environment conflict.

The multilevel and horizontal structure of industrial relations in the Italian electricity and energy sectors has proved to be an indispensable tool in accompanying the ecological and social transition, starting from the agreements with the major players in the sector (Enel and Eni, which we will go into later), aimed at building a participatory approach to territorial development plans. Already in 2016, on the occasion of the initiative “*Cantiere Mezzogiorno: le proposte della Filctem per tornare a crescere*”<sup>19</sup>, the trade union organisation put forward proposals for the relaunch of the industrial economy of Southern Italy, proposing a number of policy indications on the role of energy and water infrastructures, the importance of interconnections with other Mediterranean countries, the development of RES and industrial cogeneration systems, smart grids and the need to diversify the national energy mix through the integration of multiple energy sources. The focus of FILCTEM on the territories of Southern Italy is no accident since “*gas*

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<sup>16</sup> International Trade Union Confederation.

<sup>17</sup> IndustriALL Global Union represents 50 million workers in 140 countries in the mining, energy and manufacturing sectors.

<sup>18</sup> Federation of Chemical (and Pharmaceutical), Textile (fashion, luxury and clothing, pens, brushes and spectacles), Rubber and Plastics, Energy (Oil) and Manufacturing Workers; the Federation has concluded 22 national collective agreements.

<sup>19</sup> 16 September 2016, Bari Fiera del Levante.

and the many forms of renewables available today find a favourable environment in the southern regions, thus transforming this territory into the area of choice for the energy future of this country. A scenario, this, which naturally can only become a true driver of development in the South if all the actors who contribute in various ways to defining this country's energy policy decide to intervene in particular to support the technological renewal of the network and to overcome the problems of the environmental crisis in which the reclamation of decommissioned or soon-to-be-decommissioned sites are an important aspect (FILCTEM, 2016). It follows that in order to adopt new territorial development models that respect the principles of the Just Transition, the role of the social partners within the sector's industrial relations system must be the bearer of concrete proposals that are attentive to the needs of the territories.

#### 4.1. Industrial relations systems in the energy sector

In Italy<sup>20</sup>, the energy sector is characterised by a solid system of industrial relations<sup>21</sup>, with strong trade unions, historically non-confrontational relations between the parties and a high propensity to seek negotiated solutions (Rugiero, 2019). These prerequisites are fundamental for the success of the agreements on retraining and restructuring implied by energy transition processes (*ibid.*), as well as for the construction of channels of integration and convergence between labour and environmental sustainability. This can happen because “*in principle the legal and institutional features of collective bargaining allow companies, workers' and employers' representatives to negotiate on environmental issues*” (Tomassetti, 2020, p. 1) where the principle of sustainability is not incorporated in Italian labour law.

The historical evolution of industrial relations in Italy has seen the alternation of **different and sometimes conflicting models of industrial relations**: on the one hand, a model in which growth, income and job protection tend to prevail over environmental interests and those of local communities, and on the other, a model in which the social partners seek to advance the demands of a just transition and sustainable development in parallel with the defence of jobs and decent work.

The autonomy of the social partners is an important prerequisite for effective social dialogue; therefore, it is necessary to contextualise the structure of industrial relations in a **dynamic of changing relations between the social partners and the institutions**. A number of studies (Eurofound 2018, 2020) point to an increasing role of the state in regulatory intervention in the labour market, following major reforms that were adopted unilaterally without a meaningful discussion with the social partners. This, however, has not affected the **degree of autonomy of the social partners in collective bargaining**, who have, on the one hand, ensured that important collective agreements have been drawn up and, on the other, carefully and contentiously monitored the reform projects.

The Just Transition approach revitalises the role of trade unions in bargaining processes, ensuring a balance between the different powers of the parties. In Italy, the Just Transition

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<sup>20</sup> In general, in Italy, the collective agreements signed by the confederal trade unions CGIL, CISL and UIL cover more than 12 million (97%) of employees (Giangrande, 2022).

<sup>21</sup> A table of the sectoral collective agreements is attached (Appendix 1).

theoretical model<sup>22</sup> is made explicit by trade unions through the integration of labour and environmental protection in collective bargaining and social partnerships. This is not to say that there are not contrasting experiences in which the interests of labour and capital prevail over environmental ones (as we will see later when discussing the environment-employment dilemma), but there is in Italy a **general consensus between the social partners on the integration of environmental and employment protection**; the national collective bargaining agreements in the electricity and energy sectors, which we will discuss later, are a demonstration of this. The economic and social instability inherent in the transitional phases means, though, that there are no stable models of social bargaining and this is why the different logics of collective action in Italy tend to come together or clash depending on the economic, social and institutional context in which they operate (Tomassetti, 2020).

With the inclusion of decarbonisation as a principle for action by the social partners, they have developed, through multi-level bargaining, an approach capable of **guiding the integration of environmental sustainability into industrial relations**, anticipating a necessary institutional change (Tomassetti, 2021).

Though a poor participation of the public actor in industrial relations was complained by interviewees, the data on the change in the energy system and the decrease in emissions impact show a gradual but continuous commitment of the Italian industrial system towards decarbonisation objectives; while some industrial restructuring processes have been resolved without serious impacts on employment and local communities, in other cases the energy transition has had, and risks continuing to have, significant implications for jobs and industrial relations. Precisely for this reason, **territorial social dialogue with trade unions and local communities has been important in balancing the different interests involved in the decarbonisation process**. In general, developments in social bargaining have been driven by i. regulatory initiatives at international level (Paris Agreement, Agenda 2030), ii. the worsening environmental crisis in some areas of the country, and iii. the so-called coal phase-out. Territorial bargaining and multi-stakeholder confrontation can, therefore, represent pivotal tools for the translation of national and supranational strategic complexity into concrete practices for the protection and promotion of territorial development.

In 2019 CGIL, CISL and UIL launched a policy document “*For a sustainable development model guided by industrial relations*” (2019). The document highlights how our country lacks a systematisation of good social and technological practices capable of capturing the complexity of social, environmental and economic sustainability. For this reason, the plan formulates a series of recommendations for trade union structures operating at the sectoral and local level, proposing **cooperation with public authorities and collective bargaining with business associations and enterprises** as tools for achieving sustainability objectives. In fact, in general, collective bargaining measures refer to workers’ involvement and participation in environmental decisions. Worker participation in decision-making processes is seen by the confederal trade

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<sup>22</sup> A “just transition” is a campaign of the global labour movement which has made it possible to ensure that social conditions are an integral part of the policy, planning and implementation of climate action. Just transition, together with decent work, was included in the Paris (COP 21) Agreement (UNFCCC 2015) and further defined in the global guidelines on the work of the United Nations International Labour Organisation (ILO 2017).



unions as the best way to give workers a voice on decarbonisation strategies and green corporate governance (Tomassetti, 2020).

In order to cope with job losses, the industrial relations model in the energy sector also considers the **negotiation of retraining, outplacement and early retirement plans**, as well as collective bargaining measures to make job classification systems more responsive to the green jobs labour market. This type of industrial relations in the energy sector, which could be described as “mature”, has enabled the social partners to govern the transition, decreasing the vulnerability of workers and the community from the point of view of coal independence. In this regard, it is crucial to set up a mix of active and passive labour market policies, functional and geographic mobility for workers, and to incentivise the use of interprofessional funds to support transition arrangements and training for new skills.

Although the positioning of the social partners has not been defined in a clear logic of collective action but is rather a set of practices to deal with the dilemmas of transition, it is clear that industrial relations in recent years have evolved towards a plurality of institutional relations and public-private cooperation.

#### 4.2. Position of the social partners with regard to the energy transition

Over the years, the social partners have developed a set of innovative practices to support energy transition with the aim of taking a proactive role in the negotiation of change and fostering worker participation and the evaluation and monitoring of social impacts (Rugiero, 2019). The development of such a role, under the banner of a participatory approach, can already be inferred from the document “Common notice. Energy efficiency, a growth opportunity for the country”<sup>23</sup>, signed by Confindustria, CGIL, CISL and UIL in December 2011. The social partners believe that dialogue and collective bargaining on energy efficiency can lead to significant improvements in productivity, since the energy transition and related technological changes not only have implications for energy production and distribution, but at the same time require new professional figures, characterised by both hard and soft skills. In the document, the parties agree that the manufacturing sector is the key area where the sustainability challenge is being played out, and this calls for a **new national industrial plan**, based on the recognition of the main quantitative targets and investments needed for energy efficiency and skills renewal (Tomassetti, 2020).

Also in the wake of the Energy and Climate Plans, the trade unions put forward their considerations in a 2019 document that expresses the pragmatic nature of the confederations even in its title: “*Reconsidering the goals and making them credible*”<sup>24</sup>. The document makes a number of observations to the Government on the topics of labour, innovation, industrial policies and territory. The assessment document emphasises **the urgency of the debate with the social partners on the objectives of the INECP** also articulated on the individual sectors and topics of the decarbonisation scenario, focusing in particular on the issue of alternative production and the replacement of coal-fired power plants with the re-employment of direct and indirect

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<sup>23</sup> Confindustria and trade unions: agreement on energy efficiency Rinnovabili.it, 22 December 2011

<sup>24</sup> CGIL CISL UIL document. Considerations and proposals on Pniec (National Integrated Energy and Climate Plan). Rome, 6 May 2019.



workers, the protection of incomes and the maintenance of local economies. In addition, the trade unions propose setting up a permanent structure between the ministries and the social partners to monitor the implementation of the plan every six months, capable of indicating any adjustments or supplementary elements to achieve its objectives.

The following year, in November 2020, the Energy Sector Federations launched the “*The Right Energy Transition*”<sup>25</sup> plan, consisting of a series of “*analyses, evaluations and proposals to make credible the path that the energy world will have to take towards sustainable development*”. The federations analysed the issue of energy transition, with a series of concrete proposals for an **acceleration of the process of change in the energy sector, also in light of the acceleration brought about by the COVID-19 crisis**, and so the launch of Pitesai<sup>26</sup> and the gradual reconversion from coal to methane in the electricity sector, with an increase in bio-refining capacity, as well as the reform of the procurement code for the unification of the Italian electricity transmission and transport network. Among the priorities indicated to address the energy transition are: i. the use of natural gas as a transition source; ii. considering renewable sources in a comprehensive manner, not only photovoltaics and wind power; iii. organising and supporting the reconversion of traditional heavy industries; iv. addressing the country’s infrastructural imbalances; and v. revitalising participatory multi-utility companies through a targeted increase in public investment. The participatory approach to managing the social impacts of the transition is also put forward again in the creation of the manifesto “*Jobs and Energy for a Sustainable Transition*”<sup>27</sup>, a package of proposals for achieving the Fit for 55 targets, in which the social partners agree, on the one hand, to focus on the growth of renewables, electrification and innovative carriers, but also on industrial reconversion through the exploitation of existing assets, optimising the reuse of resources with the development of low-carbon processes and products and non-electric renewables.

Still in the sphere of trade union initiatives for decarbonisation, it should be noted that the CGIL has proposed the establishment by law of a “**National Agency for Industrial Development**”, with the tasks of defining strategic guidelines for a new industrial policy and coordinating investments for the reconfiguration of the industrial system in Italy. The proposal also envisages that the agency would head up a “Special Fund for Industrial Transition” which would finance transition-related interventions in the field of active and passive labour policies, unifying and integrating into a single overall framework the programming measures that have been negotiated, such as programme and area contracts and development pacts at territorial and regional levels (Rugiero, 2022).

On the whole, the interviewees all agree on the need for Italy to develop territorial industrial policies that accompany the processes of converting industrial centres and processing of fossil fuels, in order to avoid, first and foremost, the risk of industrial desertification. In this sense, there still seems to be a lack of common positions of public, economic and social institutions

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<sup>25</sup> The just energy transition. FILCTEM, FEMCA, CISL RETI, UILTEC. Rome, 2020.

<sup>26</sup> Plan for the Sustainable Energy Transition of Eligible Areas, approved only in December 2021. It is a general planning tool for mining activities in Italy, aimed at identifying areas where it will be possible to carry out or continue to carry out hydrocarbon exploration, prospecting and cultivation activities in a sustainable manner.

<sup>27</sup> Work and energy for a sustainable transition. FILCTEM, FEMCA, CISL RETI, UILTEC. Rome, 30 November 2021.

with respect to the industrial development of the territories.

Concerning the multistakeholder dialogue, the energy transition seems to have stimulated an increase in space for dialogue and comparison and especially in the area of industrial relations in the energy sector various players have been involved in negotiations (universities, public research institutes, consumer associations). The point of view of local committees does not correspond to an equally broad view of territorial social dialogue, as the multiplication of projects for new infrastructure and investments in the territory makes advocacy initiatives even more difficult. In fact, associations point to the absence of dialogue and low participation in decision-making processes, in the absence of structured procedures for an extended dialogue on the territory. Generally speaking, the associations recognise how, regardless of the outcome of the advocacy and objections of the territorial committees, the dynamics affecting local communities in struggle generate positive externalities linked to the communities' capacity to imagine, generate and design development alternatives, and the strengthening of ties of solidarity.

#### 4.3 The role of social dialogue in support of a socially just energy transition

With the gradual integration of the Just Transition principles into the main energy transition plans, also mentioned in Chapter 2, the trade unions are facing a new season of negotiations in which the actual implementation of JT policies may not coincide with the positions of the social partners, in a context in which the economic and institutional constraints that transition practices entail need to be taken into account. As far as energy transition is concerned, in fact, the shift from centralised energy production from fossil fuels to widespread and capillary renewable energy production requires an effort **to rethink social bargaining**. In some cases the restructuring of the production system has not led to major social costs for workers and local communities; in others the energy transition has had significant implications for jobs and industrial relations. In fact, the problem of workers (direct and indirect) at the energy sites being decommissioned is central not only for the thermoelectric sector, but also for **the refining industry**, which is called upon to innovate its production processes in view of the decline in the consumption of traditional fuels and the growth in demand for new environmentally friendly fuels and carriers. Despite the fact that in the course of its almost 60-year history, Enel has undergone various types of restructuring (privatisation, outsourcing of certain functions and phases, plant closures, internal reorganisation and transnationalisation), **Enel's** industrial relations model has enabled the social partners to govern, or rather control and manage the economic and social issues caused by the continuous transformation of the energy sector. The industrial relations model, which has been in place since the 2012 Protocol, is based on local social dialogue, in which the regional secretaries of the energy sector federations and union representatives responsible for each individual production unit take part. **Company training plans** play a key role here because they respond to the demand for continuous training of workers to enable them to continuously update their skills.

Reorganisation processes therefore have profound economic and social repercussions on the competitiveness of the industrial system, the organisation of work and the employment of people and their skills. In the Italian context, the Enel case is particularly interesting in that the

decision to close thermoelectric plants that were no longer economically profitable or environmentally sustainable led to the development of retraining and outplacement plans for workers through innovative agreements based on a **“participatory” method of continuous dialogue between the company, the workers and their representatives**<sup>28</sup> (Rugiero, 2019). In order to strengthen the energy sector's synergies with other sectors of activity, in September 2022 the sector's employers' and trade union organisations drafted and submitted to the Ministry of Ecological Transition the joint document PRALE (Work and Energy Action Programme), which presents a list of concrete projects that can be activated by companies in the sector to stimulate the energy transition.

In the **management of the closure of thermoelectric power plants and their redevelopment**, these agreements found their first application and made it possible to support a “participatory” management of the reorganisation processes, guaranteeing control over the security of employment levels and the employability of all workers. The set of social bargaining practices finds its synthesis in the circular economy project called **Futur-e**, aimed at identifying new opportunities for sustainable development in all these particular sites (Rugiero, 2019; Galgóczi, 2019). In addition to the issue of direct workers, the various Futur-e projects take into consideration the impact of the transition in terms of induced activities and, therefore, confront the loss of employment in the territory for those local communities the development of which was closely linked to the presence of the power plants that were later decommissioned (Rugiero, 2021).

Moreover, as confirmation of the solidity of industrial relations in the sector, in March 2022 the trade union federations and Enel signed the **“Statute of the Person”**<sup>29</sup>, a [protocol](#) for the enhancement of the individual in the workplace, which combines the experience and sensitivity of the group and the social partners in order to further advance the model of labour relations towards an increasingly close collaboration in which the person and their needs are at the centre of a new approach to the world of work. The statute aims to build an inclusive path by enhancing **the participation of the individual**, and therefore not only of the worker, in the construction of an ecosystem in which the company and trade union organisations work together to create a healthy, safe, stimulating and participatory working environment. The full realisation of the individual is placed at the centre of the objectives of the social dialogue, proposing an environment in which wellbeing, productivity and safety are mutually reinforcing.

The other major player in the national energy system is **Eni**, which at the same time represents an example of good practice for company bargaining in the sector. Here, too, the history of industrial relations shows a solidity of social dialogue since the foundation of the group, which in recent years has led to the signing of innovative agreements. In 2020, the sector

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<sup>28</sup> The reference is specifically to the “Agreement for early retirement and intergenerational solidarity” (9 May 2013), the “Agreement defining the experimental apprenticeship programme with school-to-work alternation” (13 February 2014), the “Agreement on functional, geographic and inter-group mobility of employees” of 2013, renewed in 2015, which provides for a national discussion with the secretariats of the trade federations on corporate strategies and the evolution of work organisation and workforce based on economic and change scenarios, followed by a joint analysis at the local level of the professional skills of individual workers and the concrete prospects for relocating the surplus employees of the older generation to other Enel Group branches. Lastly, the signing of a new agreement for the application of Article 4 of Law no. 92/2012, which, used also for the period from 2016 to 2020, allows for early retirement.

<sup>29</sup> Enel, FILCTEM, FLAEI, UILTEC. Statute of the Person. Protocol for the enhancement of the person in the company, 29 March 2022.

federations and Eni signed the **industrial relations protocol “Insieme” (Together)**<sup>30</sup>, considered a best practice by IndustriAll Europe in the panorama of innovative collective bargaining; it is a protocol aimed at building a model of industrial relations to support and share the decarbonisation path undertaken by Eni. The protocol aims to share and jointly govern the challenge of the transition through a **participatory, anticipatory and inclusive model**. In particular, the agreement envisages the maintenance of current industrial sites and, through reconversion projects oriented towards environmental sustainability, their consolidation. The innovation of this agreement also lies in the provision of a strong collective commitment and constant sharing of information, objectives, initiatives and results. This innovation finds application in the definition of a participatory relational strategy capable of supporting the evolutionary path underway, which takes the form of: i. the annual meeting of the CEO and general secretaries to define the industrial plan; ii. the establishment of a strategic committee to monitor the evolution of the energy business; iii. the definition of joint initiatives to support the energy transition; iv. the reconfirmation of the HSE Committee to continue to improve the culture on issues such as health, safety and the environment; v. the establishment of the Welfare Committee to continue the ongoing discussion on all the issues related to corporate welfare and work-life balance; vi. the updating of international agreements on issues concerning the protection of workers’ rights guaranteed by specific ILO Conventions. In addition, a Generational Pact is shared between the parties with the aim of enabling the renewal and updating of professional skills. According to a study by Eurofound (2021), the “Insieme” agreement can be considered one of the few **company agreements capable of regulating the distributional effects of climate policies**, precisely because it provides for broad, joint governance of the energy transformation process (Eurofound, 2021).

In December 2022, there is a further step forward in industrial relations with the signing of the **welfare protocol NOI**<sup>31</sup>: a plan to strengthen welfare that provides for health, social security, income support, housing and family support.

In terms of territorial bargaining, ENI and the social partners signed two important agreements: The “site pact” in Basilicata and the shared protocols for the transformation of traditional refineries into biorefineries (Venezia and Gela).

On the national contractual level, important signs of a participatory approach to managing the social consequences of the transition can be seen in the renewals of the national collective labour agreement for electricity and the national collective labour agreement for energy and petroleum, which date back to July 2022.

The Energy and Petroleum Collective Labour Agreement, in addition to the definition of a renewed individual contribution evaluation system (CREA), which contributes to increasing the contractual wage, focuses on the issues of: i. health and safety, with the consolidation of the figure of the site safety representative (a practice being tested in some pilot sites in the previous agreement); ii. training, both individual and collective, with the provision of an increase in hours aimed at the development, on the one hand, of professional growth and the strengthening of

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<sup>30</sup> Eni, FILCTEM, FEMCA, UILTEC. Together, Industrial relations model to support the energy transition path, 3 December 2020.

<sup>31</sup> Eni, FILCTEM, FEMCA, UILTEC. NOI, initiatives and services for the wellbeing of Eni people, 12 December 2022.

the job position (upskilling) and, on the other, the acquisition of new skills for re-employability (reskilling); iii. preparation of a skills booklet to certify training. The commitments of the social partners to contribute to the definition of environmental strategies oriented towards a sustainable industrial development model remain valid.

With regard to sectoral bargaining in the electricity sector, among the most innovative elements it is important to recall that Article 10 of the collective agreement provides that, in order to combine occupational health and safety requirements, respect for the environment and the development of productive activities, the unitary union representatives will be the recipients, at company level, of appropriate **training and information programmes**, which will provide them with the basic elements necessary for a correct understanding of company strategies on the environment, improvement programmes and health, safety and environmental assessment and management initiatives. There is likewise a great emphasis on the role of information; in fact, the collective agreement allows trade unions to request meetings with management to gather information on company-relevant environmental issues and/or the presentation of the environmental report. The renewal of the national contract for electricity is guided, more than ever, by the principles of the Just Transition through the introduction into the contract of the **protocol for the enhancement of the person in the enterprise** (based on the Enel model). The protocol finds application in the provision of measures aimed, on the one hand, at increasing the right to training for each worker to a total of 40 minimum hours, and on the other, at strengthening the tasks of the bilateral training body, which will be an appropriate instrument for safeguarding employment, retraining and the relocation of personnel in the event of clear critical situations. On the subject of safety, there is a paradigm shift aimed at achieving a reduction in workloads, an increase in physiological rest periods for night work, and the recognition of additional days of leave. Particular attention is paid to **equal opportunities**, through the improvement of gender equality legislation and protection measures for women who are victims of gender-based violence. A further innovation, which reflects the strong focus of the social partners on the issue of retraining, concerns the establishment of the classification commission, which will have the task of preparing the work on **the identification of all job profiles, new and traditional, implemented by digitalisation** in preparation for the reform of the classification system.

It is evident that the social sphere is at the centre of the concerns of the trade unions with the pursuit of a twofold objective: on the one hand, the trade unions emphasise employment, recognising that the large traditional energy assets and the new employment prospects linked to RES represent an enormous source of jobs, especially in territories hit by profound social and employment crises; on the other, the social objective that the trade unions promote is health and safety in the workplace. On the environmental and economic level, if it is true that the trade unions' positions are often divergent or in disagreement with the employer or institutional parties, it is also true that the instrument of social dialogue has proved efficient in establishing a concrete exchange.

### **Future challenges**

Ultimately, the forthcoming challenge to ensure a just transition will be an ability to promote

a systemic approach that, in the face of the broad scope of industrial and employment conversions brought about by the transition, will make it possible to foster processes of reconversion, retraining and the relocation of activities and professional figures that transcend the boundaries of individual large companies and their “internal labour market”, guaranteeing not only compensation prospects but targeted job-to-job transition processes in a systemic framework (Rugiero, 2021). Moreover, the success of the agreements on restructuring and retraining in Italy will not only derive from the solidity of the industrial relations system and the model of social dialogue concretely operating in the sector, but also from the **development of a new industrial policy in support of the ecological transition of the industrial system** that rests on the implementation of an integrated policy of job support measures based both on the strengthening of passive income protection policies and on the enhancement of active labour policies.

The success of upgrading and energy transition processes therefore requires **greater integration between company and public policies** and a clear role for the state to accompany the business plans of companies (Rugiero, 2022).

Beyond the worthiness of the agreements reached, the risks of industrial desertification and the relocation of skills and production processes remain particularly acute for trade unions. If the information and consultation of workers are usual practices in relations between trade unions and companies, in order to deal with the ecological transition in a socially and economically sustainable way in the near future it will be necessary to push the traditional channels of interlocution even further, **re-launching and re-qualifying industrial relations** starting with instruments that provide for the participation of trade union organisations on supervisory boards, starting with the large national companies (Rugiero, 2022).

## ANNEX TO THE PRELIMINARY REPORT ON ITALY 23/5/23

### Italian Qualitative Report

The *REJEnerAXION* project seeks to analyse and strengthen the role and contribution of industrial relations structures, including social dialogue, in fostering a “socially just transition” on the road to clean energy. With this aim in mind, to outline a **shared interpretative framework on the energy transition**, in January 2023 the partners submitted nine **preliminary reports** (at European and national level), to be further integrated in each country through the subsequent implementation of a **qualitative survey** addressing a range of respondents representing a significant cross-section of the energy sector.

This report (annexed to the National Preliminary Report on Italy) presents the **main results of the 13 interviews** carried out between February and May 2023. According to the methodological guidelines of the project the interviews were organised into **six analytical areas** affected by the energy transition: employment; work organisation and working conditions; sectoral level; territorial/regional level; socio-environmental level; drivers for and barriers to the clean energy transition. The role, functions and results in terms of **industrial relations and social dialogue** were explored transversely for each of the six areas. Interviews were carried out with: four large state-owned companies in the energy sector, four employers’ and trade union organisations in the sector at national level, three environmental and social justice associations, one public policy research body, and one institutions, the coordinating body between the Italian State, Regions and Autonomous Provinces. The information gathered will be integrated later with the views of a representative of the Ministry of Enterprise and Made in Italy (currently not available).

### 1. EMPLOYMENT

Regarding employment in the energy sector, where electrification is an important stimulus for investment, Italy shows a relative decrease in employment (mainly in fossil fuels) and an increase in renewables and efficiency. The workforce in the traditional components is extremely specialised, with high skill levels and well protected from a trade union point of view. The multilevel and horizontal structure of industrial relations in the energy sector, in which trade unions are recognised as a driving force, has allowed the social partners to conclude agreements with large energy companies and renew the collective bargaining agreements in the sector in good time. These results include innovative elements of social dialogue, concerning the notion of “placing workers at the centre”, following a holistic approach aimed at safeguarding contractual protections. Some tensions and doubts remain when moving from the declarations and analysis on the inevitability and urgency of the transition to preventive, programmatic, participatory and inclusive management of the transformations and their effects on the supply chains, companies, territories and workers involved.

#### 1.1. Effects of the energy transition on employment and the labour market

In the transition, with the widespread development of renewable energy plants, workers are less

concentrated in specific production sites and are more widely distributed geographically: this implies a necessary evolution in trade union action practices.

Regarding employment outcomes, the respondents agree that these depend on **technological investments**, which affect not only the energy chain but also other manufacturing sectors (such as the automotive sector) and that they are slowed down by **regulatory and legislative uncertainties**. To guarantee the achievement of decarbonisation targets and safeguard employment, the social partners in the sector believe that a **technology-neutral approach** should be adopted, allowing for a broader energy mix based on a **holistic interpretation of the transition**.

**Employer organisations and large companies** in the sector have a **very optimistic view** of employment prospects, despite possible spatial and temporal misalignments, thanks to the development of renewables and above all of electricity. Electrification will be characterised by a reduction of workers in generation but a substantial (direct and indirect) increase in distribution and manufacturing. In fact, forecasts point to more than 500,000 jobs in the future compared to 120,000 today. The **industry union** recognises the positive role of electrification and grid development, but believes that renewables will lead to an **increase in employment** focused on **certain stages of the value chain which in some cases will be temporary**. In fact, Italy is considered to be lagging far behind in the construction of the renewables value chain, so **up to now, the development of RES has mainly focused on the installation, operation and maintenance phases**. From this point of view, an important investment is represented by ENEL Green Power's 3Sun Gigafactory, which produces innovative, sustainable and high-performance photovoltaic modules in Catania, Sicily, but which would lead to the development of employment which in part would be temporary.

## 1.2 Effects and dynamics of the energy transition on workers' profiles and qualifications

Taking into account the digitalisation process, the increase in demand for technicians (especially in the installation, maintenance and operation of the electrical distribution network) and the shortage of qualified workers in the sector, the interviewees agree that, in terms of the new transition scenarios, it is imperative to **retrain workers from the traditional energy systems**. Most of the profiles will need to be updated in order to adapt to the transformations and, above all, to facilitate **redeployment within the sector** (avoiding competition between companies to acquire skills in the market). In fact, the sector has sufficient and highly skilled professionals, whose competences can be easily enhanced, in terms of duties and qualifications, in other value chains as well and in renewables. These last, for their part, will need fewer highly specialised figures, so that (as the trade union points out) overall in the energy sector the **average range of professionalism will tend to fall**.

Therefore, in the transition, the updating of workers' profiles is an emerging challenge in light of the changes in the sector. In this direction, the renewal of the **electricity national labour**



**contract** (2022) provided for the establishment of an **Observatory on New Skills** and a commission to **update the classification of profiles** that do not reflect the changes of the twin transition. The **renewal of the gas-water national labour contract (2022)** also introduced a commission to **look at the classification system** in the sector, focusing on workers' autonomy, knowledge and experience, and the economic recognition of increased salaries at a horizontal level. Overall, the social partners' guidelines on the professional characteristics of workers to boost the transition are defined on the basis of **analyses and studies conducted together with research institutions and universities** investigating occupational profiles and skills and studying training experiences and active labour policies.

The **virtuous employment transitions** indicated by the interviewees, which from the perspective of the just transition allow for the relocation of workers to different technologies through simple upskilling, concern the following transitions: from gas to the CO<sub>2</sub> supply chain; from traditional refineries to biorefineries; from petrochemical plants to chemical recycling supply chains; from electricity production to distribution. **Profiles that can be easily redeployed**, due to the need for similar skills, include (by way of example) *downstream production operators* in refineries who can be relocated to upstream production in oil/gas plants; *maintenance operators of complex plants* (a petrochemical plant) who can work in maintenance in photovoltaics or wind power; *petrochemical plant technical operators* to be relocated to the transport chain for the selection of plastics for chemical recycling; *power plant operators (maintenance workers)* relocated as distribution network electricians. **Profiles at risk** include *oil well drillers* and *miners*. Emerging **new profiles** for the energy sector include *data scientists*.

### 1.3 Effects and dynamics of the energy transition on training

The recent renewals (2022) of the labour contracts for the electricity, energy and oil, gas-water and chemical sectors indicate that, from the perspective of the just transition, training is an indispensable element ("a new frontier") for the upgrading of workers' skills. The contracts demand the **legal right to training for the growth of workers' professional skills**, with attention paid to the **certification of skills** (according to European parameters) through the establishment of the **training booklet**. The trade union emphasises that the certification of skills is also functional for geographical relocation in the framework of a virtuous relationship which, starting from investments in technologies (which reduce the employment base), moves on to the planning of other investments in the territory to arrive at defining and satisfying the skills needs of the sector's workforce in the context of these transformations. Training is provided both by companies and through active employment policies (for example, ENI has its own corporate university and in 2015 set up a safety competence centre to train workers made redundant in the conversion of the Gela plant in Sicily to a biorefinery).

With regard to workers' training, the need for bilateral sectoral bodies to assume a defined role and greater responsibilities was also emphasised. In this direction, a working group was set up in the renewal of the Energy Petroleum Collective National Labour Contract to establish a **National Joint Training Institute** to intervene in reskilling and upskilling needs. Interest and

appreciation were also expressed for the *Meta-apprendo* experimental training platform for metalworkers.

#### 1.4 Measures for workers in the sector

The measures adopted by the social partners to manage the effects of the transition on workers can be traced back to two prevailing procedures: **accompanying the exit** of the older workforce (mostly through early retirement/pension) and **training interventions** for relocation to other jobs or sectors of activity in the company or territory. The **model applied by ENEL** in Italy in agreement with the trade unions to accompany workers from thermoelectric power plants that are to be closed with flexible exit measures and reskilling and redeployment interventions represents a **good practice of social dialogue**, one appreciated at European level. The success and transferability of this practice rely heavily on the solidity of the industrial relations system and the social dialogue model operating in the country in question, as well as the multinational nature of the group. Other experiences of practices agreed between the parties concern the establishment of a **joint commission that collected and shared the profiles of workers** made redundant under the Employment Solidarity Protocol provided for in the 2017 electricity contract and the establishment of a **strategic committee to manage employment effects** established by the protocol signed between the parties in cases involving the transformation of ENI plants.

To promote upskilling and reskilling actions in the context of the twin transition the bilateral commissions refer to the *Fondo Nuove Competenze (New Skills Fund)*, an instrument of active labour policies. In this regard, some critical points have been reported concerning, on the one hand, the fact that only larger companies with a structured labour organisation and significant trade union participation are able to access the fund and, on the other, an apparent lack of attention on the part of this instrument to green skills and the adoption of a cross-sectoral approach.

#### 1.5 Measures for young people and students

Believing that school and university training offer does not meet the requirements of the labour market, the social partners agree on the need to intervene on education and professional training, through **structured processes of cooperation between schools, universities and research**, to encourage young people to enter the sector. The **interventions targeting students** proposed by the interviewees include programmes by large companies aimed at schools to provide **orientation** or **alternating school-work paths** and cooperation agreements with universities, also with the aim of **identifying talent**. By way of example, ENEL's "*Energie per crescere*" ("Energies for Growth") project (2018-2023) established agreements with a number of professional technical institutes to **train RES plant installers** (5,000 technicians to be employed by contracting companies). With regard to the young entrants, the social partners underlined the problem of the **low attractiveness of the sector**. Therefore, the **improvement of the advanced training and research apprenticeship contract** introduced in the national

labour contract renewal (2022) for electricity is a move in the right direction.

## 2. WORK ORGANISATION AND WORKING CONDITIONS

The energy transition represents a move from a centralised production system to a new one, fragmented and scattered throughout the territory, which affects business models, work organisation and the quality of working life. In this context, the transformations jeopardise the contractual protection of workers (wages, working conditions, training, health and safety, etc.), especially of those who work in areas not regulated by contracts who therefore find themselves excluded from the benefits of these, those within the new supply chains or whose profiles are not adequately classified in current contracts, who may be victims of wage dumping. An innovative practice of social dialogue from the point of view of the just transition is represented by the “*Statuto della persona*” (“*Statute of the person*”), the protocol signed by ENEL and the trade unions following the decommissioning of the thermoelectric plants, aimed at making the most of the individual and considering their needs in an inclusive path based on a new approach to the world of work, in which there is room for wellbeing, participation, safety, training and updating of skills.

### 2.1. Changes in business models and organisational strategies

The changes in the business models and organisational strategies of energy companies depend to a large extent on the digitalisation of the grid and production processes, the creation of new supply chains (such as hydrogen), technological investments (green hydrogen, biomethane, CO<sub>2</sub> capture and storage, etc.), and the transition to the new fragmented and geographically distributed electricity production system (in the transition more than 1,100,000 small and very small plants have joined a hundred or so large power plants). In fact, the union refers to the need to bring the organisation of work back to the centre of bargaining (to deal also with aspects such as the reduction of working hours and the human-machine interface). At the same time, it points out that, in the **absence of financial interventions** by the state (using opportunities such as the NRRP), only large companies that can assume the business risk are able to follow the change in the energy development model.

The **anticipatory element** necessary to introduce the organisational changes is indicated as relevant by the social partners on both sides. By way of example, the changes introduced at ENEL concerning the closure of thermoelectric power plants were agreed on the basis of an **approach based on planning and a strategic vision** shared with the trade unions. The FILCTEM electricity section moved in the same direction, and included the **prior discussion of business plans** in the agreement signed with the companies in the sector.

### 2.2. Working conditions and quality of work

A series of processes that can be traced back to the energy transition (the blurring of boundaries between tasks or activities in the sector; electrification that intersects several categories, types of workers and sectors such as transport and district heating; the acquisition by large companies of companies in the new technological sectors; the introduction of technological innovations with the integration of new professional skills and the obsolescence of other profiles) raises the

question of the **correct contractual classification** of workers. This concern relates to the renewables sector in particular, characterised as it is by corporate-level bargaining. As regards this situation, the union highlights a twofold risk concerning, on the one hand, the fact that workers involved in renewable energy production are protected only by the narrowest level of bargaining and, on the other, the possibility that in this area some companies might avoid the extension of contractual protections.

With respect to the above, most of the interviewees reiterated that from the perspective of a just transition it is essential to make the protections for renewable energy workers equivalent with those of fossil energy workers by offering them the **same opportunities, conditions and advantages** through a correct classification of professional figures and interventions aimed at the alignment and convergence of the different contracts applied. The **SMART Contract** introduced in the renewal of the national electricity collective agreement – considered representative of a positive “leap forward” in industrial relations – in addition to focusing attention on new organisational work models (which include working from home) is also aimed at extending the scope of application to work areas regulated by other contracts.

### 2.3. Health and safety at work

Changes in production schedules, the introduction of new technologies, and process and product innovations expose workers in the energy sector to **new health and safety risks and dangers** due to, among other things, the adoption of new materials and chemicals, the speed of change, the characteristics of new infrastructures (such as offshore wind power) and the resulting changes in work organisation models. As far as possible, the trade unions fill the role of regulating these dynamics and express concern about the **knowledge gap** that, in addition to putting workers at risk, does not allow for forms of control and monitoring. Nevertheless, the interviewees believe that from the perspective of a just transition, bilaterality has already begun to pay closer **attention to preventative occupational health and safety systems** (with respect to which the sector has a tradition of leadership). From this point of view, for example, in the 2022 renewal of the energy and petroleum national labour contract a novelty is represented by the consolidation of the figure of the **site safety representative** (considered a good practice at national contractual level), while in the renewal of the electricity sector national labour contract the right of workers on the subject has been defined, according to the logic of safety culture, in terms of the **reduction of workloads** and an increase of **physiological rest for night work**.

## 3. SECTORAL LEVEL

The Italian energy sector, as can also be seen from the data in the first part of the National Preliminary Report, is already moving towards the electrification of production and consumption processes, despite the fact that a number of difficulties persist relating to technologies and the market.

The principal drivers of impact in the sector described jointly by the employers’ organisations,

the trade union and the environmental association are, on the one hand, the need for energy infrastructures that stimulate **synergy between different economic sectors** (energy, manufacturing, services), especially in view of the concerns, particularly among the social partners, regarding the availability of decarbonisation technologies that will allow the new energy paradigms to support the country's high industrial profile (which, with Europe's second largest manufacturing industry, is characterised by significant hard-to-abate transformative industries); and, on the other, the **adaptation of the national electricity grid** to support new-generation RES. To this end, the grid must necessarily be smart and also adapted with regard to traditional transport networks, such as road transport. It is expected that the sector will also be affected by the **revamping of mining sites** in the territory that will provide materials for the production of innovative renewable energy technologies (e.g., panels and batteries for energy storage): this impact is also reinforced by the approval of the *Critical Raw Materials Act*<sup>32</sup> by the European Commission.

The respondents also emphasised the impact of climate change on the energy sector and in particular on the supply of certain non-programmable resources, such as hydroelectric power generation.

### 3.1. Cross-sectoral relations at national level

A central activity in the work of the industrialists' organisations is to **promote and analyse possible synergies between different economic sectors**, starting with the periodic study of the country's energy infrastructure. There is, in general, a strong awareness – on the part of companies operating as national players – of the effects of energy choices on the broader economy, on employment and on the income of companies and households, since energy choices strongly condition the development of the country's production chains and household wellbeing indices.

### 3.2. Industrial relations

From the point of view of industrial relations, the union emphasises how the energy transition entails the renewal of the production system in the direction of a decentralised structure, with a consequent need to **rethink the system of bargaining and worker protection**. One point of attention concerns, in particular, the **renewable energy sector** in which bargaining is predominantly company-based. In this case, the correct **classification of workers** could be ensured by applying territorial or sectoral forms of bargaining.

In September 2022 the employers' and trade union organisations in the sector drafted and presented to the Ministry of Ecological Transition the joint document PRALE (Work and Energy Action Programme), which presents a list of **concrete projects that can be activated**

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<sup>32</sup>The Act identifies a list of critical raw materials and a list of strategic raw materials crucial for green and digital transition technologies, as well as for defence and space. It also sets benchmarks for national capacities along the supply chain of strategic raw materials to be reached by 2030: 10% of the EU's annual needs for extraction, 40% for processing and 15% for recycling. No more than 65% of the EU's annual needs for each strategic raw material at each relevant processing stage should come from a single third country.

**by companies in the sector to stimulate the energy transition.** The PRALE is being updated on the basis of the investments and timeline of the NRRP, which foresees an acceleration of the implementation and deployment of a number of projects initially planned for 2026.

#### 4. TERRITORIAL AND REGIONAL LEVEL

The effects of energy transition at local and regional level are many and relate to the sphere of the political governance of the transition processes, economic and social development planning, the structuring of administrative procedures, and mediating between opposing interests.

In Italy, the regions are entrusted with the governance of energy issues since they act as a mediator between national and EU policies and territorial development strategies. In this regard, the interviews highlight how the **governance of the transition is also a political process** that feeds on the meeting between institutional, administrative, economic and social partners.

##### 4.1 Effects on sources of income and the sustainability of regional and local economies

The transition of the energy production system towards the use of RES leads to an evident **change in the geography of production**, linked to the decrease in the territorial concentration of production processes and its relative dispersion connected to the availability of natural resources. Companies, trade unions and associations agree that these changes have an even more direct impact on territories that are often already characterised by great economic-social difficulty and depression. This dynamic has its roots in the industrial history of the country, strongly affecting those same areas that have already undergone a process of transformation and that today, in order to face the ecological transition, are called upon to modernise their industrial economies, running **the risk of becoming industrial wastelands** with no alternative prospects for development.

In terms of transition, the associations highlight how some territories have developed their economies around the business of large national players in the fossil-fuel industries (e.g., in Val D'Agri in Basilicata, a site with extensive crude oil extraction activity, or in Gela, Sicily, where one of the country's largest petrochemical plants is located, now in transition towards becoming a biorefinery). The **pervasiveness of some forms of business related to fossil fuels** has not only affected the spheres of the economy and labour, drastically diminishing the development potential of other economic activities, but in some cases has affected a number of civil spheres related to health, education and social aggregation.

One prospect that most of the third sector associations interviewed agree with is a radical **rethinking of the energy system in a decentralised sense**, involving the creation of confederated and self-sufficient production-consumption islands for energy needs, exploiting the technological contribution provided by renewables (the example of Renewable and Supportive Energy Communities is central to this vision of energy system development, despite the fact that so far it does not represent a mature technological instrument capable of meeting



the energy needs of large industrial plants).

The environmental associations emphasise that the territorial effects of the decommissioning of production plants linked to fossil fuels are not only of an employment and social nature, but also concern the need to find **investments for the reclamation** of areas that have been severely polluted by production processes, stimulating companies to initiate these and take charge of reclamation (for Legambiente, the Vinyls dispute in Sardinia, with the conversion of the petrochemical plant into a biorefinery, represents a model experience for environmental and employment protection in the territory).

For employers in the electricity sector, moreover, in territories where it is more difficult to have alternative energy carriers to fossil fuels due to their location, the closure and decommissioning of coal and thermoelectric plants could lead to greater difficulties in the redeployment of workers (the case of Sardinia is emblematic from this point of view).

#### 4.2. Industrial and regional policy measures to support local economies in transition

The interviewees all agree on the **need for Italy to develop territorial industrial policies** that accompany the processes of converting industrial centres and processing of fossil fuels, in order to avoid, first and foremost, the **risk of industrial desertification**. In this sense, there still seems to be a lack of common positions of public, economic and social institutions with respect to the industrial development of the territories.

As already highlighted, some recall how the **energy issue and, consequently, strategic choices at an industrial level, are today suffering the effect of the regionalisation introduced with the reform of Title V of the Constitution in 2001**. This reform attributed a great deal of power to the Regions which, on the one hand, enjoy full administrative competence with respect to the energy system and, on the other, very often struggle to achieve political and technical awareness in following a path of energy development towards RES. This critical element, in fact, characterises both the political and technical structures (administrations) of the regional authorities and, in the opinion of the associations, could be accentuated in anticipation of a further push towards regional autonomy that would result in a differentiated development of the territories (accentuating the North-South dichotomy) and not in a greater empowerment of local government bodies. Moreover, the criterion of regionalisation of administrative competences comes into conflict with the need to plan the installation of renewables and related storage facilities by adopting a decision-making criterion that respects the availability of natural resources and not that of regional borders.

One issue highlighted by an environmental association is that of the **respect for legality** in the development of financial and infrastructure systems supporting renewable energy: the importance of raising the level of attention and continuous monitoring of projects is crucial to avoid criminal infiltration, which in many cases has characterised the development of new infrastructure in Italy.

The issue of the infrastructural network is recurrent in the dialogue with a wide variety of interviewees: there is a common understanding that to develop next-generation renewables, it is necessary to **develop a smart and capillary network** capable of connecting self-generation

and interacting with other transmission modes. In addition, regarding productive infrastructure, some major players owning large fossil-fuel production sites plan to **reuse the structural part subject to closure or transformation** through the introduction of new technologies such as, for example, carbon capture and storage from hard-to-abate industries.

In order to develop RES, it is also necessary to **attract public and private investments in the territories**, which can work as activators of related economic and environmental benefits, as well as stimulate the creation of new jobs.

### 4.3. Industrial relations

The articulation of industrial relations at a territorial level is characterised by greater complexity because those involved require **a high level of knowledge of the social and productive fabric of the territory**. This is why it is necessary for a multiplicity of players to participate in negotiating, paying close attention to territorial details: this makes it possible to safeguard the interests of the various parties involved in the discussion, while maintaining a high focus on territorial specifics. Territorial bargaining and multi-stakeholder confrontation can, therefore, represent pivotal tools for the translation of national and supranational strategic complexity into concrete practices for the protection and promotion of territorial development.

Below are two examples of territorial bargaining adopted by ENI:

- The “**site pact**” in **Basilicata**, which provides that when tenders are invited, a higher score will be awarded to those proposers who plan to absorb any redundancies, committing to territorial bargaining;
- The **shared protocols for the transformation of traditional refineries into biorefineries**: i. the protocol shared with the trade unions and institutions for the transformation of the Venice pole refinery into a biorefinery (2014); ii. the joint work on the absorption of personnel and the development of alternative businesses in Gela; iii. the creation of the *Openness* platform, aimed at helping companies in the area (not only those in its supply chain) to improve their performance and access to financing.

## 5. SOCIO-ENVIRONMENTAL LEVEL

The socio-environmental theme was dealt with extensively in all the interviews that were conducted, highlighting its centrality in the positioning of companies, employers, trade unions and associations with respect to energy transition processes. It is a challenging issue for all stakeholders and especially for trade unions, which find themselves having to deal with the so-called environment-labour dilemma on the ground, pushing them to adopt innovative bargaining practices that broadly include the interests of people as citizens and/or workers.

### 5.1. Ways in which industrial relations link environmental and social issues to energy transition

And it is in this context that the trade union confirms its role as an intermediate body, asserting its position of centrality in the **environment/labour conflict** by mediating between the private



interests of the economic players and the collective interests of territorial associations and local citizens' committees pursuing claims for environmental justice.

In this discussion, opposing positions very often clash, which can produce, on the one hand, the **collective definition of common positions** useful to strengthen claims or, on the other, the structuring of various discussion tables with the aim of mediating between positions but without reaching shared ones. In the second case, some of the associations interviewed report the **difficulty of a constructive confrontation with the trade unions**, insofar as there is a conflict between fossil exit strategies that have greater or lesser impact on the world of work and the positions of the trade unions which are still powerfully focused on the protection of jobs.

## 5.2. Multistakeholder social dialogue players

In general, the energy transition seems to have stimulated **an increase in space for dialogue and comparison** and especially in the area of industrial relations in the energy sector a various players have been involved in negotiations (universities, public research institutes, consumer associations).

The point of view of local associations and committees does not correspond to an equally broad vision of territorial social dialogue, since the multiplication of projects for new infrastructure and investments in the territory make advocacy initiatives even more difficult. In fact, the associations point to the absence of **dialogue and lack of participation in decision-making processes**, in the absence of structured procedures for extended dialogue in the territory. The lack of involvement of the committees is of particular concern, since the union risks not being representative of all citizens, but only of workers. Despite this, the associations themselves point to positive examples of dialogue and the active participation of territorial committees (in Civitavecchia, through pressure, organised citizens managed to obtain consultations with the institutions, companies and trade unions).

From the point of view of the **activities carried out by the associations and territorial committees**, the following are worth mentioning: i. the adoption of open science (or citizen science) tools with the objective of collecting data and raising awareness at an educational level among the very people who collect the data on environmental conflicts; ii. the mapping and construction of an atlas of conflicts (Documentary Centre of Environmental Conflicts) with the objective of mapping and monitoring the evolution of territorial conflicts at a national and international level; iii. the mapping of legal actions (so-called climate litigation) by local associations and committees in order to involve and stimulate the participation of public bodies and companies in the resolution of environmental conflicts; iv. participation in public consultations on national legislative plans and strategies for energy transition (e.g., in the public consultation for the National Climate Change Adaptation Plan).

Generally speaking, the associations recognise how, regardless of the outcome of the advocacy and objections of the territorial committees, **the dynamics affecting local communities in struggle generate positive externalities** linked to the communities' capacity to investigate as a whole, their ability to imagine, generate and design development alternatives, and the strengthening of ties of solidarity.

### 5.3. Aligning the National Recovery and Reliance Plan (NRRP) with EU priorities

Although much of the investment in **the NRRP** focuses on the electrification of processes and consumption, **the timing of the implementation of investments is still uncertain**, especially those concerning the move away from fossil fuels through an acceleration in RES. This position is shared by the union as well as by the employers' association in the utilities sector, which also notes a discrepancy between the resources used for energy improvement, which appear to be sufficient, and those for the development of the water sector, which, in line with the country's structural problems, lag far behind.

## 6. DRIVERS AND BARRIERS

The **drivers of the energy transition** include the **enabling factors** (indicated in the working document of the *Strategic Energy Table for a Sustainable Transition* promoted by the sector's social partners in 2021). Among these, the interviewees pointed out in particular: the digitalisation of the grid for electricity distribution, regulations and implementing decrees for renewables, investments in R&D, plant reconversion and renewables. Other **strategic drivers** (currently considered lacking) concern, on the one hand, industrial and energy policies (broad and aimed at directing investments by reducing uncertainties) and, on the other, **more intervention by the state**, both in terms of economic commitment and operations. For their part, the representatives of environmental and social justice organisations interviewed included **local community leadership and citizen involvement** among the drivers.

The reported **barriers to energy transition** can be traced back to **four main areas** and a variety of other factors.

#### a) Governance

- Lack of unambiguous and systemic direction from the public player;
- Uncertainty about the legislative and regulatory framework;
- Lack of investment governance for the energy transition (which small companies are unable to make);
- Lack of investment (despite the fact that the country has the technological know-how: it is estimated that Italy needs 300 billion euros for renewables – generation plants, grids, storage – to reach decarbonisation targets).

b) **Administrative and authorisation procedures** are complicated, cumbersome and time-consuming, especially for generation plants. Legambiente points out the main obstacles in the authorisation procedures for renewables: slowness of environmental impact assessments (EIA); tensions between the Superintendencies of the Ministry of Culture and the Ministry of the Environment, in which the Prime Minister's Office intervenes (improperly); c) inadequacy (quantitative and qualitative) of the regional personnel in charge of authorisation procedures.

#### c) The division of competences between state and regions

- Frequent disagreements between state and regions slow down negotiations and the implementation of policies;
- The regionalisation of competences and differentiated autonomy policies induce and increase the development gap between certain regions and territories.

**d) Industrial relations**

- the minimal participation of the public player in industrial relations in the sector, which, despite the fact that these relations are strong and well-structured, in discussions entails the risk of downward bargaining or overstepping bounds already agreed;
- The absence of employment guarantees related to authorisation concessions by the Regions concerning tenders for renewable energy plants.

e) **Other barriers** include: the lack of reliable data on the country's energy or gas needs; tensions on the ground with citizens' groups (sometimes supported by municipalities); and the excessive acceleration of the time available to companies to implement transition-related projects.

## BIBLIOGRAPHY

Adapt Servizi (2021), *Skills, innovation and the provision of, and access to, training, Final Report* November 2021, Brussels: EC

Bednorz, J., Sadauskaitė, A., Czarzasty, J. And Surdykowska, B. (2022), *Unionisation and the twin transition. Good practices in collective action and employee involvement*, Luxembourg: European Parliament

Bianchi, M., and Raimondi, P. P. (2022). *Russian Energy Exports and the Conflict in Ukraine: What Options for Italy and the EU*. Istituto Affari Internazionali.

CGIL. (2021). *Valutazioni sul Piano Nazionale di Ripresa e Resilienza*.

CGIL, CISL, UIL. (2019). *Per un modello di sviluppo sostenibile” guidato dalle relazioni industriali*.

CGIL, CISL, UIL. (2019). *Considerazioni e proposte sul Pniec (Piano Nazionale Integrato per l’Energia e il Clima)*, paper sent to the relevant ministries on 6 May in Rome.

CITE. (2021). *Piano per la Transizione Ecologica*.

D’Amico, T. (2022). *L’impatto del conflitto russo-ucraino in Italia: la morsa del caro energia, gli effetti delle sanzioni e la risposta alla crisi umanitaria*. INAPP.

ENEA (2005). *SITUAZIONE ED INDIRIZZI ENERGETICO-AMBIENTALI REGIONALI AL 2006*.

Enel Foundation (2019), *Just E-volution 2030. The socio-economic impacts of energy transition in Europe*, Milano: The European House/Ambrosetti

Enel Foundation (2023), *La filiera italiana delle tecnologie per le energie rinnovabili e smart verso il 2030*, Roma: Fondazione Centro Studi Enel

Eurofound (2018), *Measuring varieties of industrial relations in Europe: A quantitative analysis*, Luxembourg: Publications Office of the European Union

Eurofound (2020), *Capacity building for effective social dialogue in the European Union*, Luxembourg: Publications Office of the European Union

Eurofound (2021), *Distributional impacts of climate policies in Europe*, Luxembourg: Publications Office of the European Union

FILCTEM. (2016). *Cantiere Mezzogiorno. Le proposte della Filctem per tornare a crescere*, paper presented at the conference in Bari on 16 September.

FILCTEM, FEMCA, CISL RETI, UILTEC. (2020). *La giusta transizione energetica*, paper presented at the unitary press conference on 24 November in Rome.

- FILCTEM, FEMCA, CISL RETI, UILTEC. (2021). *Lavoro ed energia per una transizione sostenibile*. Roma.
- Galgóczi, B. (2019), *Phasing out coal – a just transition approach*, Working Paper 2019.04, Brussels: ETUI
- Giangrande, N. (2022). I contratti collettivi nazionali di lavoro, il ruolo dei sindacati confederali e i lavoratori coperti, in *ECONOMIA E SOCIETÀ REGIONALE* 3/2022, pp 33-42, DOI: 10.3280/ES2022-003004
- ISPRA. (2021). *Italian Greenhouse Gas Inventory 1990-2019. National Inventory Report*.
- Mandelli, M. (2022). *Mapping eco-social policy mixes for a Just Transition in Europe*.
- MiTE. (2022). *La situazione energetica nazionale nel 2021*.
- Peschi, E., et al. (2021). La strategia italiana di lungo termine sulla riduzione delle emissioni di gas serra: scenari emissivi e trend storici, in *Ingegneria dell'Ambiente*, pp. 201-220.
- Rinnovabili.it. (2011, dicembre 22). Confindustria e sindacati: accordo sull'efficienza energetica, in *Rinnovabili.it. Il quotidiano sulla sostenibilità ambientale*.
- Rugiero, S. (2019). Decarbonisation in the Italian energy sector, in B. Galgóczi, *Towards a just transition: coal, cars and the world of work*, pp. 109-133. ETUI.
- Rugiero, S. (2021). Sindacato e transizione energetica tra nuovi orientamenti culturali e pratiche di giusta transizione, in *Quaderni di rassegna sindacale* II pp. 63-73. Ediesse.
- Rugiero, S. (2022). *The social dimension of decarbonisation: the socio-ecological transition of the hard-to-abate industries in Italy*.
- Sciarra, E. (2017). La competenza concorrente Stato-regioni in materia di produzione, trasporto e distribuzione nazionale dell'energia. Le dimensioni sincroniche del decentramento regionale e della ri-centralizzazione odierna, in *ApertaContrada*.
- TERNA (2022). *Rapporto Adeguatezza Italia*.
- Tomassetti, P. (2020). *Labour and Environmental Sustainability, Italian Report*. Adapt, University Press.
- Tomassetti, P. (2021). Just Transition and Industrial Relations: the Italian Patterns, in *E-journal of International and Comparative Labour Studies*, pp. 52-66.

## **ANNEX 1: mapping of NCBA's for the energy and electrical sector**

<b>NCBA ID</b>	<b>NCBA title</b>	<b>Employer signatories</b>	<b>Trade union signatories</b>	<b>Average number of employers 2021</b>	<b>Average number of workers 2021</b>	<b>Sector Code</b>
B282	NCBA Mining Activities	ASSORISORSE	FILCTEM CGIL; FEMCA CISL; UILTEC UIL; UGL CHIMICI (separately signed)	73	1.664	B
B254	NCBA Energy and Oil	CONFINDUSTRIA ENERGIA	FILCTEM CGIL; FEMCA CISL; UILTEC UIL; UGL CHIMICI (separately signed)	232	36.946	B
B283	NCBA for mining activities	UNILAVORO PMI	CONFSAL FISALS	1	2	B
K051	NCBA for Electrical Workers	ELETTRICITA' FUTURA CONFINDUSTRIA; UTILITALIA CONFSERVIZI; ENEL SPA; GSE SPA; SOGIN SPA; TERNA SPA; ENERGIA LIBERA CONFINDUSTRIA	FILCTEM CGIL; FLAEI CISL; UILTEC UIL	627	59.506	K
V012	Executives of companies producing goods and services	CONFINDUSTRIA	FEDERMANAGE R	11.692	65.450	V

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V907	NCBA for Industrial Employees excluding the Construction Sector	FIDAP IMPRESE	FISAL ITALIA			V
V168	NCBA for employees of micro, small and medium-sized enterprises	FOR ITALY	CIU			V
V905	Employees of enterprises operating in the manufacturing, production and fabrication of goods sector	FOR ITALY	FAMAR; CONFAMAR	11	74	V



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Source: Archive of national collective labour agreements filed with CNEL