

No. 56 / July 2023

research

Observatoire social européen

paper

**From change to
transformation?
Digitalisation, industrial
relations and job
quality in the Italian
public sector**



Ose
PAPER SERIES

Daniela Freddi
Matt Hancock
Salvo Leonardi

www.ose.be

rue Paul Emile Janson 13 / 1050 Bruxelles / tél.: 32 (0)2 537 19 71 / fax: 32 (0)2 539 28 08 / e-mail: info@ose.be



From change to transformation? Digitalisation, industrial relations and job quality in the Italian public sector

Daniela Freddi*, Matt Hancock* and Salvo Leonardi**

***Ires Emilia-Romagna **Fondazione Di Vittorio**

Email : matt@matthancock.org

This Working Paper was produced in the context of the European Commission-funded project ‘The impact of digitalisation on job quality and social dialogue in the public services – DIGIQU@LPUB’, which is being coordinated by the European Social Observatory (OSE). The European Commission assumes no responsibility for facts or views expressed in this publication, or their subsequent use. These are the sole responsibility of the authors.

The OSE Working Paper Series takes the form of three different publications available in English or French. The ‘Research Papers’ are intended to disseminate results of objective research and analysis. The ‘Briefing Papers’ contain readily accessible and regular information on a variety of topics. The ‘Opinion Papers’ consist of concise policy-oriented opinions and recommendations for policymakers.

Referring to this publication: Freddi, D., Hancock, M. and Leonardi, S. (2023), From change to transformation? Digitalisation, industrial relations and job quality in the Italian public sector. DIGIQU@LPUB project. OSE Working Paper Series, Research Paper No. 56, Brussels: European Social Observatory, July.

With the financial support of the



Table of contents

EXECUTIVE SUMMARY	4
SECTION 1. INTRODUCTION.....	7
SECTION 2. Setting the scene	8
2.1 State of play and national strategies	8
2.2 State of play at sectoral level.....	14
2.2.1 Overview of the three sectors	14
2.2.2 Patterns and history of digitalisation in the three sectors.....	16
SECTION 3. Impact of digitalisation on job quality in the sectors	21
3.1 Electricity sector	21
3.1.1 Selected job quality dimensions	21
3.1.2 Conclusions for the sector	23
3.2 Public administration sector.....	23
3.2.1 Selected job quality dimensions	23
3.2.2 Conclusions for the sector	24
3.3 Hospital sector	25
3.3.1 Selected job quality dimensions	25
3.3.2 Conclusions for the sector	26
SECTION 4. Impact of digitalisation on social dialogue.....	27
4.1 Social dialogue on digitalisation in the electricity sector	27
4.2 Social dialogue on digitalisation in the public administrations sector	29
4.2.1 Social dialogue on digitalisation in the sector.....	29
4.2.2 Trade union approaches and priorities for the collective bargaining agenda on digitalisation....	29
4.2.3 Conclusions.....	31
4.3 Social dialogue on digitalisation in the hospital sector	32
SECTION 5. Cross-cutting conclusions.....	34
SECTION 6. Policy recommendations	36
REFERENCES	39
Annex 1. List of interviews	41
Annex 2. List of focus groups	42

EXECUTIVE SUMMARY

This Research paper is part of a European research project on 'The impact of digitalisation on job quality and social dialogue in the public services (DIGIQU@LPUB)', led by the European Social Observatory (OSE) and funded by the European Commission. This work also benefits from support from the European Public Services Union (EPSU).

In recent years, public service workers are increasingly using connected organising tools and methods, which shape the way their job tasks are implemented, scheduled and controlled. In this context, the Digiqu@lpub project aims to: (a) assess the impact of digitalisation on job quality dimensions from the perspective of trade unions but also of public service workers themselves; and (b) investigate how the challenges and opportunities for job quality generated by the digitalisation of work in public services are addressed in social dialogue (at the national and sectoral levels) in selected European Union (EU) Member States.

At the core of the project are eight case studies in as many countries: Denmark, Finland, France, Germany, Hungary, Italy, Poland and Spain. The project targets three public service sectors: electricity suppliers, public administrations and hospitals. This Research paper contains the Italian case study. In addition to desk research, three sources of original data are used to address the research questions: interviews conducted with trade unionists and workers; focus groups with field workers; and data from an original web survey.

State of play and national strategies

Italy ranks 18th out of 27 EU Member States in the 2022 edition of the Digital Economy and Society Index (DESI). Notwithstanding, the situation in Italy has improved in recent years, driven by efforts by policymakers and social partners to first implement an 'Industry 4.0' strategy, as well as a digitalisation strategy for the public sector. Our research revealed a highly variable landscape, both geographically and between the specific ministries and public agencies. In fact, despite the overall low ranking of Italy in DESI, we also found examples of highly digitalised processes. The arrival of Next Generation EU funds (notably through the Recovery and Resilience Facility), with their emphasis on digitalisation, should increase the impact of digitalisation on all aspects of the public sector, moving from a focus primarily on achieving efficiencies through process improvements toward a true digital transformation of the workplace.

The impact of digitalisation on job quality

The overall impact of digitalisation on job quality in the analysed sectors depends very much on the technology adopted, the relationships with external stakeholders as well as the specific pressures on the organisation (e.g., competition, shareholder expectations and labour shortages in the case of the liberalised and privatised electricity sector; increasing efficiency, flexibility and quality of services in the public administration). In the case of the electricity sector, some

technologies such as drones and software management programs have overall increased job quality, as these instruments have favoured job safety, upskilling and work-life balance. However, the use of applications on smartphones has negatively impacted job quality, leading to greater work intensity, longer working days, and a reduction in safety in this sector.

With regard to the public administration, the key change brought about by digitalisation has been the possibility for employees to work outside of the office. This opportunity is still very limited in the Italian public administration, but those workers who experienced it, mainly during the Covid-19 pandemic, commented on the lack of adequate devices and technology infrastructure, the risk of overwork because they lack the abilities to organise their own work around objectives, and negative effects on mental health; nevertheless, workers appreciate the ability to achieve a better work-life balance as a result of remote work.

The hospital sector is maybe, among the three analysed, the sector that has experienced the most pervasive digitalisation: introduction of a wide range of technologies, such as robots in the operating room, tablets to collect data and monitor patient intake, and the implementation of electronic medical health records. In general terms digitalisation has improved job quality in hospitals, mainly by making the work-flow smoother and increasing safety.

The impact of digitalisation on social dialogue

In recent years, as the pace of digitalisation has increased, impacting more and more areas within the public sector, social dialogue has had to adapt to take account of these changes, particularly given the impact of technology on work organisation, job quality, health and safety, job classification and employment. Unions' strategies include both attempts to govern the processes of change as they impact work organisation, as well as efforts to help workers adapt to the changes.

Bargaining in the electricity sector presents some important differences when compared to the public administration and hospital sector. First, bargaining within the electricity sector occurs following the rules and customs of private sector bargaining. Here the company-level agreement with Enel, the largest employer in the sector, is negotiated first and sets the tone for negotiating the sector-wide agreement. Second, specifically regarding digitalisation, electricity sector unions' strategies have focused on several areas: a) guaranteeing access to continuous training; b) job classification; c) regulation of remote work and the right to disconnect; d) using the rights to information and consultation to govern changes in work organisation; and e) bargaining that is inclusive of the entire value chain (including new renewable start-ups) and not just traditional actors.

Unions in the public administration and hospital sectors have used bargaining, joint examination and information and consultation to address the changes wrought by digitalisation. To address

changes in work organisation (outside of the purview of collective bargaining in the public sector), the 2016-2018 collective bargaining agreements (CBAs) for the public administration and hospital sector required the creation of bilateral standing committees on innovation, which use information and consultation to monitor changes that impact work organisation and have the ability to propose changes themselves. In 2022, landmark CBAs were negotiated, covering 2019-2021, which include establishing the right to remote and agile work for all public employees, along with rules for governing the (decentralised) implementation of remote and agile work arrangements for individuals.

Conclusion and policy pointers

The changes being driven by digitalisation are both profound (or radical) and sweeping (touching seemingly all jobs in all sectors). And because the social, political and economic context within which new technologies are developed and implemented has an impact on the balance of power in the workplace and society, the question of who will benefit from digitalisation is contested terrain. This reality, the non-neutrality of technology, opens possibilities of increased conflict in industrial relations, as well as increasing collaboration.

Ensuring that the benefits of new technology accrue evenly across society, and include especially workers, will require new levels of awareness and understanding of digitalisation, new skills, approaches to bargaining that include the entire value chain, and joint governance of change, including at the level of the workplace. Specifically, we recommend public policy efforts to increase awareness of the nature of digitalisation through: a) training for social partners; b) inclusive industrial relations practices that embrace the entire value-chain; and c) efforts to govern change in a tripartite manner. Successfully governing these changes for the mutual benefit of workers, organisations and users requires: a) a stronger legal and regulatory framework regarding the introduction of digital technology; b) providing social partners with the subject-matter expertise needed to effectively negotiate digital transformation; and c) experimentation with efforts to jointly implement changes through direct worker participation.

SECTION 1. INTRODUCTION

This Research Paper ⁽¹⁾ presents the results of the national study carried out as part of the European Commission-funded 'DIGIQU@LPUB' project, which studies the impact of digitalisation on job quality and social dialogue in the public services. It covers eight European Union (EU) countries: Denmark, Finland, France, Germany, Hungary, Italy, Poland and Spain. The study is led by the European Social Observatory (OSE) and is funded from the European Commission's budget line 'Improving Expertise in the field of Industrial Relations'.

The project aims at improving understanding of the impact of digitalisation on job quality in the public services, by highlighting the perceptions that workers themselves have of the changes generated by digitalisation in the performance of their daily tasks. The study focuses specifically on three sectors: public administration, electricity and the hospital sector. The project also aims at raising awareness among trade unions and decision-makers of the consequences of the digital transition of work for the public services. Specific objectives include the following:

- To assess the impact of digitalisation on job quality from the perspective of trade unions, but also of public service workers themselves. The intention is to identify the changes affecting the nature, content and implementation processes of the tasks involved in the jobs of public service workers, as well as the outcomes for the workers.
- To explore how the challenges and opportunities for job quality generated by the digitalisation of work in public services are included and addressed in the dynamics and practices of social dialogue at national and sectoral levels in selected EU Member States.
- To enrich the debate about this topic among social partners and to provide advice, through policy recommendations, to both European and national trade unions and decision-makers, on suitable ways to address the digital transformation of work ⁽²⁾.

This Research paper analyses the impact of digitalisation on job quality and social dialogue in Italy. In addition to desk research, three sources of original data are used to address the research question: interviews conducted with trade unionists and workers; focus groups (a small number of carefully selected people who discuss a given topic) among field workers; and data from the original DIGIQU@LPUB (DGQS) web survey conducted by the European Social Observatory. Due to the uneven distribution of the sample among the different sectors, account should be taken, in interpreting the quantitative results, of the methodological limitations. These only allow inferences

-
1. The authors would like to thank FP CGIL and FILCTEM CGIL for their help in organising the interviews and the focus groups, and all the workers who agreed to participate.
 2. A more elaborate project description, in-depth country case studies and analytical reports can be found on the project website: <https://www.ose.be/digiquapub/>

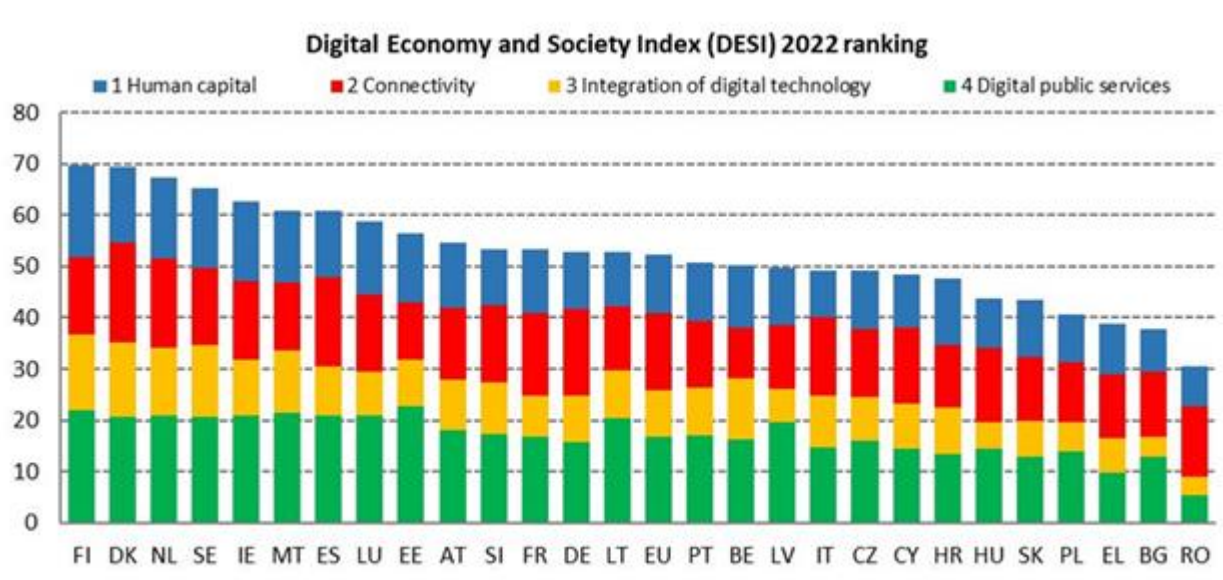
to be made about a group of survey respondents and do not allow conclusions to be extrapolated to the entire sector. Whenever claims in the text below draw on statements from a focus group, the source mentions 'FG X'; the equivalent reference to an interview is 'INT X' (see the Annexes).

SECTION 2. Setting the scene

2.1 State of play and national strategies

Italy ranks 18th out of 27 EU Member States in the 2022 edition of DESI, a very poor performance. Overall Italy is below the EU average, but extremely low in the human capital dimension and connectivity, while it is in line with the EU average in integration of digital technologies and digital public services. However, the index has been improving, in particular in the last three years.

Graph 1 Digital Economy and Society Index (DESI) ranking for EU countries (2022 edition)



Source: European Commission (2022)

The beginning of a digital national strategy in Italy can be identified with the launch in 2016 of the Government's 'Industry Plan 4.0' (Battista et al. 2022). This Plan, mainly focussed on the manufacturing sector, aimed at reaching five main objectives: a) increasing the flexibility of small batch production with the economies of scale of mass production; b) increasing speed from prototyping to mass production using innovative technologies; c) increasing productivity thanks to lower set-up time and reduced downtimes; d) improving quality and scrap reduction thanks to real time production monitoring through advanced sensors; e) enhancing product competitiveness thanks to additional functionalities enabled by the Internet Of Things (IoT). The Government Plan

was guided by two core principles: first, it operates with a logic of technological neutrality (assuming thus that technological change and digitalisation do not modify social structures or the distribution of resources and power across society); second, intervention with horizontal (and not sectoral/vertical) actions, thus providing help without being too invasive and working on enabling factors. The strategic framework was based on two key lines, one of which was attracting innovative investments with direct economic measures, and two complementary lines related to the development of enabling infrastructure, including the implementation of ultra-broadband connections and standards and criteria for IoT interoperability.

In 2017, the 4.0 Plan was renamed 'Enterprise 4.0', with the objective of expanding the scope of fiscal measures beyond manufacturing to also involve service sectors: the main new features were a tax-credit for worker training on Industry 4.0 technologies, granted only to companies on the basis of a company-level or local collective agreement, and a voucher for Small and Medium Enterprises (SMEs), to be used for consultancy services on the digital transition.

In its 2020 budget law, the Italian Government renewed the former 'Enterprise 4.0' plan and launched the new 'Transition 4.0' plan, with a stronger focus on innovation, green policies and investment and involvement of SMEs. With the 'Industry 4.0' plan, the internal demand for machine tools radically increased in 2017 (+46%) but declined significantly in 2018 (-11.5%) and 2019 (-25.7%) (Battista et al. 2022).

In 2020, the Ministry of Technological Innovation and Digitalisation launched a public consultation on a document entitled '2025: a strategy for technological innovation and digitalisation of the country' that proposes 20 actions aimed at enhancing digitalisation, innovation and sustainable and ethical development of society ⁽³⁾. The document was divided into four thematic areas: education and life-long learning, active labour force, specialised competences in information and communication technologies ⁽⁴⁾ and citizens. The consultation regarded all of them. This consultation started on 13 October 2020 and ended on 30 October 2020, resulting in a total of 31 proposals that made it possible to better clarify and integrate the strategy. In particular, with regard to the area of active labour force in the public sector, it stated that the spread of digital culture at all levels of the public administration is seen as an essential element to foster digital transformation, together with effective adoption of smart working. In the follow-up to the consultation it was also specified that the initiatives highlighted in the strategy aim, overall, to promote enrichment of the system of technological and innovation knowledge of the Public Administration (PA) by recruiting new staff with adequate digital skills and the up-skilling of those who already work in the PA. It proposing differentiated solutions and tools in response to the

3. <https://assets.innovazione.gov.it/1610546390-midbook2025.pdf>

4. https://partecipa.gov.it/uploads/decidim/attachment/file/11/Report_intermedio_competenzedigitali.pdf

specific needs of each key target: IT specialists and digital transition managers, public executives and all personnel primarily in charge of such administrative functions. In particular, in addition to the interventions focused on the recruitment of talent, significant attention is paid to the promotion of targeted training courses, with methodologies and tools suited to particular roles or activities and to stages of the professional career (e.g. new hires), with extensive use of e-learning to ensure that training that can easily be accessed at any time and in any place. In addition, mechanisms are created to share and transfer knowledge within and between administrations and the world of innovation and research.

In the last two years, the Italian Government has launched a National Innovation Fund, operating on the basis of venture capital instruments ⁽⁵⁾, to support investment in innovative enterprises (i.e., start-ups, scale-ups) and has developed two national strategies on Artificial Intelligence (AI) – with the Ministry of Economic Development beginning a public consultation on AI ⁽⁶⁾ – and blockchain technologies, bringing together experts from industry, university and social partners.

The most recent Government initiative in the area of digitalisation consists of the national Recovery and Resilience Plan (RRP), the centrepiece of NextGenerationEU. The previous government (Draghi Government 2021) submitted its RRP to the European Commission ('Piano Nazionale di Ripresa e Resilienza'): digitalisation is one of its main pillars.

The NRRP is made up of six different missions consisting of 16 components and about 50 interventions. The total European funds available (about €191 billion just from the Recovery and Resilience Fund) are divided between the six missions. The missions dedicated to the Green Transition and to Digitalisation will account for 31% and 21% respectively, totalling more than 50% of the Recovery and Resilience Fund resources available to Italy. A significant part of the EU funds is allocated to encouraging investment in Industry 4.0 technologies. Of the about €40 billion dedicated to the Digitalisation Mission, about €14 billion is allocated to investment in Transition 4.0, about €7 billion to Culture and Tourism 4.0 and about €10 billion to digitalising the public administration. The investments in Transition 4.0 amount to about €19 billion, including all the related EU funds. The explicit objective here is to relaunch the competitiveness and productivity of the country. The general framework of the NRRP re-proposes the objective of the latest national 'Transition 4.0' Plan, in which the Government regards the transition from a twofold perspective: technological and ecological transition. In addition to the former Transition 4.0 Plan, the NRRP specifies that digital investment in economic activities in Southern Italy should be increased, extending the tax credits for a two-year period (2021-2022) for those companies investing in

5. Venture capital instruments are institutional investment activity in risk capital of unlisted companies, in the start-up phase, characterised by a high development potential.

6. Ministero dello Sviluppo Economico (2019), https://www.mise.gov.it/images/stories/documenti/Strategia_Nazionale_AI_2020.pdf

material and immaterial goods, research and development, innovation and training in digital competences.

Along with investments explicitly focused on Transition 4.0, the components of the NRRP digitalisation mission also include investments in digital infrastructure and the internationalisation of value chains. Some critics (Garibaldi 2021) point out that the concept of Transition 4.0 as understood in the Italian NRRP is driven by certain conceptions about digitalisation. Specifically, they levy three criticisms: first of all, digitalisation has been largely thought of as a tool to redesign the production system towards a more extreme flexibilisation, combining the advantages of mass production and mass customisation; secondly, digitalisation has been used to install more intensive and extensive forms of management command and control along the value chain (platform economy); and lastly, digitalisation is used as a tool to integrate physical products and digital services (smart products). If we look at how the concept of digitalisation has been developed within the NRRP, the labour point of view seems to be missing.

In general, the NRRP is based on an idea of investment policy in line with the previous national investment plans on innovation, automation and technology. In particular, since the national government has no clear and systemic industrial policy (Pianta 2021), what is missing in the National Plan is the idea of a plan, meaning a proper industrial strategy (Dorigatti and Rinaldini 2021). The 'Transition 4.0' included in the NRRP is based on generic and indiscriminate incentives to companies (so-called horizontal policies as opposed to vertical policies) and is not linked to any forms of obligation (in terms of results, outputs or processes to be adopted) or accountability for those companies that benefit from fiscal measures. Little importance is given to the social impact of digital technologies, even though many studies have already emphasized how digitalisation exerts an asymmetric pressure on workers in terms of working conditions and quality of work. It is true that the NRRP allocates significant financial resources to training measures geared to upskilling and reskilling workers' (digital) competences, but these measures seem to be more adaptative and still depend on a supply-side orientation of investment policies, in which labour policies are more focused on encouraging workers' employability than on increasing employment. Finally, an analysis of the NRRP reveals a deterministic approach to digitalisation based on the concept of neutrality of (digital) technology, which implies that public investments should not interfere with the technological innovation strategies of private companies, but only support and stimulate them.

With regard to the public administration, the measures in the NRRP could generate significant transformation in a system that, on the whole, has a limited track record on digital innovation (notwithstanding the important, but limited, exceptions highlighted in this report). As is illustrated in the literature (Arpaia et al. 2016), the available evidence indicates that the development of digitalised processes in Italy is still unsatisfactory, with a preponderant share of citizens and a

fairly large share of businesses usually interacting with the Public Administration in person. Especially in the case of citizens, there are shortcomings in demand for on-line services linked to a poor digital culture and a low propensity to use the internet. For companies, on the other hand, digitalisation of the public administration appears to be slow and to generate further delays in the exchanges between them and the public sector. Companies, especially larger ones, show, compared to the EU average, a relative 'digital maturity' and appear more prepared overall, and receptive to the innovations offered by an e-government that is present and effective.

Furthermore, the use of information and communication technologies (ICTs) by the Italian public administration seems to have mainly focused on improving the efficiency of internal processes and much less on the provision of digital services to citizens and businesses. Even when this has happened, the public administration has not invested sufficiently in notifying users of the innovation, thereby inhibiting the potential advantages of digitalisation. Not even the use of ICT tools by the public administration in internal management functions seems to have produced significant progress in the functioning of the administration, which continues to be the subject of repeated attempts at reform. Furthermore, the digitalisation process in Italy has taken place in different ways and at different speeds, producing an arrangement that could be defined as 'patchy'. Some entities of the central administrations – the Ministry of Economy and Finance, the Revenue Agency, National Social Security Institute (INPS) – are now equipped with advanced information systems and databases that allow citizens to carry out complex functions using advanced interview methods, as in the case of tax or social security obligations. For other ministries, in particular the decentralised offices, there is considerable variation in the process. These entities, importantly, vary considerably in terms of functions and administrative size; in particular, for the local authorities (Regions, Provinces and Municipalities), the differentiation inevitably reflects the differing socio-economic contexts in the geographical areas of the country.

Digitalisation of the public administration is therefore one of the main challenges identified in the NRRP, with €6 billion of planned investments (7). A significant portion of these resources is allocated to interventions aimed at transforming the public administration into a digital key. These interventions are including in the first component of Mission 1 dedicated to 'Digitalisation, innovation and security in the Public Administration'. The most important interventions concern digital infrastructure: cloud technologies, data storage and protection, and interoperability (which aims to ensure better sharing of information between central and local public administrations, in compliance with the 'once only' principle, according to which a public body should avoid asking citizens twice for information already possessed by other administrations). Much importance is also given to digital services and digital citizenship, linked to the overall improvement of the quality of

7. <https://www.forumpa.it/pa-digitale/pnrr-e-trasformazione-digitale-ecco-gli-investimenti-e-le-riforme-previste-per-la-digitalizzazione-della-pa/>

digital services offered to citizens, in line with the initiatives launched in recent years for the development of tools for generating and disseminating digital services. There are also measures to improve the experience of users of the public administration's online services, through the harmonisation of portal and service development practices and the adoption of common quality standards.

The investments described so far have mainly a transversal character: they concern all categories of public administrations, central and local, although they differ in scale. Alongside these actions, the measure 'Digitalisation of large central administrations' identifies a series of 'vertical' interventions, aimed at large public entities responsible for important processes related to specific policy sectors (justice, labour, defence, public safety). As highlighted by the NRRP, these large administrations play a fundamental role in the provision of public services widely used by citizens and businesses: the process of modernising and digitalising these services should be significantly accelerated.

The investment consists of a total of €611.2 million, aimed at a rather limited set of important central institutions:

- Ministry of the Interior: in particular, digitalisation of the main services for citizens and the related internal processes is envisaged, for a total of 45 internal procedures and processes, to be re-engineered and fully usable online by June 2026. New applications and internal management systems will also be developed, as well as staff retraining interventions to strengthen the digital capabilities of the administration.
- Ministry of Justice: large-scale digitalisation is expected, with the digitisation of ten years of court archives relating to civil and criminal trials – a total of ten million digitalised judicial files by June 2026. By the same date, a data lake should have been created, acting as a single point of access to the raw data produced by the judicial system, as well as six new knowledge systems related to it.
- Social security institutions, namely INPS and INAIL (National Insurance Institute for work accidents): there are mainly plans to revise internal systems and procedures, as well as the development of digital contact points with users. For the INPS, by December 2023, 70 additional services are to be created and made available on the institutional website, and a total of 8,500 employees should have improved digital skills. For INAIL, the re-engineering of 82 institutional processes and services is expected by June 2026, to make them completely digitalised.
- Ministry of Defence: the plans include mainly an upgrade of systems and applications and a gradual transition towards open-source paradigms. The resources allocated to the Ministry of

Defence amount to €42.5 million. By December 2024, 20 procedures relating to personnel management should have been digitalised, revised and automated; a number of certificates will be issued using the infrastructure, with a disaster recovery site equal to 750,000; and 15 applications should have fully migrated to a new open-source infrastructure.

2.2 State of play at sectoral level

2.2.1 Overview of the three sectors

Electricity

The electricity production and distribution sector is going through significant changes in Italy. Currently there is an ongoing transition from a monopolistic public system to a liberalised market, and the whole sector is undertaking innovative processes to increase the use of energy sources with lower levels of CO2 emissions and to reduce the environmental impact. Overall, this is leading to the development of protocols and legislation to regulate the access to the market of new companies, as well as mergers and acquisitions.

According to a recent study on the sector (Mencarelli and Mereu 2021), in 2019, the gas and electricity sectors together employed 88,000 employees, while the electricity sector alone employed about 50,000 workers. In the same year the overall industrial sector in Italy employed over six million people; the gas and electricity sector therefore represented 1.4% of the industrial workforce and 0.4% of the total workforce. The number of companies was 2,574 and the average size is much larger than in industry generally: the vast majority (69.1%) of employees work in companies with more than 250 employees.

A very large share of employment in the gas and electricity sector is concentrated in larger companies (69.1% in companies with more than 250 employees). In industry as a whole, only 23.7% of employment is in larger companies. The electricity sector is also characterized by a level of male employment (80.7%) that is significantly higher than the overall industrial average, and by an average age that is slightly lower than the average in industry as a whole. Again, compared to the entire industrial sector, almost all those employed in the electricity sector are of Italian nationality (i.e. non-immigrant) and most employees are on standard contracts (open ended, full time). What seems to single out the electricity sector more is the high level of professional skills of the workforce, as the percentage of white collars (50%) is much higher than in industry as a whole (27.8%).

Public administration

The public administration sector in Italy includes the so-called 'Central Functions' (ministries, government agencies, compulsory social security), 'Local Functions' (regions, provinces,

municipalities), 'Health Sector,' 'Education and Research' and the Presidency of the Council of Ministers. From a labour-relations perspective, the agencies in these four areas are represented, in collective bargaining, by the *Agenzia Nazionale per la Rappresentanza Negoziabile delle Pubbliche Amministrazioni* (National Agency for Negotiation Representation in the Public Administrations, or ARAN). Collective bargaining within these sectors, or bargaining units, is highly regulated and structured. Total employment in the public administration sector is 3.2 million people, with 63% of employment concentrated in the central government, 24.3% in regional governments and 12.5% in local governments. Just over one million are employed in schools and 653,000 in hospitals (Cepiku 2018). In the ten year period 2007-2017, total public sector employment in Italy shrunk by 7.4%, the fifth most significant drop among OECD countries (Rizzica 2020). Public sector employment accounts for 14% of total employment in Italy⁸ and, with expenditure at 50.4% of GDP, Italy ranks among the top ten of the EU 28 in terms of the size of its public sector.

Hospitals

Finally, considering the hospital sector, the National Health System (NHS) employs over 650,000 persons, 72% of whom are direct-care workers (e.g. doctors, nurses and specialists), the majority of which (68.7%) are women (Da Rold 2022). Workers are employed in one of Italy's 105 'Local Health Units,' which are responsible for managing care in a particular geographic area, including hospitals and clinics, throughout the country.

The NHS in Italy is relatively new. Although Italy's post-war constitution guarantees free healthcare as a 'fundamental right', it was not until the 1970s, following the creation of regional, democratically elected governments, that the NHS was created. It is worth noting that the main proponents of the creation of the NHS were Italy's trade unions and the regional governments. Prior to the 1978 establishment of the NHS, healthcare was provided through non-profit health insurers. Today, healthcare is the purview of regional governments, with the central government providing the bulk of funding, establishing minimal levels of health coverage, and monitoring performance. There are wide discrepancies among regions. For example: wealthier areas allocate more per capita funding than poorer regions; organizational and economic models differ among regions and quality also varies widely, with some regions failing to provide the minimum mandated levels of care (Cicchetti and Gasbarrini 2016). Despite these challenges, and with low per capita spending compared to other OECD countries, Italy's health system provides 'uniformly impressive' results in terms of 'outcomes, quality and efficiency' (OECD 2014).

Despite its historically strong performance, and low per capita funding levels, observers agree that the current system is not sustainable, especially considering the changing needs of an aging

population, which includes an increased prevalence of chronic conditions, and the persistence of significant differences in both spending and outcomes, across regions (OECD 2014).

2.2.2 Patterns and history of digitalisation in the three sectors

Researchers in the field of Socio-Technical Systems Design (STS-D) Theory have proposed a conceptual framework regarding digitalisation that will be helpful in analysing the Italian case (Grover and van Almsvoort 2019). Digitalisation, they argue, is composed of three distinct, ongoing and overlapping evolutionary phases:

The first phase, '*digitisation*,' began in the 1960s and primarily has to do with the 'conversion of analogue carriers of data (paper) to digital carriers (databases).'

The second phase, '*digitalisation*,' began in the 1980s and regards the application of digital technology to *existing* processes. Enterprise resource planning (ERP), call centre automation, electronic medical health records (EMHR), and smart meters are examples of digitalisation.

The third phase, '*transformation*,' is focused on the creation of 'new business models based on the possibilities of digital technology and platforms to integrate business processes.'

In the case of Italy, our research shows ample experience with digitisation (phase one) and digitalisation (phase two). We also see evidence of the overlapping nature of these phases. We see some isolated experiences of digital transformation, and the public sector may be poised to move into the transformation phase in coming years, especially with the arrival of Next Generation EU funds. We see evidence that phase one and two changes may be governed effectively by existing industrial relations (IR) practices and structures. However, digital transformation appears to represent an 'adaptive' challenge for leaders, which may require integration of new IR practices, like direct participation, in order to fully realise the transformative potential of new technology, and to ensure that the benefits of those technologies, and new ways of working, accrue equitably to all stakeholders (Bacci et al. 2022; Heifetz et al. 2009; Ribarova et al. 2022)

According to the evidence collected through the interviews and the focus group in the Italian electricity sector, digitalisation until now has primarily focused on improving energy efficiency, productivity and the sustainability of the system. The most relevant technological opportunities applied in the sector are the so called 'smart grids', big data analytics, blockchain technologies to guarantee traceability along the value chain and IoT instruments for automatised maintenance of networks. Big data analytics allow the performance of so-called 'predictive maintenance', as the analyses of previous interruptions allow firms to foresee and locate possible malfunctions.

However, while the implementation of digital processes in the Italian electricity sector has been much publicised by companies, actual implementation was stalled prior to the Covid-19 pandemic. The pandemic led to a fast and deep transformation process towards more widespread digitalisation. Currently the most significant changes brought about by digitalisation which have an impact on labour are: a) the electronic counter for measuring electric energy consumption in customers' premises; b) the so-called Workforce Management Programs adopted in some of the largest companies of the sector, such as Enel and A2A; c) the use of drones and smart glasses for maintenance activities; d) specific applications for smartphones; e) and the extensive use of teleworking. In the coming years there will also be important investments in the Smart Grid; in particular the Enel programme 'Grid Blue Sky' aims to create a smarter electricity network, increasing efficiency and leading to better distribution. This may have a significant impact on working conditions in the coming years. As emerged from the focus group, external workers, who work 'in the field', mainly fixing problems on the electricity grids, do not use personal computers, but rather handhelds. With this device it is possible to track all the interventions on the grid and make analyses of the work done. There is also a safety system which is called 'man down': if a worker puts the device down for more than 30 seconds, it sends an alarm to central offices.

Another device that is very much used by workers in the field is the smartphone. This is used for telephone calls but, more importantly, workers are required to use many applications, especially when working in the field. By means of these applications workers can print out documents (with a portable printer), they can access relevant files remotely, and can trace their work. Apps are also used to guide workers who are fixing a broken electrical system.

Regarding the history and path of digitalisation in the public administration from the perspective of the end user, looking at the comparative 'digital public administration indicators', Italians are far below the EU 27 average in terms of use of the internet to interact with public authorities. Not surprisingly, in 2020, the first year of the Covid-19 pandemic, citizens' use of the internet to interact with the public administration increased markedly (European Commission 2021).

On the other hand, according the European Commission's 'European Interoperability Framework', Italy performs at a 'fair' to 'good' level on the framework's three pillars⁽⁹⁾. Italy is mostly in line with the EU 27 average on the first pillar, 12 principles of interoperability, while performing slightly below average on the second pillar, 'levels of interoperability'. For the third pillar, 'conceptual framework', Italy performs well, with above-average results for 'security' and 'privacy' (European Commission 2021).

9. The three pillars are: 'conceptual model,' 'levels of interoperability,' and 'underlying principles.'
<https://joinup.ec.europa.eu/collection/nifo-national-interoperability-framework-observatory/solution/eif-toolbox/eif-pillars>

Recent years have seen significant activity on the digitalisation front, involving agencies throughout the public administration. A few examples: (a) the 2005 launch of the EGovernment Portal for Businesses; (b) the 2009 launch of Magellano – an online knowledge management platform for the public administration; (c) mandatory electronic invoicing for all public agencies since 2015; (d) PagoPA, a system allowing citizens and businesses to make electronic payments to public agencies; (e) the 2020 rollout of the Public Digital Identity System (SPID) which extended digital identity to more than 15 million citizens, involving more than 7,000 public administration bodies (European Commission 2021).

To support digitalisation, parliament authorised the creation in 2012 of the Agency for Digital Italy (AGID), which operates from the Prime Minister's office. It also later created, under the current Draghi government, the Ministry of Innovation Technology and Digital Transition, which houses the Digital Transformation Department, charged with carrying out the digital transformation priorities for the public administration (European Commission 2021).

Despite the focus on digitalisation, and the introduction of several significant changes in recent years in the public administration, interviews with union delegates and members of CGIL's national Public Function leadership reveal a highly variable landscape across agencies, so much so that it seems almost impossible to speak of 'digitalisation in the public administration.' Some public agencies, for example *Istituto Nazionale Previdenza Sociale* (INPS, social security) and *Istituto Nazionale Infortuni al Lavoro* (INAIL, disability), are clearly at the forefront of phase two digitalisation: cutting-edge digital tools have been implemented to improve workflow and processes as well as to facilitate citizens' access to services. Other agencies, such as local courts, embassies and consulates, have made scarce use of even rudimentary digital tools, such as offsite e-mail and calendar or online forms, until recently focusing primarily on phase one – digitisation of information. What stands out from the interviews conducted is the limited impact, until very recently, of digitalisation on the quality of work and collective bargaining.

Several themes emerged from the interviews that appear to explain this phenomenon:

- Lack of adequate equipment (e.g., laptops, smartphones);
- Lack of technology infrastructure (e.g., cloud computing, virtual private networks (VPN) that allow remote access to data);
- Generational attitudes towards aptitude in digital tools;
- Management capacity and culture, at the agency and workplace-level;
- Access to continuous training to upgrade skills.

Regarding digitalisation, the dominant theme across the interviews was that of 'remote' and 'agile' (or 'smart') work. While it was the pandemic that thrust these themes to the forefront, it is clear that the issue of remote and agile work will continue to be of strategic importance in the years to come, as is reflected in the recently-signed collective bargaining agreement for the Central Functions, which includes a path-breaking agreement with regard to remote and agile work.

Despite the importance of remote and agile work in the latest CBA, many lament management attitudes that work against more widespread adoption of these new forms of work. A quote from a focus group participant illustrates some of the challenges linked with wider adoption: *Obviously managers are often used to a direct relationship with workers, for which they want you in the office. There are some managers that seem to want a chaperone rather than wanting to assess the outcomes the employee produced* (FG1.4).

This all changed with the outbreak of the Covid-19 pandemic, as the number of Italians working from home jumped from 1.4% to 14.4%. In the public administration, agile work (which under the first wave of COVID-19 was really working-from-home) was decreed to be the default mode of working (Senatori and Spinelli 2021).

Finally, in the hospital sector, interviewees point out that *'in the last 10 years the world has changed inside hospitals'* (INT 9): the digitisation of records, robots in the operating room to assist surgeons, tablets to collect data and monitor patients, the digitalisation of laboratory analysis, online booking of appointments, the digitalisation of patient intake and the implementation of electronic medical health records.

In the last ten years, there have been three broad areas of digitalisation-related change that have impacted healthcare in Italy ⁽¹⁰⁾: a) the introduction of electronic medical health records (EMHR); b) digitalisation of the system for booking tests and consultations with specialists (Centro Unico di Prenotazione or CUP); and c) telemedicine. These three areas are the result of national policy decisions, and the differences in degree of implementation mirror the significant regional differences that continue to characterise Italy's NHS.

According to some of the interviewees (INT 10,11) the pandemic was an important catalyst for the adoption of new technologies. For example, the region of Emilia-Romagna had already put into place a sophisticated system to support the inter-operability of EMHR across Local Health Units and hospitals. Few, however, were using these systems. This all changed when, during the pandemic, the central government automatically created accounts for all citizens registered with

10. <https://www.agid.gov.it/it/piattaforme/sanita-digitale>

the NHS. Once users (medical professionals, back-office operators and citizens) were forced to use the new tool, they came to see its usefulness.

The next four years are set to see the further transformation of the healthcare sector, driven by digitalisation. The above-mentioned *Piano Nazionale di Ripresa e Resilienza* (PNRR), dedicates no less than 8.16% (or €15.6 billion euros) of Italy's share of the NextGenerationEU funding to the NHS. Along with funds from the national budget dedicated to investments in healthcare, more than €20 billion will be invested in coming years to transform healthcare ⁽¹¹⁾. Priorities include:

- The construction of new structures to provide more care in the community.
- Investments in tele-medicine (including monitoring of patients) to move care away from the hospital when possible and provide greater levels of care in the home.
- Increased digitalisation in hospitals, including investments in high-tech equipment to replace obsolete tools (e.g., CT scan, MRI, linear accelerators).
- Strengthening the use of Electronic Medical Health Records (EMHR), the inter-operability of data and the ability of local health units to use the data in aggregate patient records to improve quality of care in the system.
- Investments in the creation of new patient intake centres and the use of advanced technologies including Artificial Intelligence (AI) for better coordination of care among structures and professionals (including coordination of social and home-health supports in the community).
- The use of predictive analytics to guarantee minimal levels of care across Italy's 20 independent regional health systems.

11. <https://www.pnrr.salute.gov.it/portale/pnrrsalute/dettaglioContenutiPNRRSalute.jsp?lingua=italiano&id=5833&area=PNRR-Salute&menu=missionesalute>

SECTION 3. Impact of digitalisation on job quality in the sectors

3.1 Electricity sector

3.1.1 Selected job quality dimensions

The most interesting evidence of the impact of digitalisation on job quality in the electricity sector is related to work organisation ⁽¹²⁾. As illustrated by our interviewees and participants in the focus group, Workforce Management Programs (WMPs) were developed for workers who operate to maintain the electricity grid. They work in teams and need to intervene in case of malfunctions along the line. Before the introduction of WMP, workers started their working days by visiting the office to receive the list of interventions. Nowadays, thanks to WMPs, workers start their working day directly from home, as new devices provide them with a list of tasks. Once they have completed these interventions, they must perform some administrative tasks in order to 'close' the work procedure. This change has improved workers' lives, as they travel less but also because they had to acquire new competences, moving from being mainly operative workers towards administrative and managerial tasks. Workers had to become progressively more multi-skilled. Also, the use of drones to carry out the inspections and evaluate the conditions of the grids has meant a need for enhanced competences in electricity companies, an issue addressed by the hiring of new personnel with specific competences and upskilling of the existing workforce.

The tracking and guidance applications described above are regarded mainly negatively by workers. In particular, the monitoring/tracking activity is in addition to the normal working tasks, and workers are required to document constantly, by means of pictures, the work done. This makes work slower, as the monitoring activity takes time. Moreover, workers believe that their work has become less safe because often they are expected to work with one hand, sometimes also in dangerous positions, while taking pictures with the other.

Workers regard the guidance applications as useful, because they give an explanation of the work to be conducted; however they think that these tutorials reduce the competences of the workforce. Because of this application, it is now possible to have workers with little experience who can perform their duties just following the instructions from the application (FG2). According to the workers attending the focus group, this has allowed their company to reduce labour costs, as many tasks can be performed by external companies with a less experienced workforce, often belonging to sectors applying different and less expensive national collective CBAs.

12. Other dimensions of job quality have been studied in the full country report for the project. These include working time, health and safety, reconciling work and personal life, skills and learning, career prospects and employment security and worker's rights. Other dimensions of job quality have been studied in the more comprehensive Italian country report (see the project website <https://www.ose.be/digiqualpub>)

Drones are judged very positively because they can help to detect problems on the grid in a safe way. They also are perceived as a new technology that requires real upskilling and new competences. Smart glasses are used to collect pictures and documents for monitoring work activity in real time in a different and more comfortable way. This helps when workers need further remote assistance from colleagues. They do not really change the work either positively or negatively, but provide an economic advantage for the company because fewer workers are required for fixing problems along the grid (FG2).

One result of digitalisation has been to allow the company to rely more on digital tools such as smartphone applications to coordinate and guide the work to be performed. This has had two major consequences for workers in the field: the number of people in the team has been reduced (from 4-5 to 2-3) and they must monitor their work step by step. The combination of these two factors has, according to the focus group participants, resulted in a significant increase in work intensity because *'the manual and technical work to be done is the same but now we have some additional tasks linked to the monitoring activity'* (FG2.1). Also, autonomy has decreased significantly because all workers, including the most experienced, are required to follow the instructions provided by the application to fix a problem on the grid. Therefore, workers have less autonomy in all aspects: in task scheduling, in task organisation and in problem solving. Following the instructions slows down work processes, so workers who need to meet the deadlines have to work without following the instructions at their own risk. Cooperation among colleagues has not changed, while surveillance by supervisors has increased as all the work is to be tracked and monitored step by step (FG2).

The various digital technologies applied have had differing impacts on health and safety: both WMPs and drones have improved health and safety. WMPs allow workers to travel less, thus reducing exposure to the risk of accidents, while drones enable remote inspections in places such as tunnels or other risky locations (FG2).

As explained before, tracking and guidance applications are regarded mainly negatively by field workers. The monitoring/tracking activity is in addition to the normal working tasks, and workers are required to document constantly the work they have done.

Because of these aspects, in general terms job satisfaction has declined since the introduction of digital devices. However, workers in the focus group believe that technology has not impacted the quality of the service provided.

3.1.2 Conclusions for the sector

Digitalisation in the electricity sector has had both positive and negative impacts on job quality, depending mainly on the profession and on the technologies applied. In general terms, the increasing possibility to monitor electric networks remotely on the smart grids has led to a reduction of the workforce needed to work along the distribution lines, reducing employment security. The possibility, however, for technicians to start their shift directly from home, without going to the office (made possible by tablets onboard their vans that provide mobile access to all the required data and information) has improved workers' lives, as they travel less and have to acquire new competences, moving from being mainly operational workers to taking on administrative and managerial tasks. Workers have had to become progressively more multi-skilled. Also, the use of drones to make the inspections and evaluate the conditions of the grids has enhanced the competences needed in electricity companies, an issue addressed by the hiring of new personnel with specific competences and upskilling of the existing workforce.

However, the use of applications and tablets to monitor and track working activities for technicians working on-site has increased the time required to complete tasks, and made work more intense, and more unsafe. Finally, for those workers starting teleworking from home during the pandemic, working and life conditions have mainly improved, although the blurred boundaries between work and private life can cause stress and overload.

3.2 Public administration sector

3.2.1 Selected job quality dimensions

Digitalisation in the public administration sector has impacted many dimensions of job quality, including working time, health and safety, skills and learning, the balance between work and personal life, and workers' rights.

With limited experience with remote work, most public administration workers were forced into work-from-home arrangements during the pandemic. Unprepared for this new way of work, employees experienced a blurring of boundaries, as one focus group participant recalled: *'... regarding workload, I remember that many colleagues received phone calls or emails from their direct supervisor or department head, outside of normal working hours, that created such a heavy workday that you can't even call it the 'workday' anymore. Some were receiving calls at 7:30, 8:00 PM, long after the workday had ended...'* (FG1.8)

Some workers expressed concerns about the impact of remote working on their physical and mental health. In the project's online survey, DGQS, 21% of respondents in the public sector reported a worsening of conditions due to digital tools, and 20% reported digital tools causing new physical conditions or pain. Of those reporting physical problems, 24% reported vision problems,

17% back pain, 16% neck pain and 12% physical fatigue. In terms of mental health, 14% of survey respondents in this sector reported digital tools causing new psychological problems and 8% report digital tools aggravating an existing psychological condition. Mental health conditions cited included mental fatigue (32%), anxiety (21%), demotivation (15%) and stress (12%).

Skills and learning were often cited as the reason for the lack of adoption of tools. In one telling anecdote, the interviewee recalls, two weeks into the first lockdown, a co-worker asking ‘can you tell me how to check my email from home?’ (INT2). However, we also found positive examples of how ongoing investments in training, going back years if not decades, have allowed the employees at INPS to welcome the digital changes (or ‘informatisation’) that have helped make their workflow and processes easier. Here, little resistance to digital tools was noted, because workers in general see these as tools that help improve their work experience and provide better, more efficient services to users. In some cases (INT2), younger employees were seen as a source of innovation, as they bring a set of skills and a more general attitude and aptitude regarding technology to the work than their older colleagues.

3.2.2 Conclusions for the sector

It is challenging to summarise the situation in the public administration, as there appear to be significant differences from one agency to another, and among offices within the same agency. To account for this discrepancy, we decided to focus interviews on agencies that were more advanced at using digital processes (phase two digitalisation), to highlight best practices. These agencies, such as the social security system (INPS), perhaps because of their regular interactions with both businesses and individual users, had decades of experience with digitalisation under their belts. Here, levels of equipment, training and support were much higher than in other agencies. The Covid-19 pandemic forced public administration employees into working from home, frequently under quite adverse conditions. Lack of adequate equipment, training, ways to securely access data remotely hampered workers’ ability to continue to provide services. Here the union often played a critical role, helping to create a network for employees to draw on, advocating for their needs, and helping to get offices back on-line quickly following the shock of the initial lockdown order. In some cases, union delegates took it upon themselves to organise remote work.

The importance of training and prior experiences with remote platforms was fundamental to helping some offices and agencies be more prepared to respond to working from home, including having colleagues with experience working remotely whom others could draw on for support. There is widespread support for the continuation and expansion of remote and agile work, though this support is by far universal, particularly among workers with pre-existing mental health conditions or less strong social networks outside of work. Throughout the public administration, however, we found evidence of bright spots, or islands of innovation, usually driven by individual leaders in specific departments, as opposed to larger policy directives.

3.3 Hospital sector

3.3.1 Selected job quality dimensions

Within the hospital sector, one of the areas most affected by digitalisation within the public sector, the main impacts on job quality relate to work organisation and health and safety. Since skills and training are important enablers of the use of technology, we share some results from the DGQS survey regarding this domain.

Regarding work organisation, digitalisation has primarily served to make work and work-flow easier, while providing better outcomes for patients. Because healthcare is fundamentally relational in nature, technology can supplement the work of individuals, but not replace the human dimension. As one trade unionist put it: *'you can't send a computer [to a patient]. Technology gives you more tools with which to intervene, but you [the professional] have to intervene'* (INT9). 57% of those surveyed in the hospital sector responded that digital tools have reduced the time needed for routine tasks, and 52% responded that digital tools increased their autonomy in completing and scheduling tasks, while 53% said technology improved task coordination. Digital tools, according to survey respondents, have been less effective at improving coordination among colleagues, oversight of tasks by supervisors and areas of internal/external assessment. According to one interviewee (INT9), technologies have improved the speed with which laboratory diagnoses can be conducted, the ability of the doctor on call to conduct certain tests (e.g., ultrasound) him/herself, while reducing the physical burdens on operators associated with lifting and moving patients. The use of digital tools, like EMHR and other technology, to coordinate patient intake and care also facilitates improved follow-up of patients post-discharge. For example, hospital staff can automatically schedule follow-up visits and tests with patients, which improves outcomes and reduces re-admissions. Another example of how technology has impacted – or perhaps more accurately enabled – change regards ambulances. In the Emilia-Romagna region, ambulance crews are no longer required to include a medical doctor, as long as there is there is a skilled nurse ('emergency technician') aboard. The emergency nurse now consults remotely with the emergency doctor to determine the best course of treatment based on the specific emergency (INT12).

Digital tools within the hospital have an impact on both worker and patient safety. For example, technologies that assist operators with lifting and moving patients enhance both outcomes. Many survey respondents indicated that new tools and methods did not impact physical health. And yet, one in three indicated that new tools and methods either triggered a new condition or exacerbated an existing condition. The most common types of conditions reported were vision problems, as well as neck and back pains. Most respondents indicated no impact on mental health, while 21% reported new mental health conditions or the exacerbation of an existing condition by digital tools and methods. Mental fatigue, stress and anxiety were the most prevalent mental health concerns

raised. This finding merits deeper examination to determine whether or not technology is the cause, given the effect of the Covid-19 pandemic and depleted staffing levels within healthcare.

Training within the sector focuses on the use of new digital equipment and tools, as well as proper protocols, to improve patient outcomes, especially reducing hospital acquired infections, as pointed out by an interviewee (INT9). Regarding digital tools, 49% of DGQS survey respondents indicated that they had not received formal training in digital tools. It is worth noting however that more than half who said they received no formal training did learn 'on the job' and from peers. Nearly 30% of survey respondents in the hospital sector reported having received only training in specific digital tools. Related to this, 32% of DGQS survey respondents reported having to learn both general digital literacy skills and specific digital skills, while 30% reported having to learn specific digital skills. 18% felt that the training provided totally matched their needs, while 56% said the training partly met their needs, with regular updates required.

3.3.2 Conclusions for the sector

The healthcare system has been impacted significantly by technology and will see further and accelerated changes in the future, driven in large part by the *NextGenerationEU* funds dedicated to health care. Although this sector did not experience the same widespread use of remote work under Covid-19 as the public administration, the pandemic was nonetheless a catalytic event, encouraging the widespread use of technology (EMHR) that was already in place, but had been scarcely utilized by patients and professionals. As a result, patient care can be more effectively coordinated, including post-discharge; doctors and patients regularly use the EMHR, reducing the number of office visits required, potentially freeing up staff to provide greater attention to patients who need more support in navigating the healthcare system. As the healthcare system in Italy remains highly fragmented, the degree to which technologies are implemented, the quality of patient care and the quality of work vary widely across the system.

Despite a system that is awash with new technologies, we see evidence of inadequate training, especially in general digital literacy, and perhaps an over-reliance on on-the-job training. This will no doubt impact the ability of workers to fully take advantage of new technologies, both to their own benefit and to the benefit of patients. While we have seen the ability of technology to enhance safety in some areas, new digital technologies also appear to exacerbate existing conditions or create new ones, including mental health conditions. Of course, the data we collected must be understood against the backdrop of the Covid-19 pandemic, which placed the healthcare system under major strain while forcing it into the widespread adoption of new technologies.

SECTION 4. Impact of digitalisation on social dialogue

4.1 Social dialogue on digitalisation in the electricity sector

According to all of the interviews, in the electricity sector, given the very small number of very large companies which dominate the industrial structure, company agreements tend to influence industry-wide collective agreements. This is certainly true for the ex-monopolistic, state-owned company Enel, which employs about 57% of total workers in the sector. This is the reason why, as is currently the case, national collective bargaining is often preempted by company agreements in Enel, which set the most strategic elements that will later be developed in the national collective bargaining.

The last industry-wide agreement was signed in 2019, and the bargaining process for its renewal started between May and June 2022. The key issues addressed in the 2019 agreement were:

- Specific attention paid to young workers, with the introduction of mechanisms that could allow them to accumulate additional resources to be transferred in the future when they retire.
- Introduction of specific measures to tackle harassment or gender-based violence in the workplace (a very innovative issue addressed for the first time in an industry-wide CBA).
- The inclusion in the CBA of companies working on renewable sources of energy with fewer than 25 employees, before inclusion in other industry-wide CBAs such as those for the mechanical or the trade sector. This made it possible to have one CBA only for the entire electricity sector, thus increasing salaries and improving workers' rights. Moreover, from a strategic perspective this point was particularly important, as the renewable energy sector is growing and will become more and more significant in the future.

In the CBA signed in 2019 ⁽¹³⁾ there were no issues specifically linked to digitalisation. However, in the current process for renewal of the industry-wide CBA at least two topics related to digitalisation will be addressed, as illustrated in the following section: remote work and the classification of professional profiles.

One of the trade unions' current priorities for the collective bargaining agenda on digitalisation is the regulation of remote working and the related issues, such as the right to disconnect, work-life balance, privacy issues and surveillance of workers. Another priority is the change in the classification of professional profiles, which is indirectly linked to digitalisation processes.

13. https://www.gse.it/documenti_site/Documenti%20GSE/Societ%C3%A0%20trasparente/Personale/Contrattazione%20collettiva/Rinnovo%20Contratto%20Collettivo%20Nazionale%20di%20Lavoro%20per%20i%20Lavoratori%20Addetti%20al%20Settore%20Elettrico.pdf

An agreement on remote working has recently ⁽¹⁴⁾ been signed in Enel and, as stated above, given the role of this company in the sector, this agreement will probably influence the outcome of collective bargaining at industry level. The key values that have been recalled and guided the agreement are:

- ‘Consolidation of a leadership open to discussion, sensitive to people's well-being, results-oriented, leaving wide freedom and delegation to the worker in line with Enel ‘Open Power’ values: trust, responsibility, innovation and proactivity.
- Voluntary participation in remote working.
- Prevailing role of the company headquarters as a meeting place for activities [...].
- Strengthening of good practices aiming at better protecting work life integration, including digital disconnection.
- Development of the transversal skills and abilities necessary to face the challenges of the future and to enhance workers’ talent.
- Inclusion as a driver to ensure the success of a transformation where the individual is central [...].
- Attention to the needs of people both during on-site activities and in remote working.
- Intensification of social dialogue as a tool for activating change.’

The collective agreement establishes a maximum number of working days per month that can be conducted remotely, states that remote working must be voluntary and that there must be rules guaranteeing the right to disconnect and a correct balance between working times and personal life.

Another priority for the collective bargaining agenda on digitalisation in the electricity sector is the change in the classification of professional profiles. This aspect is indirectly linked to digitalisation processes and is very important. Through digitalisation processes and the transition towards renewable energies, the competencies in the sector are changing rapidly, as are workers’ professional profiles. Technical and technological instruments are developing quickly, requiring new competences. In response, trade unions are trying to reflect and accompany this evolutionary process in the industry-wide agreements, in order that emerging profiles can be evaluated properly from an economic perspective and to capture emerging needs and rights.

14. Signed on the 21st of March 2022.

It is important to point out here that on 29 March 2022, an agreement was signed between the trade unions (Filctem-Cgil, Flaei-Cisl and Uiltec-Uil) and Enel, the largest company in the sector, called 'Statute of the Person' ⁽¹⁵⁾; this addressed a wide range of key issues related to the quality of work and workers' well-being. The agreement states that 'to support the green and digital transition, enhance innovation, economic growth, promoting economic and social inclusion and guaranteeing quality employment, the Parties encourage the implementation of programs to improve existing skills to access courses to advance professionally (upskilling) and learning new ones (reskilling), also enhancing transversal skills and soft skills, in collaboration with the dedicated bilateral bodies. [...].'

4.2 Social dialogue on digitalisation in the public administrations sector

4.2.1 Social dialogue on digitalisation in the sector

On 5 January 2022, ARAN, for the public administration, and the most representative unions signed the 2019–2022 Central Functions collective bargaining agreement. Digitalisation is a central theme in this agreement: it represents possibly the first attempt within the EU to address agile and remote work in a national-level collective agreement. In the interviews we conducted, there was no sense that trade unions are acting defensively, simply adapting to the inevitability of remote and agile work. On the contrary, most of those interviewed appear to have embraced these approaches as strategic, enhancing quality of working life, driving innovation within the public administration, and improving the quality of services. This notion of a potential 'win-win-win', in which workers, the agency and users all benefit from remote and agile work, appears to be driven by the experience of the Covid-19 pandemic, when workers, forced to use new digital tools, were – in some instances – able to move away from a time-based concept of work to a more outcomes-based concept, and create new ways of providing better services, closer to citizens. The hope is, then, that it will be possible to define the concepts of remote and agile work, and create mechanisms, through collective bargaining and joint examination, that can result in the extension of remote and smart work to, potentially, all employees.

4.2.2 Trade union approaches and priorities for the collective bargaining agenda on digitalisation

One of the overarching priorities of the trade unions in public administration was to move the concepts of remote and agile work out of the niche realm, something that a manager would 'concede' to a worker on the basis of an individual characteristic (e.g., young children at home), to a place where remote and agile work were considered just as legitimate a way of working as traditional office work.

15. <https://www.filctemlazio.it/file/enelprotocollocontrattazioneinclusivastatutodellapersona.pdf>

The second element in the trade union strategy was to shift from a notion of ‘who is “smart-able”?’ to ‘what phases or cycles of work are smart-able?’. By shifting from positions to activities, the aim is to potentially enable all employees, regardless of their specific role, to benefit from some degree of agile or remote work.

While purely ‘agile’ work means that employees work toward objectives, without regard to time, the agreement provides protection regarding the number of hours in a day or week that someone working remotely should be ‘contact-able’ (without the requirement to provide an immediate response) as well as their right to disconnect. Both terms are defined with reference to the CBA’s defined number of work hours in a day or week (e.g., 36 hours per week). Unions regard both the definition of when someone should make themselves available to be contacted, and when they have the right to disconnect as key protections.

Remote and agile work continue to be contentious issues. In late 2021, following months of forced working from home, a Presidential Decree declared in-office work as the ‘standard form’ of work in the public administration. A follow-up Ministerial Circular re-iterated this premise, while describing remote and agile work as measures to prevent against infection in the workplace (Ministry for Public Administration, 2022). Notwithstanding this resistance to remote and agile work, unions succeeded in introducing both modalities as a right of most employees in the public sector.

The aim of the national-level agreement for the Central Functions is to provide definitions and establish clear guidelines within which remote and agile work can be further negotiated. The agreement envisions this happening at the second level and using, in the words of one interviewee, ‘the most advanced instrument we have by law: joint examination (*il confronto*)’ (INT 6).

Given the innovative nature of the newly negotiated Central Functions agreement with regard to agile and remote work, it would be of benefit to look more closely at the language used, in order to understand the trade unions’ strategy.

Agile and remote work are addressed under Title V of the agreement, which is defined as ‘having the goal of improving public service, organizational innovation while guaranteeing work-life balance.’ It establishes that remote or agile work does not alter the nature of the employment relationship, and guarantees equal treatment for agile and remote workers. Importantly, the agreement establishes agile and remote work as a right of all employees, wherever the nature of the work permits it. To benefit from remote or agile work, an individual agreement is required. The CBA also limits the total number of hours in a day in which an agile worker must be available to be contacted, and makes reference to the average number of working hours in a day, as well as giving a right to disconnect for 11 consecutive hours. During the period of availability, an agile

worker has the same rights to time off as any other worker. The agreement also calls for workers to be provided with adequate training so as to allow agile workers to experience greater autonomy and empowerment (the words used by interviewees to describe the desired effect of agile work included 'self-management' and 'self-determination.')

Importantly, the CBA makes a distinction between agile and remote work. Substantively, agile work should be driven by objectives and maximum freedom for the individual worker, while remote work retains many of the features of traditional work arrangements (i.e., time, not objectives, is key), providing flexibility with regard to where the individual worker carries out their duties, but not necessarily to how or what duties to carry out (as in the case of agile work). The section on remote work makes reference to many of the same clauses as for agile work, including the requirement for the arrangement to be voluntary and based on an individual agreement.

As mentioned above, the goal of the national-level agreement is to provide a framework and guidelines for determining what activities can be carried out via smart- or remote-working; it delegates the application of these guidelines to second tier bargaining, joint examination and the stipulation of individual agreements.

4.2.3 Conclusions

The pandemic acted as a catalyst for the widespread adoption of new digital technologies, as employees were sent home *en masse* to avoid Covid-19, but were still required to provide citizens with the same level and quality of services. As the expression goes, 'necessity is the mother of all invention.'

As already mentioned, leadership, employee training and internal capacity all play important roles in the effective adoption of new technologies. Leadership can come from management, labour or both. Where agencies had already made investments in training, the adoption of digital tools was facilitated. Pre-existing pilot-programmes, which meant there was already some expertise among colleagues, made it easier to expand the use of new technologies that allowed employees to work remotely.

The overarching theme is the question of remote and agile work, with workers' representatives advocating for making these modalities a right of all employees (within certain limits), both as a means of providing greater flexibility to employees but also, potentially, as a way to provide better quality services to citizens when and where those services are needed.

While the inclusion of remote and agile work within the latest CBAs for public sector workers is a clear victory for labour, it is one that creates both a challenge and an opportunity, as the implementation of such work arrangements requires the negotiation of secondary CBAs and,

ultimately, the creation of an individual plan, determining work objectives, modality and place(s) of work, technology needed, etc. This is an opportunity to massively introduce greater flexibility for employees and experiment with new ways of providing services. The challenge is that successfully implementing these new forms of work will hinge on the ability of social partners, locally, to jointly negotiate and implement these arrangements.

4.3 Social dialogue on digitalisation in the hospital sector

Though not specifically addressed in national collective agreements, digitalisation has become a priority, as is reflected in the creation, as part of the national public sector agreements covering the period 2016-2018, of the Standing Committee on Innovation (*Organismo Paritetico per l'Innovazione*, OPI), a type of roundtable at which social partners sit, in equal numbers. The national agreement calls for the establishment of standing committees in agencies with a minimum of 300 employees. The formation of the OPI is an example of the interplay between the three different rights (bargaining, information and consultation, joint examination).

OPI was established through the collective bargaining process in 2018, at the time of the renewal of the 2016-2018 agreement. OPI was set up for the purpose of creating a 'new relational model, with the goal of encouraging the participation of unions... in everything that has to do with new, complex, experimental projects that impact the organisation of the administration...' ⁽¹⁶⁾ Members of the local OPIs have the right to information and consultation, to engage in dialogue around the implementation of specific changes, and have the ability to propose changes or topics for future collective bargaining. Finally, as part of the latest agreement for the hospital sector, in line with the Central Functions agreement, workers in this sector enjoy the same rights to remote and agile work as those defined in the public administration agreement, according to the same modalities as those outlined in that agreement.

Regarding the role of unions and collective bargaining in digitalisation and organisational change, one interviewee summed it up like this: '*Collective bargaining is the real value-added... because managers and trade unionists were far-sighted. They looked to the healthcare of the future [...] they invested in the development of organisational models [...] this is how we addressed major challenges like the pandemic, organisational changes, structures, skills and capacity. The bargaining table is forward-looking [...]* (INT 9).

Trade unions are keen to influence and govern the implementation of new technologies, a task rendered more difficult by the exclusion of work organisation as a bargainable item by the reform of bargaining in the public sector. In the local contexts where there is a strong history and culture of social dialogue, this has had little impact on the ability of unions to negotiate changes impacting

16. <https://www.cnel.it/Amministrazione-Trasparente/Personale/Organismo-paritetico-per-linnovazione-OPI>

work organisation. As an example of labour relations' ability to govern technological changes, one leader interviewed, from Emilia-Romagna, cited the consolidation of several emergency call centres into one centre. Through joint examination, employee representatives were able to achieve important changes to the design of the new centre, and influence work organisation: an example that trade union leaders were particularly proud of. This was despite the formal exclusion of work organisation from bargaining: *'politically in Emilia-Romagna you are not excluded from issues of work organisation.'* (INT12).

Still, trade union leaders are open about the challenges posed by new technologies to the unions' agendas: *'the risk is that the complexity and specificity of the material leaves the union at a disadvantage.'* As a result, unions tend to focus on the *'systemic level,'* negotiating on *'organisational systems' rather than specific technologies.'* (INT12)

This last quote seems to highlight the challenges posed by phase three, digital transformation, an adaptive challenge that requires new IR practices and new tools, given the stakes and the socio-technical nature of the changes yet to come.

To sum up, the healthcare system in Italy has been particularly impacted by the introduction of new technologies, with more on the way in the coming years. Here, as in the public administration, regional differences impact the adoption and utilisation of new technologies. The quality of industrial relations locally is a major factor in the effectiveness of these new technologies, in terms of how they are adopted and used in the workplace – and who they benefit.

As one of our interviewees put it, the increasing *'specificity'* and *'complexity'* of the new technologies is a risk for industrial relations, and in particular for unions, which may lack the expertise to be able to negotiate the adoption and implementation of specific technologies. Yet these technologies increasingly have an impact on the organisation of work, employment and on the quality of services. Unless unions can develop the ability to understand and negotiate the implementation of specific technologies within the workplace – technologies which increasingly impact the *'organisational systems'* themselves – the risks will only grow.

SECTION 5. Cross-cutting conclusions

To date, industrial relations in Italy have attempted to govern the impacts of these changes through collective bargaining, joint examination ('confronto') and information and consultation. Our field research indicates that the degree to which industrial relations have been successful appears to be linked to the abilities of the leadership (management, trade unions or both) and the context within which labour relations exist locally. These existing tools and practices also appear to be effective in jointly governing, through bargaining and social dialogue, phase one and phase two digitalisation. Whether existing IR practices and leadership competencies will be effective in addressing phase three – digital transformation – remains to be seen. Evidence points to the need for social partners to integrate new IR practices in order to be able to jointly, and equitably, govern digital transformation.

According to the literature, digital transformation is a 'paradigm shift:' moving beyond adapting existing processes to new technologies, transformation places unique pressures on organisations to move away from a model based on hierarchy, organisational silos, long-term planning, the fragmentation of job-tasks and visual management, toward a model that is user (citizen) centric, flexible and results-oriented, where top-down management approaches and hierarchical control are replaced by greater horizontal collaboration among workers guided by a shared purpose (Bacci et al. 2021). Transformation radically changes the 'way organisations operate and how organisations realise value for customers,' and requires organisations to rethink how they organise and manage, as well as calling for more holistic thinking (Grovers and van Almsvoort 2019). In terms of this type of change, our research reveals that the Italian public sector is still in its infancy. Evidence suggests, however, that the pressures (and possibilities) to achieve transformation will only grow. Finally, from the perspective of social dialogue, it is important to emphasise that new technologies are not neutral: these new technologies reflect the political, social and economic context in which they were developed, and their implementation has an impact on the balance of power and the distribution of resources and benefits within the workplace and society. How these new technologies are implemented will determine to whom the benefits of these new technologies accrue.

Digital transformation fits the definition of an 'adaptive challenge.' Adaptive challenges place special stresses on leaders (both in management and labour). Effectively responding to these types of challenges requires a shift away from top-down decision making and a reliance on external expertise, toward greater participation in jointly defining the problems and the solutions, as well as direct participation of those most affected by the new technologies in their implementation (Heifetz et al. 2009). One cannot apply old thinking and ways of working to new technologies and hope to fully realise the benefits, for workers, organisations and users, of those new technologies (Grovers and van Almsvoort 2019; Ribarova et al. 2022). This all implies the

need for the current IR system within the public sector to learn and integrate new practices, capable of addressing these unprecedented challenges.

Italy has a rich history of using IR to jointly negotiate and monitor changes (phase one and phase two digitisation and digitalisation). Specifically regarding digitalisation, there was the recognition by CGIL, Italy's largest labour confederation, of the need to 'negotiate the algorithm,' implying the need for unions to develop deeper expertise in the specific types of digital technologies affecting work. We see this history reflected in the case studies as well, for example the inclusion of a right to remote and smart work in the new public administration agreements, the creation of bi-lateral commissions (OPI) for addressing and monitoring changes that impact work organisation, the negotiation of the *Statute of the Person* in Enel. However, as in other EU countries, there is much less experience of joint (management and labour) implementation, at the level of the workplace, through direct worker participation in specific changes (Ribarova et al. 2022). Research, however, points to the need for a major shift toward direct participation in the adoption and implementation of new technologies, especially regarding phase three transformation, in the workplace. This would require a shift in thinking among unions and management regarding the role of industrial relations in implementing specific changes at the workplace level (Guidelines for Good Practice of Direct Participation; Bacci et al. 2021).

When it comes to direct participation schemes, unions are understandably concerned about loss of autonomy and of their role as collective representatives of workers. However, there is also a risk associated with not promoting such an approach: as digital technologies impact work more and more, unions may risk being seen as being unable to govern the implementation of these technologies for the benefit of workers and users. This risk is highlighted also by the DGQS survey. Participants were asked if formal information and consultation procedures were followed 'when planning and designing the digitalisation of work processes and tools at your workplace' regarding 'the process of digitalisation and its implementation strategy.' 30% of public administration respondents said 'I don't know,' while 48% said 'no, such procedures were not followed.' In healthcare, 45% responded 'I don't know' and 37% responded 'no, such procedures were not followed.' In the electricity sector, 41% said 'I don't know' and 19% said 'no, such procedures were not followed' in response to the same question. Respondents were also asked 'In your view, how effective has the trade union been in negotiating the socially sustainable management of digitalisation and technological change' in the workplace. 26% of public administration respondents said 'I don't know,' while 23% said 'not effective at all.' Among healthcare respondents, 36% said 'I don't know' and 18% said 'not effective at all.' (In the electricity sector, on the other hand, 70% of respondents saw the union as moderately to highly effective in this regard.)

As the pace of digital transformation picks up in the coming years, there is the risk that perceptions such as these, that unions are unable to govern these changes, may only increase, further disadvantaging labour. There is also, however, ample research to support the view that direct worker participation in implementing changes in the workplace, in the context of robust, collaborative labour relations, can improve outcomes for workers, organisations and users, as well as strengthening the role of unions as collective representatives of workers' interests (Ribarova et al. 2022; Rubinstein and McCarthy 2016). By experimenting with new ways of joint problem-solving and decision making, and continuous, direct participation in the workplace, leaders can tackle the adaptive challenge presented by digital transformation, to the benefit of workers, organisations and citizens, while strengthening the role and ability of unions to collectively represent the interests of workers. As researchers, we also posit that public sector unions have a unique, strategic role within the larger economy and society, when it comes to pioneering new IR practices, including around direct participation. Because most public entities are not bound by the requirement to make a profit, there may be greater room and appetite among managers for experimentation with new IR models and new forms of participation. In this sense, public sector unions may be in a position to 'break new ground' in implementing new practices that can then be transferred to the private sector due to the confederal (and therefore cross-cutting or transversal) nature of unions in Italy.

SECTION 6. Policy recommendations

As we have seen, the changes being wrought by digitalisation are both deep and broad. And because the social, political and economic context within which new technologies are developed and implemented has an impact on the balance of power within the workplace and society, who benefits from digitalisation is contested terrain. This reality, the non-neutrality of technology, opens possibilities of both increasing conflict in industrial relations, as well as increasing collaboration.

Ensuring that the benefits of new technology accrue evenly across society, and particularly include workers, will require new levels of awareness and understanding of digitalisation, new skills, approaches to bargaining that include the entire value chain, and the joint governance of change, including at the level of the workplace. Below, we flesh out in more detail specific proposals for policy makers and social partners that can help ensure that digitalisation brings benefits to workers, as well as to users and organisations/companies.

Awareness and training

Across the sectors studied in this report, a greater need for training became clear. Workers, managers and union delegates should receive a foundational (or baseline) level of training that: a) raises awareness about the nature of technology-driven change in general (including and

especially the non-neutral nature of technology); b) provides training in digital literacy and numeracy; c) enhances relational and team-building skills; and d) trains participants in change management. This suite of skills is required so that individuals, teams and organisations can make conscious choices about how best to implement new technologies, including understanding the impacts on work organisation, quality of work and quality of service. It is important that training be ongoing (life-long), and experiential (Ceccotti 2023). Ongoing training of this kind will benefit unions in their ability to understand digitalisation and to represent workers effectively, as well as workers and management. Finally, workers should have a right to lifelong training.

Including the whole value chain

Digital technologies break down and blur boundaries between roles and organisations, and enable greater use of outsourced labour and sub-CBAing. Because of these dynamics, it is essential that labour strategies consider the entire value chain, and not simply traditional actors. We see examples of this especially in the electricity sector, where unions have successfully included smaller start-up firms (active in renewables) in the industry-wide collective bargaining agreement.

Governing change

Digital technologies are introducing radical changes into organisations and whole industries, affecting processes, work organisation, the quality and quantity of employment, wages, and health and safety. These new technologies are also redefining and blurring boundaries, between roles, organisations and industries, and between user and producer (not for nothing is this era referred to as the 'fourth industrial revolution'). These profound changes, combined with the acknowledgement that technology is not neutral (socially, politically, economically) brings a need to strengthen the ability of social partners, and unions in particular, to collectively govern these changes. It is in this spirit that we offer the following recommendations:

Legal and regulatory framework: the appropriate legal and regulatory framework should be created to ensure that new technologies put people at the centre, including criteria for the use and development of algorithms, AI and other technologies; regulation should ensure that the public sector does not become dependent on a narrow set of private-sector solution providers; regulation should also require social dialogue regarding the ends (intents) of adopting new technologies, and joint negotiation around their implementation. Social partners should actively monitor the impacts of new technologies and have viable enforcement mechanisms when the impacts stray from the agreed-upon intents; new technologies, and their implementation, should comply with the rights of workers as outlined in the Workers' Statute.

Expertise: trade unions need to have the required expertise to understand and independently develop positions on the use of specific technologies. During negotiations, unions should have access to subject-matter experts so that they can effectively represent workers' interests based on

their independent view of technologies. Joint bodies (bi-lateral commissions, standing committees, etc.) should have the support of subject matter experts that social partners view as legitimately independent to help them make informed decisions. Initiatives such as the development of the CGIL initiative 'Labour 4.0' and the Forum on the Digital Transition are important steps in this regard¹⁷.

Training: the deep and wide-ranging impacts of technology, along with its specificity and complexity, require significant investments in training, not just for workers but also for their representatives and other social partners. Training should provide broad awareness of the kinds of technologies affecting work, with an emphasis on the non-neutral nature of technology and the choices available to social partners regarding the selection of new technologies and their implementation. Union delegates and managers should also receive training in new forms of technology-enabled work organisation, including best practices for implementing remote and agile work arrangements (so much of the implementation of unions' vision for remote and agile work will depend on the abilities of managers and delegates at the local level).

Joint implementation: the purpose and goals of new technologies should be jointly negotiated. Social partners should jointly monitor implementation against those agreed-upon goals. Industrial relations should encourage direct worker participation in the selection and implementation of new technologies, especially when employment, job quality and work organisation are likely to be impacted. Direct participation should be encouraged, not as the unilateral prerogative of management, but as an extension of collective representation and existing union efforts to jointly govern the impact of changes on workers and work organisation. One such model is the Joint Union Management Steering Committee (JUMSC), proposed by the EU funded project DIRECT 2: *Expanding and Improving Workplace Democracy as a Prerequisite for Humanising Labour and the Work Environment*¹⁸. It should be noted that such joint management-labour structures are not a substitute for conflict, collective bargaining or the role of unions as workers representative, but an extension and deepening of existing practices into the workplace. Such an extension seems necessary, given the nature of the sweeping changes impacting work and to ensure that the benefits of those changes accrue to workers.

17. <https://www.collettiva.it/speciali/idea-diffusa-1-2023/>

18. <https://2.direct-project.org/library/english/84-guidelines-for-good-practice-of-direct-participationion>

REFERENCES

- Arpaia C.M., Ferro P., Giuzio W., Ivaldi G. and Monacelli D. (2016) L'e-government in Italia: situazione attuale, problemi e prospettive [E-government in Italy: Current Situation, Problems and Perspectives], Questioni di Economia e Finanza, Occasional paper, Banca d'Italia. https://www.bancaditalia.it/pubblicazioni/gef/2016-0309/QEF_309_16.pdf
- Bacci A., Frieri F. and Sparaco S. (2021) Trasformazione Digitale & Smart Working nella Pubblica Amministrazione [Digital Transformation & Smart Working in the Public Administration], Maggioli S.p.A, Santarcangelo di Romagna.
- Battista L., Dazzi D. and Rymkevich O. (2022) Industry 4.0 and Trade Unions in Italy, Irel project. <https://irel.fmb.unimore.it/download/italy-industry-4-0-and-trade-unions-in-italy/?wpdmli=2257&refresh=6273ec5ddd9d1651764317>
- Ceccotti E. (2023) L'effetto della digitalizzazione in sanità [The Effect of Digitalisation in Healthcare], Collettiva. https://www.collettiva.it/speciali/idea-diffusa-1-2023/2023/02/23/news/idea-diffusa-digitalizzazione-sanita_-2767933/
- Cepiku D. (2018) Public administration characteristics and performance in EU28: Italy, The Public Administration in the EU 28, European Union.
- Cicchetti A. and Gasbarrini A. (2016) The Healthcare service in Italy: Regional variability, European Review for Medical and Pharmacological Sciences, 20 (1 Suppl), 1-3.
- Da Rold C. (2022) Più 2,3% di dipendenti del SSN nel 2020. Quante persone lavorano in sanità, veramente [2.3% More Employees in the NHS in 2020. How Many People Really Work in Healthcare], Il Sole 24 Ore, August 23.
- Dorigatti L. and Rinaldini M. (2021) Innovazione tecnologica, digitalizzazione e competitività del sistema produttivo nel Pnrr, (Technological Innovation, Digitalisation and Competitiveness of the Productive System in the PNRR) in Quaderni di Rassegna Sindacale, 2/2021.
- European Commission (2022) Digital Public Administration Factsheet 2022: Italy. https://joinup.ec.europa.eu/sites/default/files/inline-files/DPA_Factsheets_2021_Italy_vFINAL.pdf
- Garibaldo F. (2021) Il PNRR, Il sistema industriale europeo e la nuova fase internazionale [PNRR, the European Industrial System and the New International Phase], in Quaderni di Rassegna Sindacale, 2/2021.
- Grovers M. and van Almsvoort P. (2019) A Socio-Technical Perspective on the Digital Era: The Lowlands View, European Journal of Workplace Innovation, 4 (2), September, 144-159.
- Guidelines for Good Practice of direct Participation, Expanding and Improving Workplace Democracy as a Prerequisite for Humanising Labour and the Work Environment DIRECT II - VS/2020/0101 <https://2.direct-project.org/library/english/84-guidelines-for-good-practice-of-direct-participation>
- Heifetz R., Grashow A. and Linsky M. (2009) The Practice of Adaptive Leadership, Harvard University Press, Boston, MA.
- Mencarelli E. and Mereu M.G. (2021) Anticipazione dei fabbisogni professionali nel settore dell'energia elettrica [Anticipation of professional needs in the energy sector], Inapp. <https://oa.inapp.org/xmlui/handle/20.500.12916/846>.
- OECD (2014) OECD Reviews of Health Care Quality: Italy 2014: Raising Standards, OECD Publishing.
- Pianta M. (2021) La politica industriale al tempo del Pnrr [Industrial Policy in the Time of PNRR], in Rivista Il Mulino, n.2.

Ribarova E., O'Kelly K. and Gold M. (2022) FINAL PROJECT COMPARATIVE REPORT, Expanding and Improving Workplace Democracy as a Prerequisite for Humanising Labour and the Work Environment DIRECT II - VS/2020/0101.

Rizzica L. (2020) The Italian public sector workforce: recent evolution in the light of the rules on turnover, Occasional Papers, Banca d'Italia.

Rubinstein S. and McCarthy J. (2016) Union-Management Partnerships, Teacher Collaboration and Student Performance, ILR Review. [ILR660508 1..19 \(live-lectronimo-smlr.pantheon.org\)](https://www.pantheon.org/articles/rubinstein-s/rubinstein-s-mccarthy-j-union-management-partnerships-teacher-collaboration-and-student-performance-1191191.html)

Senatori I. and Spinelli C. (2021) (Re-)Regulating Remote Work in the Post-pandemic scenario: Lessons from the Italian experience, Italian Labour Law e-Journal, 1 (14).

Annex 1. List of interviews

ID	Gender	TU affiliation	TU affiliation	Occupation	Date	Online/ In person
INT 1	Male	Flaei Cisl Reti	CISL/Electricity	Secretary	7/3/22	Zoom
INT2	Male	UILPA	UIL/Central Functions	Delegate	1/3/22	Zoom
INT3	Male	ILCTEM	CGIL	Civil servant	4/5/22	Zoom
INT4	Male	FILCTEM	CGIL/Electricity	Secretary	28/03/22	Zoom
INT5	Male	FILCTEM	CGIL/Electricity	Secretary	28/03/22	Zoom
INT6	Male	FPCGIL	CGIL/Central Functions	Secretary	23/02/22	Zoom
INT7	Female	FPCGIL	CGIL/Local Functions	Secretary	17/03/22	In Person
INT8	Male	FPCGIL	CGIL/Central Functions	National Coordinator	25/03/22	Zoom
INT9	Female	CGIL	Emilia-Romagna Region	Civil servant	21/10/22	Telephone
INT10	Male	Emilia-Romagna Region	Health and hospitals	Worker	15/11/22	Teams
INT11	Male	Emilia-Romagna Region	Health and hospitals	Worker	15/11/22	Teams
INT12	Male	FPCGIL	CGIL/Healthcare	Secretary	17/11/22	In Person

Annex 2. List of focus groups

FG1: Public Administration

ID	Gender	TU affiliation	Sector	Occupation
FG 1.1	Female	FPCGIL (Funzione Pubblica – Confederazione Generale Italiana del Lavoro)	Local Functions	Civil servant
FG 1.2	Female	FPCGIL (Funzione Pubblica – Confederazione Generale Italiana del Lavoro)	Local Functions	Employee IT Services
FG 1.3	Male	FPCGIL (Funzione Pubblica – Confederazione Generale Italiana del Lavoro)	Central Functions	Civil servant
FG1.4	Female	FPCGIL (Funzione Pubblica – Confederazione Generale Italiana del Lavoro)	Central Functions	Employee
FG1.5	Female	FPCGIL (Funzione Pubblica – Confederazione Generale Italiana del Lavoro)	Central Functions	Social Worker
FG1.6	Male	FPCGIL (Funzione Pubblica – Confederazione Generale Italiana del Lavoro)	Local Functions	Civil servant
FG1.7	Male	FPCGIL (Funzione Pubblica – Confederazione Generale Italiana del Lavoro)	Central Functions	Employee
FG1.8	Male	FPCGIL (Funzione Pubblica – Confederazione Generale Italiana del Lavoro)	Central Functions	Employee
FG1.9	Male	FPCGIL (Funzione Pubblica – Confederazione Generale Italiana del Lavoro)	Healthcare	Administration

FG2: Electricity Sector

ID	Gender	TU affiliation	Sector	Occupation
FG2.1	Male	FILCTEM CGIL (Federazione italiana lavoratori della chimica, tessile, energia e manifatture - Confederazione Generale Italiana del Lavoro)	Chemistry, Textile, Energy, Industries	Electrician
FG2.2	Male	FILCTEM CGIL (Federazione italiana lavoratori della chimica, tessile, energia e manifatture - Confederazione Generale Italiana del Lavoro)	Chemistry, Textile, Energy, Industries	Electrician
FG2.3	Male	FILCTEM CGIL (Federazione italiana lavoratori della chimica, tessile, energia e manifatture - Confederazione Generale Italiana del Lavoro)	Chemistry, Textile, Energy, Industries	Electrician
FG2.4	Male	FILCTEM CGIL (Federazione italiana lavoratori della chimica, tessile, energia e manifatture - Confederazione Generale Italiana del Lavoro)	Chemistry, Textile, Energy, Industries	Electrician
FG2.5	Male	FILCTEM CGIL (Federazione italiana lavoratori della chimica, tessile, energia e manifatture - Confederazione Generale Italiana del Lavoro)	Chemistry, Textile, Energy, Industries	Electrician