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EXECUTIVE SUMMARY

This research paper 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.

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 hospitals. 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. From a methodological point of view, the following tools have been used: a) desktop research; b) twelve semi-structured interviews with key informants; c) an online survey of workers; and d) three focus groups with workers and trade union representatives in the selected sectors. Taken together, this information (qualitative and quantitative) has provided first-hand insights into the reality of digital change in public services.

Background information

Over the last decade, the debate on the effects of digitalisation on employment in Spain has become important, following the outbreak of the Covid-19 pandemic in 2020. The increase in interest in the topic is due to the impact of the crisis, which has helped to boost some pre-existing trends. Digital transformation has also become one of the central pillars of *NextGenerationEU*, which in Spain is being implemented through the National Recovery and Resilience Plan.

Since 2020, the Spanish digital strategy has been mainly deployed through two instruments, coordinated by the Ministry of Economic Affairs and Digital Transformation: the *Digital Spain 2025* agenda (recently updated to *Digital Spain 2026*) and the *Recovery, Transformation and Resilience Plan* (RTRP), which incorporates the various actions included in the agenda. Social dialogue has played a leading role in the laws promoted by the Ministry of Labour: both the law on remote work and the law on the labour rights of workers on digital platforms were agreed with the main trade unions (CCOO and UGT) and the main employers' organisations (CEOE and CEPYME).

In the 2022 Digital Economy and Society Index (DESI), the European Commission's mechanism for monitoring progress in digitalisation in Member States, Spain was in seventh place, obtaining a score of 60.8. This position is due, to a large extent, to the important progress made in digital public services, a strategy that has been promoted throughout the central state administration.

Job insecurity is a structural feature of employment in Spain, with a high level of temporary employment. This is why the debate on the repercussions of digitalisation on the quality of employment is of particular relevance in the Spanish context. The current lines of research focus

on the digitalisation and quality of employment, from different perspectives: occupational health – ergonomic studies and psychosocial risks; working conditions for platform workers; and, more recently, telework and the 'platformisation' of other sectors due to the increasing use of artificial intelligence. Much of the analysis refers to gaps related to gender, age or educational attainment.

Key findings

The incorporation of new technologies into the electricity sector has gone hand in hand with privatisation of the sector, with a change in business strategy and work organisation. Many new technologies have been introduced, both in personnel management and in the development of work processes. Although the intensification of work seems to be a common finding of the DIGIQU@LPUB survey, the interviews and the focus groups, there is no clear view on other impacts of new digital technologies. While the survey shows a somewhat positive perception of the resulting autonomy and the benefits of telework, the delegates interviewed and the focus group participants also highlight the negative impacts associated with increased individual responsibility, monitoring and increased competition between colleagues.

In recent years, collective bargaining has focused on the negotiation of various agreements which, while not directly addressing the company's digitalisation strategy, refer to it indirectly as a central element. Closely linked to the implications of digital change, an agreement has been reached on time tracking (associated with the digital clocking-in system), on teleworking and a final agreement on disconnection. In addition, a flexibility roundtable was set up, with the participation of the social partners, to monitor these agreements.

The public administration has undergone a very intense process of digital transformation in the last decade, boosted as a result of the pandemic: the implementation of digital public services has advanced rapidly and today public workers use a multitude of digital resources in their work processes and in the services provided to citizens.

Our analysis shows that the impact on working conditions is uneven, particularly in relation to telework, which is perceived as the major incorporation of digital tools by public employees in recent years. The public sector workforce seems to see teleworking as an opportunity to improve certain working conditions, but trade unions are very reluctant to consider these benefits without weighing up the significant risks they perceive in relation to teleworking. There is, however, a shared view of the impact on processes and tasks, describing a reduction of repetitive tasks and increased work intensity. This implies longer working hours, with difficulties in reconciling work and family life as well as occupational risks, especially psychosocial risks. Besides, training seems to be one of the weaknesses to be addressed.

Concerning digitalisation, telework is high on the social dialogue agenda. Although there are differences across the country, the application of remote working in the central administration has been addressed unilaterally by the central government, with unequal implementation in different institutions. The trade unions are calling for collective teleworking agreements on issues such as identifying the needs of the services and the conditions applicable to teleworking, thus extending collective rights in an agreement that is considered to be individual.

The health sector in Spain, and hospitals in particular, has been incorporating digital tools in recent decades, and the pandemic, as in other sectors, gave a strong impetus to the process. The entire patient management system has changed rapidly and will continue to do so in the future. There is a generally positive perception of the benefits of digitalisation in improving care and quality of work, but it seems that the workload has intensified and working days have become longer. The Covid-19 pandemic had a profound impact on the healthcare system, which was seriously overstretched and whose shortcomings were highlighted.

The impact of digital change and the facilities provided to implement it depend, to a large extent, on the management of the hospitals and services themselves, on the professional category and age of the workers in the sector. Special emphasis is placed on the difficulties caused by the lack of resources for training during working hours, particularly for technical staff, which results in longer working hours and stress in the learning process.

In hospitals, the incorporation of new digital technologies is not in itself a focus of collective bargaining, which has been marked in recent years by the impact of the pandemic and a shortage of material and professional resources. However, digitalisation cuts across many of the needs raised with regard to working conditions. Particularly striking is the need for quality training for professionals, and for involvement of workers' representatives in the management of digital change.

In general terms, the social partners in the public services have not been very involved in the digital transformation in Spain: discussion takes place ex-post, addressing changes in work organization and working conditions.

Collective bargaining regulates specific matters affected by the digital change, which means that there are no global ‘digitalisation agreements’. The social partners instead negotiate on specific aspects of the work situation. In this respect, the main issues addressed relate to telework (public administration, hospitals, electricity), training (public administration, hospitals, electricity), time management and flexibility (electricity).

Conclusion and policy pointers

The results of the present study highlight the importance of addressing the changes brought about by digitalisation in a comprehensive and proactive manner. This process of change must be approached from a holistic perspective, to guarantee, on the one hand, the quality of public services for all citizens, and on the other hand, the quality of employment and working conditions of civil servants and public sector workers.

The effects of digitalisation on working conditions are very much related to the organisation of work, since the intensification of the pace of work and the need to improve training and qualifications are key results extracted from the project's online survey. Better work-life balance measures, reducing working hours and inclusion of training for workers in working time are possible tools for better wellbeing at work.

It is important to ensure sufficient staff in the public services, limiting attempts to privatise or outsource activities and services, which would have an impact on the quality of service. The uneven impact of digitalisation on working conditions should also be monitored, exploring the particularities not only of sectoral conditions, but especially of occupational differences, considering age, gender and territorial gaps. The impact on working conditions should be monitored through participatory tools to evaluate psychosocial risks.

National stakeholders could address changes by drawing up participatory protocols for action, incorporating a clear and specific procedure to ensure that new technology is not intrusive for workers; those proposing pilot projects should evaluate the impact of technological implementation on workplaces and specific jobs; and bipartite monitoring committees should be set up.

In order to address the changes in a pre-emptive and participatory manner, it is necessary to strengthen workers' rights of information and consultation and enhance social dialogue and collective bargaining. European social dialogue plays a very important role in supporting the social dialogue in the different countries, generating and promoting negotiation processes between the social partners on matters affected by digitalisation, in the various areas and at the various recognised levels.

SECTION 1. INTRODUCTION ([1])

This research paper presents the results of the national study carried out as part of the European Commission-funded DIGIQU@LPUB ([2]) project, which studies the Impact of digitalisation on job quality and social dialogue in the public services in 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 hands-on policy recommendations, to both European and national trade unions and decision-makers, on suitable ways to address the digital transformation of work.

From a methodological point of view, the following tools have been used: a) desk analysis; b) twelve semi-structured interviews with key informants; c) the original DIGIQU@LPUB (DGQS) web survey conducted by the European Social Observatory in the selected sectors (electricity, hospitals and public administration); and d) three focus groups (a small number of carefully selected people who discuss a given topic) with workers and trade union representatives in the selected sectors.

1. The authors would like to thank the Comisiones Obreras Federations of Health Care and Public Administrations, as well as the Endesa works council, for their collaboration with the project. In particular, we are grateful to Ricard Serrano, Maria del Roger Medina, Jerónimo Rodriguez, Miriam Pinillos, Libertad Camino Alcocer, Celia Dominguez, Jesús Jordán e Irene Bonilla for their support. People interviewed and participants in the focus groups were essential for the development of the project.
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/digiqualpub/

The fieldwork in Spain has been carried out with the support of the various trade union federations in the sectors concerned, which made it possible to select the most appropriate people to be interviewed in each of them. These organisations were also key in selecting participants, organising the focus groups and distributing the DGQS survey. Whenever points made 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).

Taken together, this information (qualitative and quantitative) has provided first-hand insights into the reality of digital change in public services. There was an uneven distribution of the sample among the different sectors. Therefore, when interpreting the quantitative results presented, the methodological limitations should be borne in mind: these only allow inferences to be made about a group of survey respondents and cannot be extrapolated to the entire sector.

This Research Paper is structured as follows: Section 1 sets the scene by describing the level of development of digital technologies in Spain and the public strategies and policies implemented. Section 3 addresses the state of implementation of digital technologies and the impact on working conditions in the three sectors under analysis (electricity sector, public administration and hospitals). The fourth section addresses the role of social dialogue in the digitalisation process. Finally, the last section contains cross-cutting conclusions and policy recommendations.

SECTION 2. Setting the scene

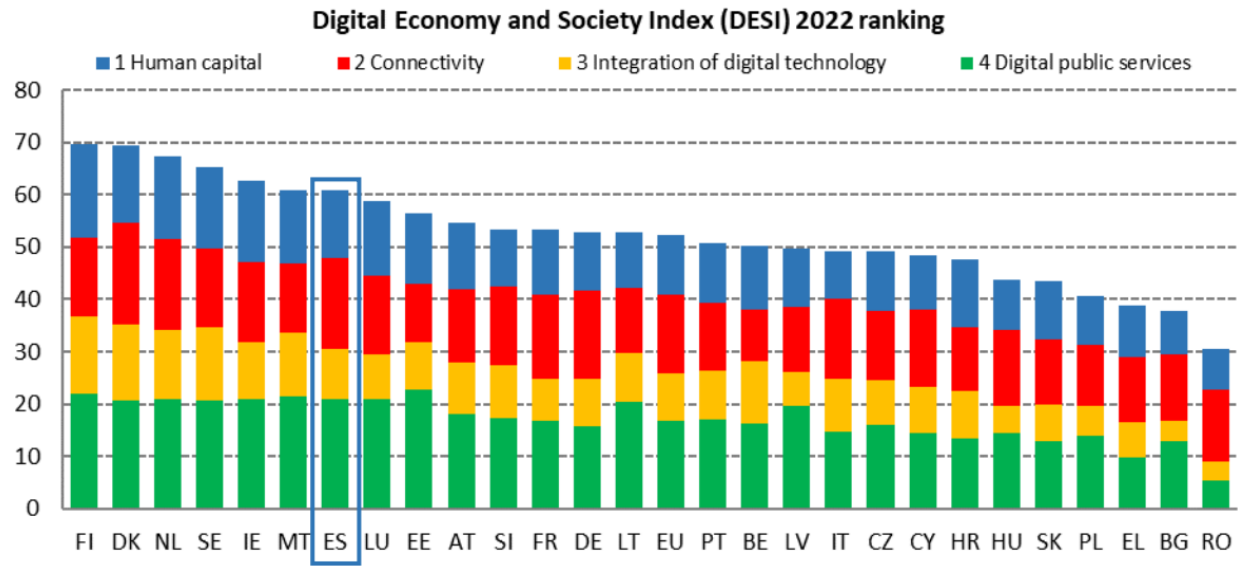
2.1 State of play and national strategies

The debate on the impact of digitalisation on employment in Spain – which has developed over the last decade in academia and among institutions, social partners and the media – gained new importance following the outbreak of the Covid-19 pandemic in 2020. The renewed interest was basically due to the impact of the crisis, which accelerated certain pre-existing trends such as: the use of digital technologies by companies, institutions and citizens in general; teleworking, which in Spain experienced an unprecedented increase during the pandemic; or the demand for professional services provided through digital platforms (Eurofound, 2021; European Commission, 2021; OECD, 2020). Added to this was the approval in July 2020 of the EU's temporary recovery instrument *NextGenerationEU*, which has digital transformation as one of its central pillars, and which in Spain is being implemented through the national Recovery and Resilience Plan (RRP). Thus, digital transformation is the backbone of many of the national plans in Spain and constitutes a central plank of the recovery strategy to take Spain out of the crisis derived from the pandemic.

According to the most recent Digital Economy and Society Index (DESI), the European Commission's mechanism for monitoring progress in digitalisation in Member States, Spain

obtained a score of 60.8. This score places Spain in seventh place, above the European average (Figure 1 below).

Figure 1. Digital Economy and Society Index (DESI), ranking 2022



Source: European Commission, 2022.

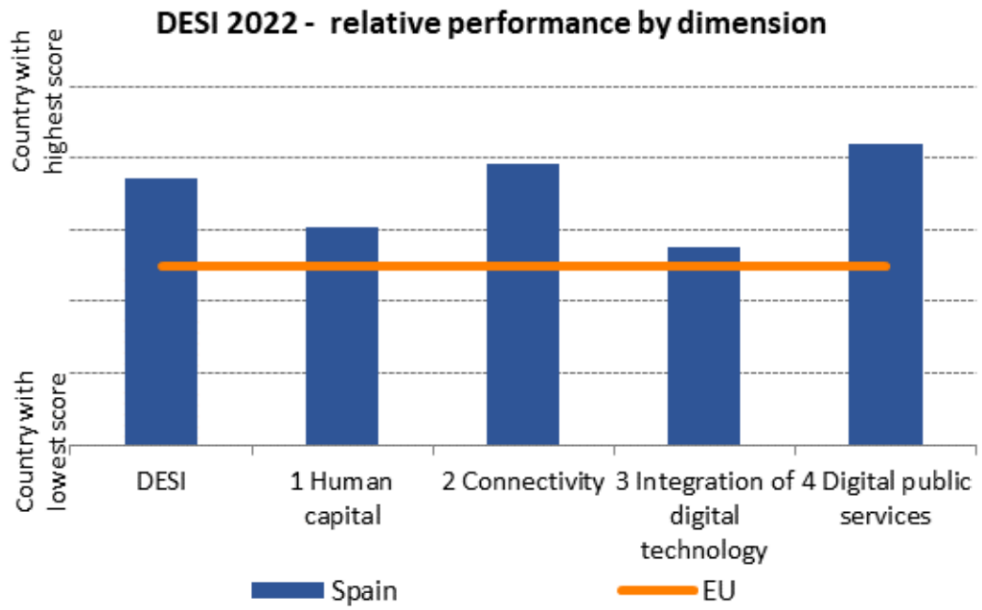
Spain's good results are due, in particular, to the vast progress in digital public services, a strategy that has been promoted throughout the central state administration and which has meant that in 2022 the country is well above the European average in this aspect. Much of this score is due to the impressive digital development of the Tax Agency (CES, 2021). All the indicators analysed show a high level of interaction between public authorities, businesses and citizens through online services: 73% of Spanish internet users actively participate in e-government services; a score of 78 points out of 100 was obtained for completed forms for the reuse of citizen information between administrations; Spain scored 87 points on digital public services for citizens and 94 points on digital services for businesses; and finally, it also obtained very good results concerning open data.

Spain shows better comparative results on the rest of the broadly analysed items, as shown in Figure 2. Spain has very good connectivity data, ranking third thanks to the wide availability of fast and ultra-fast fixed and mobile broadband networks, which have also been deployed more widely and used intensively since the beginning of the pandemic. However, significant territorial differences remain, with low levels of deployment in rural areas.

Although Spain scored around the European average, there is clear room for improvement regarding the dimensions of human capital and the integration of digital technology. On human

capital, taking 2021 data as a reference, only 38% of the Spanish population are found to have above basic digital skills.

Figure 2. Spain's score on the main elements of the DESI index, 2022



Source: European Commission, 2022.

In 2021, the Economic and Social Council (ESC) of Spain stressed the importance of addressing the weaknesses that have become evident during the pandemic years regarding digital skills and the digital and employment gaps, as these will also determine the success or otherwise of the digital transition, given the increased exposure of some jobs. The risks are not only linked to the possible disappearance of some jobs, but also to the need for adaptation of people performing digitalised tasks (CES, 2021). As mentioned by the ESC, age, economic and educational resources, gender and territory are key factors determining access to services and the labour market. Examples of this are the elderly and their difficulties in communicating with public administrations or financial services; and access to the minimum living income for people without economic resources who do not have the technical resources and skills to be able to manage the necessary process digitally.

One of the weakest elements is the share of staff specialised in elements such as big data analysis, artificial intelligence, etc.: the percentage of the employed population specialised in ICT (4.1%) is below the European average.

In terms of the integration of digital technology in companies, Spain ranks 11th among the EU countries. It is above the European average in the percentage of small and medium-sized enterprises that exchange information electronically, the percentage of SMEs that use social networks, use ICT for environmental sustainability or make online sales. On the other hand, the percentage of SMEs accessing big data analysis, using cloud services or using artificial intelligence is below the EU average.

The data from the Survey on the Use of Information and Communication Technologies and ICT and e-commerce in Companies in the years 2020-2021 ([3]) (INE, 2021) shows differences between companies with ten or more workers and those with fewer than ten. Thus, among small companies, 85.4% have computers, 71.36% of workers work with computers connected to the internet and 74.87% have contracted an email service. However, only 8.42% have interconnected devices that can be monitored remotely, 3.47% use artificial intelligence technologies, 3.19% have analysed large datasets and only 1.42% have an ICT specialist on staff.

Among companies with ten or more employees, 99.26% have computers, a similar percentage also has an internet connection and 81.5% have contracted an email service. 26.9% of these companies make online sales, 27.7% have interconnected devices that can be monitored remotely, 8.32% use artificial intelligence technologies, 11.5% analyse large datasets and 16.39% have ICT specialists among their employees.

The pandemic also shed light on the importance of digitalisation of small and medium-sized enterprises in Spain, which faced this situation from a disadvantaged position in terms of digital equipment and training. Everything suggests that companies and sectors with more digitalisation were able to react quickly to the new situation, boosting even more their telematic relations with suppliers, customers or the administration; especially, by enabling their workers to telework, mitigating, to a certain extent, the impact on their activity and on employment (CES, 2021).

The incorporation of new technologies has allowed companies to adapt and modernise, increasing their competitiveness vis-a-vis more global or other competitors. In the case of the public administration, this process has enabled the implementation of digital administration, facilitating citizens' access to management and connectivity between administrations. The impact of the crisis resulting from the pandemic has generated a significant boost to pre-existing trends, as mentioned in the introduction.

3. https://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica_C&cid=1254736176743&menu=ultiDatos&idp=1254735576692

The Economic and Social Council (ESC) pointed out in 2017 that the digital transformation is changing the very nature of work and the structure of the labour market. For example, some jobs are being replaced, others are being created and many are being transformed (CES, 2017). The ESC furthermore recognises the role played by new digital technologies during the pandemic and the role they should play in the recovery (CES, 2021). This progress in the digitalisation process in Spain raises a series of questions and challenges. The main question concerns the scale of the impact on employment, given that it seems that robotisation and automation will affect tasks more than specific occupations, while models of cooperation between workers and robots are being planned. In recent years, some job displacement can be identified, but so far, the volume of jobs affected is considered to be rather limited. The main trends observed relate to changes in training requirements and the impact on working conditions.

The consequence of such gaps is that some people may be excluded from the labour market –at least formally – or face greater difficulties in being promoted or accessing jobs related to digital change, which will be the most in-demand in the future. For the time being, it is worth noting that digitalisation is impacting people in lower-skilled jobs and, going forward, the new job opportunities that are generated will depend heavily on the digital skills that are available. This is because digitalisation is changing occupations, threatening the permanence of some occupations through automation, requiring the transformation of many occupations to make work more productive and creating opportunities for workers whose educational profiles and skills enable them to take better advantage of new technologies (CEDEFOP, 2021; ETUC et al., 2021; Alvarez-Hernández et al., 2020; OECD, 2021).

In recent years, the digital strategy in Spain has been mainly implemented through two instruments, coordinated by the Ministry of Economic Affairs and Digital Transformation: the *Digital Spain 2025* agenda (and its updating *Digital Spain 2026*) and the Recovery, Transformation and Resilience Plan (RTRP), which incorporates the different actions included in the agenda.

Digital Spain 2026 ([4]) includes a set of measures, reforms and investments, structured in ten strategic priorities, aligned with the digital policies set out by the European Commission. Its objective is to promote the country's digital transformation as one of the fundamental levers for relaunching economic growth, reducing inequality, increasing productivity and taking advantage of all the opportunities offered by new technologies, while respecting constitutional and European values and protecting individual and collective rights.

The RTRP is Spain's strategy for channelling the funds earmarked by Europe to repair the damage caused by the Covid-19 crisis and, through reforms and investments, to promote a large part of

4. https://espanadigital.gob.es/

the programmes and measures contained in the Digital Spain 2026 agenda. These include the National Digital Skills Plan, the strategic programme *Educa en Digital*, the Plan for Connectivity and Digital Infrastructures and the Strategy to Boost 5G Technology, and the SMEs Digitalisation Plan 2021-2025.

In December 2020, Spain published a new *Plan for Connectivity and Digital Infrastructures and the Strategy to Boost 5G Technology* ([5]), which aims to provide the entire population with a connection above 100 Mbps by 2025, in line with EU targets, especially in rural areas.

At the beginning of 2021, the *National Digital Skills Plan* ([6]) was launched. This includes seven lines of action: a) digital empowerment of citizens; b) gender digital gap; c) digitalisation of education and development of digital skills for learning in education; d) training in digital skills throughout the working life (unemployed and people employed in the private sector); e) training in digital skills for people working for the public administrations; f) development of digital skills for SMEs; g) promotion of ICT specialists (in both vocational and university training).

In addition to this Plan, there are other programmes such as *Educa en Digital* ([7]), with measures to promote greater digitalisation of the Spanish education system or to promote digital skills for employment, through: a) strengthening of active labour market policies aimed at the acquisition of skills and retraining, targeted at unemployed and employed people; b) a digital training programme for public administrations; and c) a programme for the digital transformation of SMEs and to provide them with training in digital skills.

In relation to improving the integration of digital technology, the National Strategy for Artificial Intelligence ([8]) was launched in December 2020. In January 2021 Spain published the *SMEs Digitalisation Plan 2021-2025* ([9]), which aims to boost disruptive innovation and entrepreneurship in the digital sphere. This plan has five main lines of action: a) basic digitalisation for SMEs; b) support for digital change management; c) fostering disruptive innovation and digital entrepreneurship; d) support for sectoral digitalisation, with special emphasis on industry, tourism and trade; and e) coordination and efficiency. In addition, the Spain Entrepreneurial Nation Strategy aims to boost the Spanish entrepreneurial ecosystem in all sectors.

5. Agreement reached on 10 March 2021 between the Government, CCOO, UGT, CEOE and CEPYME, following the work carried out by the Dialogue Committee set up for this purpose on 28 October 2020.
6. Plan Nacional de Competencias Digitales. Gobierno de España. https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/210127_plan_nacional_de_competencias_digitales.pdf
7. Educa en Digital. Gobierno de España. https://www.red.es/es/iniciativas/educa-en-digital#objetivos
8. https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/201202_ENIA_V1_0.pdf
9. https://www.ccoo.es/597bd6acb53ea9b746c8d3a7ecf1309d000001.pdf

Finally, the digitalisation of public administrations ranks third in the *Digital Spain 2026* strategy. In 2020, the Public Administrations Digitalisation Plan was launched with the aim of improving the 'accessibility of public services to citizens and businesses with all the guarantees for the protection of personal and business data, overcoming social and territorial digital divides and boosting the efficiency of public administrations through the digitalisation of important areas such as health, justice, employment policies, consular services or territorial administration in terms of inclusion' (Gobierno de España, 2020).

One of the main measures in the *Recovery, Transformation and Resilience Plan* is the creation of a new instrument, namely the *Strategic Economic Recovery Projects* (PERTES) ([10]). Through public-private collaboration and the cross-cutting involvement of the administrations, these plans finance strategic projects with great potential for dragging along the entire value chain and transformational capacity. They must be approved by the Council of Ministers.

The Spanish social partners are committed to social dialogue as a tool to ensure that the digital transformation is shaped in a sustainable way, a position that resulted in an agreement ([11]) signed by the majority trade unions, Comisiones Obreras (CCOO) and Unión General de Trabajadores (UGT) (CCOO and UGT) and the employers' organisation representing the digital industry sector, AMETIC (*Asociación Multisectorial de Empresas de Tecnologías de la Información, Comunicaciones y Electrónica*). The agreement aims to boost digital transformation by promoting a balance between increasing the competitiveness and efficiency of companies and respecting the fundamental rights of the workforce.

On the labour side, the Ministry of Labour has promoted two laws to regulate the impact of digitalisation on working conditions. The first law ([12]), on remote work, emphasises the important role to be played by collective bargaining in regulating this matter at company level, a boost to the historically low level of development of remote work in Spain (Gallego, 2022; Tascón, 2020). The second law ([13])guarantees the labour rights of delivery workers working through digital platforms. This pioneering regulation is undoubtedly important, although the labour literature has highlighted the need to provide more detailed content to ensure the effective exercise of collective rights in the new digital working environments (Garrido, 2021).

In sum, social dialogue has played a leading role in the laws promoted by the Ministry of Labour: both the law on remote work and the law on the labour rights of workers on digital platforms were

10. https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/210127_plan_nacional_de_competencias_digitales.pdf
11. https://www.ccoo.es/597bd6acb53ea9b746c8d3a7ecf1309d000001.pdf
12. Royal Decree-Law 28/2020, of 22 September, on remote work (BOE, 13/10/2020).
13. Royal Decree-Law 9/2021 (BOE, 12/05/2021).

agreed with the main trade unions (CCOO and UGT) and the main employers' organisations, Confederación Española de Organizaciones Empresariales (CEOE) and Confederación Española de la Pequeña y Mediana Empresa (CEPYME).

2.2 State of play at sectoral level

2.2.1 Overview of the three sectors

The **electricity production** and distribution sector in Spain employs 85,751 employees, only 0.5% of the total number of employees. It has undergone a privatisation process of such magnitude that currently only 0.3% of the employees in the electricity sector are employed by the state. They are predominantly older, between 56 and 65 years of age, with only lower secondary education. All of them are full-time, permanent employees (Encuesta de Población Activa, INE, 2021).

The public electricity production and distribution service in Spain was managed by ENDESA, which was established in 1944 by the National Institute of Industry. In 1985, in accordance with European legislation, high and medium voltage distribution was separated and *Red Eléctrica de España* was created. In 1988, the privatisation of ENDESA started and the State's shareholding began to be reduced, a process which culminated in 1998.

Given the peculiar Spanish situation, with virtually no public energy sector ([14]), ENDESA (although it is now a private company) will be considered, for the purposes of this report, as a company that provides a public service. ENDESA is a privatised company, bought by the Italian public company ENEL. It employed 9,600 workers in Spain in 2021. In addition to privatisation, certain activities have been outsourced, resulting in fragmentation of certain control and integration processes, and differing working conditions.

In Spain 851,314 people work in the **public administration** and on economic and social policy, which represents 5% of the salaried population. It is a female-dominated sector, with one third of the workforce over 55 years of age (INE 2022). The public administrations are organised territorially in three territorial levels: the general State administration, regional administrations and local entities.

Spain has 468 **hospitals.** In 2019, the National Health System employed in hospitals 85,467 doctors (55.2% of them were women), 153,433 nurses (86% of them were women) and 276,862 other related professionals (Ministerio de Sanidad, 2022)

14. Currently, the only significant company that is partially public is Red Eléctrica (20%), with 2,000 employees. Two more are part of SEPI (Sociedad Estatal de Participaciones Industriales): Enusa (100%), with 664 employees and Ensa (100%), with about 500 employees.

2.2.2 Patterns and history of digitalisation in the three sectors

The electricity sector

In the electricity sector, digitalisation has taken place gradually, with some acceleration in the last decade. In parallel to the acquisition of ENDESA by ENEL, digital implementation was accelerated together with changes in the business strategy.

The company has introduced various digitalised systems, to ensure interoperability and integration of the different areas: production, distribution and marketing. Digitalisation has impacted customer management, contracting, billing, control of networks and plants, data collection and remote repair of digitalised electricity meters by means of telematic mechanisms. This has recently resulted in the implementation of a teleworking system, with percentages of office work which vary between production areas, from zero to three days per week (INT10).

New technologies are fully implemented in the company in various areas related to the organisation of work, control of the working day and workplace management. The entire workforce has a corporate mobile phone, most have laptops, and some have tablets. All staff use a unified management system and have a clocking application. They all make use of work software. In addition, there are specific software programmes for each department or area (FG2). The staff have mobile applications that allow them to clock in, reserve their workplace in the office, receive alerts, messaging or GPS navigation to go to clients or check and manage the electricity network (INT10 and 12).

The DGQS online survey confirms this very extensive use of digital tools and software in the electricity sector ([15]). Thus, almost all respondents stated that they regularly use portable devices and tablets at work, mainly for four functions: communicating with colleagues and internal and external services (25%), to plan/schedule the performance of work tasks (23%), to measure data to collect/organise/retrieve information (22%) and to monitor the performance of working tasks (19%). The use of ICT tools is also widespread, mainly for sending and receiving emails (35%), using web-based applications for training and learning online (29%) or for exchange with other services or institutions (23%).

15. The survey was completed by 323 respondents, mainly from the staff of ENDESA, the former Spanish public energy company that was privatised and is now 70% owned by ENEL, an Italian public company. 74% of the respondents were men, mainly workers aged between 45 and 64 (62%). 64% had a university education and a further 31% had post-secondary education. Nearly all respondents had full-time permanent contracts. The respondents were mainly people in skilled technical positions (40%), followed by highly skilled professionals and technicians (29%) and skilled professionals (17%). 10% of the respondents were trade union representatives and 40% were trade union members.

Teleworking is a widespread practice: more than half (52%) of the workforce say they telework three days per week and 36% one day per week. A large percentage of staff also work remotely from home or users' premises (34% fully and 30% partially). This practice is expected to become increasingly common: one interviewee explains that 'in fact, buildings are already being sized with remote working in mind' (INT9).

The use of machines operated by digital commands to perform certain operations does not seem to be widespread: 33% of respondents say they use these machines at work, to measure data and collect, organise and retrieve information (38%) and to monitor and control the parameters of equipment or people (34%).

The public administrations sector

The digitalisation of the public administration has been carried out in two phases: according to one interviewee, there was a first very long and hard stage, and another abrupt and stressful phase in the wake of the pandemic (INT7). The public sector has undergone a significant transformation in recent years, incorporating a multitude of telematic citizen services, which have become known as the 'digital administration'. Probably the most important example of this transition is the tax office, which is processing more and more tax returns for individuals and companies online.

In parallel, the use, by businesses and citizens, of digital credentials and certificates to carry out procedures has been slowly expanding, even though the process for accessing them is not yet simple (INT7 and FG3). Due to this access, the public administration was able to respond to lockdown. With the pandemic, the implementation of digital services has advanced rapidly, and digital tools have increased exponentially to the point that, in 2021, 98% of companies with less than ten employees used electronic signatures to communicate with the public administration (INE, 2021).

Several interviewees state that a multitude of digital resources are used: corporate software, digital time and attendance systems, basic ICT tools, virtual meetings, teleworking, laptops, smartphones available to workers (INT7, 11 and FG3). In line with this assessment, the DGSQ results in the sector ([16]) confirm that the use of new technologies is widespread among public workers: 84% of respondents say they regularly use smartphones, tablets or laptops. These devices are used for various functionalities: to measure, collect, organise and retrieve information

16. 399 public sector employees responded to the survey, 55% of whom were women. 47% of the respondents were between 55 and 64 years old and another 39% were between 45 and 54 years old. 66% of the respondents had completed university education and another 23% had completed post-secondary education. 32% of the respondents were skilled professionals, and another third were moderately skilled clerical workers. 78% were civil servants, 79% had a permanent contract and 98% were full-time. Of the respondents, half were members of a trade union and a further 26% were union representatives in their workplace.

(19%), to plan the performance of work tasks (22%), to communicate with colleagues and internal or external services (23%), or to interact with users of the public service (18%). Only 23% claim to use programmed machines to perform certain activities.

The use of ICT tools is also very widespread (95%), especially to send or receive emails (32%), to carry out training and learning through web-based applications (23%), to exchange information with other services or institutions (21%) or to connect with public service users (19%).

Teleworking was abruptly introduced at the time of the pandemic during the lockdown. It was maintained for months, in various combinations with work at the workplace, and has again been approved as an energy efficiency measure in the wake of the war in Ukraine. Decree RDL 14/2022 ([17]) is a reference text, which the various administrations must implement by adopting their own regulations, determining to what extent different workers and services are eligible to work remotely. This is resulting in considerable differences in implementation across regions, institutions and services (FG3). The survey found that 11% were able to telework fully and 39% partially. A further 21% were able to telework only during the pandemic. Most of those who telework do so one day a week. Less common is working from a user's home or location or working from an office or satellite location. However, the use of new technologies and the option to telework are not available to all public employees to the same degree in all institutions.

On the other hand, digitalised machines and artificial intelligence tools are not yet used (INT7 and FG3). The introduction of artificial intelligence is not seen as something imminent. In the words of one respondent: '*Artificial intelligence will not be introduced unless there is a cultural change in which the digital transformation is conceived at a global level, (in the public administrations) which will not happen in the short-term. The public administration, for various reasons, is very slow in taking up change processes and in organising work, unless the change is driven from Europe by the Next Generation funds beyond pilot experiences'* (INT 7).

Inspection selection, registration, database maintenance, identification of needs are fields where artificial intelligence could be introduced. Others are more difficult due to the legislative complications involved, such as in public procurement, 'but it is impossible that this will happen in the next five years' (INT 7).

Moreover, one public administration expert points out that recruiting staff with the required profiles for this change is very complicated and costly. Public employment is likely to be unattractive for the hyper-skilled categories of workers required, and the public administration is already outsourcing specialised digital management services to private companies. In addition to

17. https://www.boe.es/diario_boe/txt.php?id=BOE-A-2022-12925

privatisation, there is a risk that this outsourcing process will give rise to influence, lobbies and monopolies (INT7 and FG3).

The hospital sector

The hospital sector in Spain has been incorporating digital tools since the 1980s, and the pandemic, as in other sectors, gave a strong impetus to accelerate the process. The entire patient management system has changed rapidly and will continue to do so in the future.

The study 'Smart Health Systems. International comparison of digital strategies' ([18]) ranks Spain high, in fifth position on the Digital Health Index, behind Estonia, Canada, Denmark and Israel, due to the nationwide implementation of identification systems, digital medical records and prescriptions, patient portals and electronic appointments. Its ranking also reflects the strong development of security and privacy practices in data processing, as well as the widespread application of data terminology and coding standards.

For years the medical sector has been rapidly adopting new digital technologies in diagnosis and surgery, and digital means have gradually been incorporated into the management of patient relations and the relationship between healthcare professionals and services. In recent years, the digital system for making and managing medical appointments has become widespread, while digital clinical records are spreading in the national health system ([19]). Another common tool is the electronic prescription, which allows the physician to issue and transmit prescriptions by electronic means, using information and communication technologies, so that the medication can then be dispensed.

With the pandemic, the options for rapid interaction between patients, professionals and their schedules have expanded. During the pandemic, laptops, screens and equipment were purchased, as well as network systems and software. This has, for example, enabled the transmission and visualisation of images and thus streamlined work processes and patient care, as long as the systems worked (network failures). The systems make it possible to computerise and record all processes (FG1).

In the day-to-day work in hospitals, a multitude of digital tools, applications and programmes are used, some of which are shared and some of which are function-specific. In recent years, new programmes have been introduced, others have been changed and others have been updated.

18. https://www.bertelsmann-stiftung.de/en/publications/publication/did/smarthealthsystems-1
19. Almost all regional health systems issue and receive digital reports. The reports that are issued digitally are diverse, and there are regional differences. Despite these differences, according to data from the Ministry of Health, practically all the territories issue the summarised clinical history digitally (94%) and also download clinical reports (72%) or emergency clinical reports and outpatient clinical reports (62%). Ministry of Health, 2022.

Tools such as videoconferencing for meetings between professionals have also been incorporated (INT5 and 8).

The DGQS results ([20]) show that 84% of respondents in the hospital sector make use of mobile devices on a regular basis, for a variety of functions: to communicate with colleagues or internal or external services (25%), to plan the performance of tasks (23%), to monitor the execution of tasks (18%) or to measure, collect, organise or retrieve information (20%). Similarly, 55% of respondents say they use programmed machines to execute certain operations. These are used to measure, collect, organise or retrieve information (30%), to monitor and control parameters of equipment or people (29%), or to perform routine repetitive tasks (21%). 88% of the workers surveyed make regular use of information and communication tools, mainly to send and receive emails (30%), to use online applications for training (26%), to exchange with networks of other services or institutions (21%), and/or to connect with public service users (18%).

These results are confirmed by the focus group, in which it was stated that most of the tasks are performed digitally, those related to both work and human resources. However, the focus group allowed a more precise qualitative assessment of the use and implementation of technology. Several points were made (FG1):

- There is a common system, with varying degrees of implementation, called Selene, which began as a pilot, but has been extended to the rest of the hospitals. Its implementation seems chaotic, and no comprehensive training was provided. In addition, it was pointed out that in most cases Selene is outlined/defined for some categories (doctors and nurses), while for the rest (technicians, for example), it is not so well defined. This definition varies from one hospital to another and is closely related to the organisation of work.
- There is a technological gap between occupations, professional categories and services. In services such as X-ray, they are up to date with technology (very high tech), while in others such as linen services (pyjamas, sheets, towels, etc.) there is no proper use of digital tools.
- There are differences between hospitals in the extent to which technology has been implemented. There are hospitals in which they only work digitally (tablet, computer) and where the changeover was very costly, but now the assessment of the processes is very good,

20. The DGQS received responses from 79 hospital workers, so the results can be considered as merely illustrative. 58% of respondents were women. 44% were between 45 and 54 years old, and 34% were between 55 and 64 years old. 54% had a university degree and 37% a post-secondary education. 49% of the people were skilled professionals, 13% were moderately skilled clerical workers. Of those surveyed, 49% were trade union members and 29% were trade union representatives in their workplace.

while there are others in which staff continue to work in both modes, digital and paper, with an overload of tasks.

Teleworking has been introduced timidly in hospitals, in management and service positions in some management or medical directorates. Only a minority of staff have the possibility to work remotely, according to the survey: 22% can telework from home partially and 10% did so during the pandemic. In general, the public health administration seems to be very reticent about remote medical consultations, while in the private sector they have become more widely used since the Covid-19 pandemic. It does not seem to be a practice that will continue over time (INT5).

According to the experience of the people in the focus group, it was administrative workers who teleworked during the pandemic. After the first few months of the pandemic, these people returned to their jobs, in face-to-face mode. Some consultations were conducted remotely, e.g. to inform of test results, but the doctor had to be at his or her workstation, as there is an issue concerning security of data and medical reports, which must not leave the system (FG1).

At the end of 2021, the government approved the Digital Health Strategy ([21]), a reference framework to promote the digital transformation of the National Health System in a 'harmonious and coordinated' manner. The strategy is organised around three lines of action: the development of digital health services, across-the-board interoperability of health information, and the promotion of data analytics related to health, its determinants and the health system. In the specific case of hospitals, the plan aims to introduce digital tools that, on the one hand, improve the interrelationship between patients and professionals from different health services, and on the other hand, improve the recording, integration, access to information, communication, coordination and cooperation of teams and professionals from different departments and services, even from different health centres in Spain.

21. https://www.sanidad.gob.es/ciudadanos/pdf/Digital_Health_Strategy.pdf

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

3.1 Electricity sector

3.1.1 Selected job quality dimensions ([22])

The widespread implementation of technology, hand in hand with the outsourcing process, has profoundly changed **the organisation and the content of work** (FG2). The availability of a company smartphone for each employee, with a software system, mediates the organisation of work. Also, the daily use of telematic communication and teamwork tools has influenced the routine tasks. This extensive use of new digital technologies is perceived with a certain mistrust, as it provides more autonomy in work performance, which is perceived as greater individual responsibility for work (FG2).

The introduction and use of ICT has implications which differ according to areas, profiles and age. Technical staff working in distribution activities say that they have experienced a major transformation in the organisation and performance of their work, whereas commercial staff have not experienced such radical change, although they have made extensive use of teleworking. Age and career path have a major impact on adaptation to new ways of organising work: older people and those with more years of experience have seen their work change radically (FG2).

The content of the work has changed, due to both digitalisation and the outsourcing process, especially for technical staff working in distribution. *'We have moved from working in the field to being data managers'* (FG2.6.). In addition, there is a heavier workload and greater responsibility for work done by other people with whom they do not even have contact, because the work is outsourced: *'I say I have no autonomy because I am responsible, but I cannot fix the problems'* (FG2.9). Marketing staff claim that the introduction of methodologies such as Agile ([23]) was causing increased pressure and work intensity.

Regarding work organisation, the DGQS online survey shows that there has indeed been an increase in autonomy and conditions to increase productivity. 70% of the staff surveyed consider that, at least somewhat, digitalisation reduces the time spent on routine repetitive tasks, 66% believe that it improves coordination of tasks with colleagues, 60% that it improves cooperation with colleagues. In addition, it provides more autonomy to organise (67%) and schedule tasks (64%) and gives more time to focus on the most important aspects of the job (61%).

22. Other dimensions of job quality have been studied in the full country report of the project (see the project website https://www.ose.be/digiqualpub/)
23. Agile methodology is the application of the principles of Agile software development to product development and project management. Client satisfaction is anticipated through the continuous delivery (step-by-step) of value-adding product. There is constant communication with the client, but also close communication between team members.

However, all the union delegates interviewed and most of the participants in the focus group emphasise the need to take into account the negative effects of greater autonomy: an individualisation of responsibility that ultimately means greater dependence on and surveillance by the company. Digital tools reinforce the direct and indirect monitoring of the hours worked (from the digital clocking system to a traffic-light system that assesses connection activity). There is also more monitoring in the workplace, by means of job reservation systems or the tracking of people working at the customers' premises. In addition, on-site attendance is organised through clocking-in and workspace reservation systems functioning via a mobile app, which are often perceived as control mechanisms (FG2 and INT10). In fact, 60% of the employees surveyed in DGQS say that the monitoring of employee performance has increased at least somewhat. Moreover, in recent months, direct monitoring has intensified (FG2).

The increased workload is also highlighted, in a model of work organisation that prioritises meritocracy and encourages individual responsibility; this promotes greater involvement, in terms of workload and working time, on the part of employees. The company takes advantage of the digital option so that workers are permanently aware of business needs (INT9 and 10). In addition, other mechanisms have been implemented to incentivise this logic through competition, using 'meritocracy' salary bonuses, with medal systems among colleagues or by knowing how other people's tasks are progressing (FG2). The results of the survey confirm this assessment, albeit partially: 69% of the people surveyed consider that work intensity has increased, 52% say that they must be connected very often in order to manage their professional life.

Working time is an element that has come to be managed through the various digital systems, especially time and attendance. The digital clocking system initially planned to prevent overtime, following state legislation, records when the working day starts and warns when it is due to end, but does not record extensions (FG2).

The online survey shows that staff have not generally seen major changes to working time as a result of digitalisation. However, 29% say that they work, at least somewhat, more hours than those set out in their contract, 23% report a rise in unpaid overtime hours and 30% say that they have increased their working time during unsocial periods (evenings or weekends).

The interviewed union delegates (INT9 and INT10) and some FG participants perceive, based on their experience, that working time has increased. However, although there is beginning to be more direct control, so far the company's policy has been that the workers themselves choose whether they need to extend the working day. Thus, not everyone has increased their working hours to the same extent and not everyone acknowledges that they have done so. It is something that, in their opinion, is related to age and career path in the company. New recruits come in with

a lot of motivation and take on a heavy workload, responsibility and longer working hours, although they do not acknowledge this.

Inflexibility on working time is one of the subjects of conflict, which is being addressed through agreements on flexibility and digital disconnection (FG2). Teleworking does have a significant effect on working time, and 56% of the online survey respondents consider that the time spent commuting from home to work has been reduced (DGQS, 2022).

Regarding **health and safety at work**, results are diverse on the physical and psychosocial risks. Thus, it is considered that there has been an increase in some conditions, such as back, head or neck pain. They point out that some of the physical workload, especially in distribution, has been outsourced and is therefore not reflected in the surveys. On the other hand, some union delegates believe that there is an increased risk associated with the lack of human control in the use of electrical equipment to be used by technical staff (INT9).

Moreover, several FG participants reported increased pressure due to intensification of work, necessarily implying higher levels of stress, anxiety and even burnout (FG2). However, they associate this with both the organisation of work and the incorporation of new technologies. They also refer to the isolation of the months when people were teleworking because of the pandemic. However, trade union representatives with responsibilities for occupational health point out that work-related health problems are not sufficiently considered, as workers do not report them as such (INT10).

Respondents to the online survey agree that digitalisation has led to a widespread process of **professional reskilling**. In relation to the need to update digital skills, the survey shows that 41% have needed to improve their digital literacy either through training and/or professional experience and another 35% say they have needed to develop specific digital skills required by digital tools or software. A further 14% say they have needed both digital literacy and specific digital skills. From a qualitative point of view, the new profiles demanded are for highly qualified staff, so that practically all the new recruits to the distribution division have at least a higher engineering degree (INT9 and FG2).

The **work-life balance** is affected by the greater use of teleworking, in addition to, according to interviewees, the digital disconnection agreement and another agreement being negotiated on flexibility. Teleworking is thought to facilitate a work-life balance, but the pandemic months showed that in practice it could lead to more hours of availability (INT10).

In this area, the online survey notes that 71% of staff feel that their work-life balance has improved (49% strongly agree). Just over half of the respondents consider that digitalisation has

at least somewhat increased their personal and family time, while 27% consider that it has not really affected their time outside work. The extension of working time (online or face-to-face) at the expense of personal time does not seem to be a problem, with one third of respondents saying it has affected their work/personal time somewhat and another third saying it has not. More than half of the respondents deny that teleworking conflicts with family responsibilities and only 17% acknowledge such a conflict. In addition, 46% disagree that teleworking blurs the boundaries between work and personal time.

In general, the **digitalisation of work** is assessed as positive, with more than half of the respondents saying that it improves, at least somewhat, society in general, public services, social welfare, job quality and working conditions and the work-life balance. In particular, as shown in the DGQS, 51% strongly agree that it improves the work-life balance, 49% that it improves society in general, and 46% that it improves public services.

The personal perception of the respondents is that digitalisation improves their **personal well-being** at work (51% strongly agree and 26% somewhat agree). Much of this is associated with the improvement in the work-life balance. The majority also consider that it has improved the quality of their work and their productivity, can make their work more attractive and interesting and, to a lesser extent, has improved their job security and future prospects. This view is not shared by the interviewees and focus group participants, who associate this idealised vision with the new enthusiastic young staff joining the company. According to the participants in the focus group, after three years, they become more disillusioned with the job and the turnover of staff seems to increase (FG2).

3.1.2 Conclusions for the sector

The incorporation of new technologies has gone hand in hand with privatisation of the electricity sector, with a change in business strategy and work organisation. Many new technologies have been introduced, both in personnel management and in the development of work processes.

Although one clear finding from the survey, the interviews and the focus group seems to be that work has intensified, views on other impacts of new digital technologies are mixed. While the employee survey reflects quite a positive perception of the potential for greater autonomy and the benefits of teleworking, the delegates interviewed and the focus group participants highlighted the negative impacts associated with increased individual responsibility, monitoring and the stirring up of competition between colleagues.

3.2 Public administration

3.2.1 Selected job quality dimensions

Digitalisation has meant that a large share of the work processes of large swathes of public administrations are managed using clocking tools and software for information management, communication between institutions or team meetings (FG3). Teleworking has been implemented unevenly, adapting to the situations and organisational needs of the different workplaces, a process which is perceived with mistrust given the arbitrary way in which the conditions for its application are determined (INT6 and FG3).

Several aspects have been very strongly affected by the introduction of digital tools and software. According to the survey data, some can be highlighted: the reduction in the time needed to perform routine repetitive tasks (66% strongly agree or somewhat agree), and the increase in work intensity (63% strongly agree or somewhat agree). A majority of our respondents also consider that, at least somewhat, they have gained time to focus on more important aspects of their work, that the quality of interaction with users has improved, that they have gained autonomy in the organisation of tasks and that the coordination of tasks with colleagues has improved. Nearly 50% of respondents also appreciate that digital tools have improved cooperation with colleagues or that they provide greater autonomy in the scheduling of their tasks. However, there is a feeling that they have not influenced other elements such as supervision over subordinates, doing the tasks that make up their work, internal evaluation of job performance by their supervisors, internal evaluation of job performance by direct peers or external evaluation by users.

The interviews highlight 'the autonomy paradox' linked to digitalisation. On the one hand, from a trade union perspective, it seems that digitalisation confers more autonomy on public sector staff, which they associate with positive aspects, but also with negative ones, such as increased responsibility. However, from the perspective of public employees, work processes in the public administration do not allow for much autonomy, and neither does digitalisation. However, they recognise that this potential exists (INT6, 7 and 11).

Concerning **working time**, the sudden implementation of teleworking was a major challenge for public sector employees and sometimes involved overtime, as there were no effective formulas to ensure that workers' circumstances and jobs were not negatively affected. In these months, public staff acted in a 'hyper-responsible' manner to ensure access to public services (INT6 and 7).

Interviewees also recognise that overwork can be caused by the potential to access work content remotely, if the worker him or herself is generating or organising his/her work (INT6, 7, 11). Some 30% of our respondents say that working time during non-standard hours (evenings, nights,

Saturdays or Sundays) has increased somewhat, even though, in general, respondents say that they have not noticed any major changes in working time. It is worth noting that 38% of respondents say that their commuting time from home to work has been reduced at least somewhat. Occasionally, longer working hours were found to be due to employee training (FG3).

Since the introduction of digital tools and methods, 20% of respondents say they do not need to log in from outside the workplace, 31% say they are not under pressure to log in during their free time and another 17% say they log in but as a personal choice. Most agree with regulation of the right to digital disconnection. Digital disconnection does not seem to be a major issue, but it does require people to be informed about this right, as many public workers can choose whether to be available outside the normal working day (FG3).

Regarding **health and safety at work,** some interviewees emphasised the effects of digitalisation and teleworking in terms of mental overload. One interviewee explained that *'In addition, the process of digital change generates a lot of insecurity, mistrust and fear in many people'* (INT7).

However, the impact of the introduction of digital tools at work is perceived as uneven. Digitalisation experts and focus group participants identify several sources of stress linked to digitalisation. On the one hand, work has intensified in some occupations: *'there is less and less time for dealing with files'* (INT6 and 7). On the other hand, stress comes from the process of change and adaptation to new requirements, from software systems to the application for digital certificates to interact with the public administration as an employer (INT7 and FG3).

The way processes have been designed in the public administrations, enhanced by digitalisation, and the lack of human contact require emotional intelligence, but this is not taken into consideration. There is even greater demand for people who have been trained and work well with different tools, with significant biases by age and level of qualification, something that intersects with gender (INT7).

Interviewees and participants in the focus group perceive that the **training** offered to staff is insufficient, even though basic office automation and information management tools are used extensively. Public sector employees are forced to self-manage training and learn by themselves (INT 6 and 10). Focus group participants consider that training is insufficient and that the online training that has become widespread is unattractive and ineffective (FG3). Moreover, as noted above, it often involves training outside working hours.

According to the DGQS, 39% of respondents say that they have needed to develop some specific digital skills for certain tools or software. Moreover, 46% felt that the training they had received

was adequate, although updates are required and 26% remarked that insufficient resources and time are devoted to training. This lack of training is seen as one of the main problems in the implementation of new technologies and telework. However, staff recognise that the pandemic may have been partly to blame for this lack, with a significant gap in the use and updating of these tools according to age (INT6, 7, 11).

Since the pandemic began and teleworking was introduced, some aspects of the **work-life balance** seem to have improved, but others have deteriorated. Taking results from the DGQS, although the majority opinion is that digitalisation has not generally affected the respondents' ability to balance family and personal life, 40% say that to some extent they have seen their working time increase at the expense of their personal time, and 44% of the respondents feel that work and personal time are somewhat mixed when teleworking from home. Trade union representatives are adamant that teleworking is not a work-life balance measure. During the pandemic, it became clear that teleworking did not take account of the work-life balance measures needed to care for dependents, leaving teleworkers without the cover they needed and overburdening them with work and care responsibilities (INT6, 11 and FG3).

In addition, a large number of the FG participants in the survey showed clear resistance to considering teleworking as facilitating the work-life balance, describing the risks that they see in teleworking. The consequences are gender inequalities, as women tend to make greater use of telework, the risks of isolation both for the mental health of workers and for the generation of collective awareness, insufficient health and safety monitoring of the place of work, and the tendency to extend working hours. In addition, they fear that telework is being used as an alternative to real work-life balance measures for the care of children or elderly dependents (FG3). However, several FG participants recognise that there is a strong demand for teleworking among public employees, and that the work-life balance is one of the reasons most often put forward, given that the savings in travel time have a significant impact on the working day (FG3).

Regarding **employment,** trade union representatives point out that there has been a clear reduction in the number of public sector employees and that people who retire are not often replaced. Given the relatively ageing workforce, finding it harder to retrain and adapt to new digital tools, it is likely that new recruits will be forced to take on a heavier workload, thus reducing the size of the public sector.

Taking the results from the DGQS, there is a positive perception of the effects of digitalisation on the **public services** (44% of the respondents strongly agree that it has positive effects and another 34% somewhat agree). At an individual level, a positive perception is also reported. Respondents perceive beneficial effects on their personal well-being at work (65% agree at least somewhat), their work-life balance (57%), improved quality of work (64%), improved productivity

(64%), and more interesting or attractive work (59%), with at least half of the respondents agreeing somewhat or strongly agreeing. However, they do not see a marked impact on their job security or future expectations (with 34% of the respondents neither agreeing nor disagreeing).

3.2.2 Conclusions for the sector

The public administration has undergone a very intense process of digital transformation in the last decade, even more so as a result of the pandemic: the implementation of digital public services has advanced rapidly and today public workers use a multitude of digital resources in their work processes and in the services provided to citizens.

Our analysis shows that the impact on working conditions is uneven. Thus, for example, in terms of work organisation, the greatest impact is related to teleworking, which is perceived as the major way in which digital tools have been taken on by public employees in recent years. The public sector workforce seems to see teleworking as an opportunity to improve certain working conditions, but trade unions are very reluctant to consider these benefits without weighing up the serious risks they perceive as associated with teleworking. However, inequalities can be seen in terms of processes and tasks, linked to the reduction of repetitive tasks and increased work intensity. This implies longer working hours, generating difficulties in reconciling work and family life and the emergence of occupational risks, especially psychosocial risks.

This process of digital change has taken place without adequate training for public sector workers, who state that they have had to train themselves in digital tools. In addition, the public services have a small and ageing workforce, who are confronted with a heavier workload and greater difficulties in adapting to the new tools.

3.3 Hospital sector

3.3.1 Selected job quality dimensions

The possibility of accessing the patient's clinical history digitally has had an impact on the **organisation of work**: it has facilitated the pooling of patient information which can be accessed from different places and by different medical personnel.

Much of the accelerated introduction of digital means of making appointments and patient communication during the pandemic was based on the premise that 'the less time the patient spends in hospital, the better', leading to a greater burden on schedules (INT5). According to the DGQS results, there is a broad perception that the pace and intensity of work has increased (23% of respondents strongly agree with this statement and 34% somewhat agree).

The focus group participants do not think that new technology has increased their workload, although they say that there are differences between services and/or categories. They report that despite the speeding up of some processes for technical staff, there is increased complexity as more information is being managed (FG1). In terms of processes and tasks, the focus group detected different situations depending on the level of implementation. Thus, in those hospitals that have not yet fully incorporated the digital system, workers suffer from duplication and increased workloads, while those working in hospitals that have completed the changeover perceive the change positively (FG1).

Regarding the impact of digitalisation on job performance, the respondents to the DGQS also expressed a positive perception of most of the aspects considered. Thus, 27% of them strongly agree that digitalisation has had positive effects on job quality and that it has improved their productivity (29% strongly agree and 31% somewhat agree). Some 27% of the respondents strongly agree that time spent on routine repetitive tasks has been reduced and another 27% agree somewhat. More than half of the respondents agree at least somewhat that it has improved interaction with public service users (55%), that it has provided more autonomy in scheduling and organising tasks (51% and 52% respectively), that it provides a clear overview of the execution of tasks being performed (51%), and that it has improved coordination of tasks between colleagues (47%). These results coincide with results from the focus group, whose members agreed that the patient is provided with a much more complete service (FG1).

As highlighted by one interviewee, the hospital management shows a huge mistrust of teleworking, which seems to be due to a false perception that teleworking is less efficient than face-to-face work. The consequence is that managers increase the number of tasks to be performed when working remotely and at the same time there is greater pressure on professionals to demonstrate the effectiveness of this way of performing tasks (INT5).

Digitalisation is generally not thought to have had a major impact on **working time,** as widely expressed in FG and interviews. This is partly because the shift system by which hospital work is organised in principle limits overtime. However, 25% of DGQS respondents say that the number of hours set in the contract has increased to some extent and 30% say that there has been at least some increase in time worked at unsocial working times (evenings, nights or weekends). It is worth noting that, in addition, 16% say that, at least somewhat, breaks or rest periods have been reduced.

Lack of training has been a factor in extending working hours, as affirmed by most of the FG participants and interviewees. Since training on digital tools was not provided on the job, workers were required to train outside working hours. Workers were motivated to follow training outside work by the wish to provide a good service. This was also done at other times, when everything

was paper-based, and not just for the sake of incorporating technology - for example, with the introduction of new techniques, tests, knowledge or services (FG1).

Regarding **health and safety at work**, there is also an uneven perception of digitalisation and its impacts: 33% of respondents said that there was an impact on physical health and 47% of respondents reported no new mental conditions affected by the introduction of new digital technologies.

Some interviewees perceive that the new technology makes it easier to carry out a greater number of consultations or interventions, although digitalisation is perceived as making tasks less onerous. On the one hand, there is a perception that working with people can increase pressure, but on the other hand there is better human contact. Two interviewees (INT5 and 8) agree, however, that people have suffered from increased fatigue and stress, in some cases explained by the intensification of work, which is psychologically demanding, and in others by the anxiety generated by working without adequate training. These phenomena have also been observed among the few people who telework, largely due to the suspicious attitude of the management, which increases the number of tasks.

Some of the focus group participants emphasise that the transition from paper to digital is hard work and stressful; its impact depends on the services, categories and the conditions under which the transition takes place. The experiences of those who were able to reduce their care work and had sufficient training were more positive (FG1).

Finally, in relation to job satisfaction, the DGQS results indicate that the introduction of new digital technologies has not markedly affected different aspects of their well-being at work: 61% of the respondents agree, at least somewhat, that digitalisation has improved their personal well-being at work; 23% of them strongly agree and 20% somewhat agree that it has made their job more interesting and attractive.

Concerning the **training** required, 35% of respondents to the DGQS say they have had to acquire new specific digital skills linked to digital tools or software. A further 34% of them say they had to learn both digital literacy and specialised skills while 19% say that the skills they needed were acquired via training or professional experience. A majority of staff believe that the training they received met their needs but that training updates are required (56%). However, 30% of respondents consider that no further training is needed in this respect.

From the point of view of the delegates interviewed (INT5 and 8) and participants in the focus group, the training provided is very poor for various reasons:

- Firstly, the training plans in hospitals are not digital-specific, and there are no training measures to ensure that all occupations affected by the change receive the necessary training. In fact, instead of including trade union representation in the plans, responsibility is often shifted to the union representative (FG1).
- Secondly, the lack of training, especially for the more technical jobs, means that not all possible use is made of the technologically advanced machinery that is acquired. Part of the problem is that substitutions are not planned to give people the necessary time to train (FG1 and INT8).
- Thirdly, there is a link between the lack of training and the negative impact on working conditions. As mentioned above, the lack of accurate continuous and updated training is also leading to work overload, as professionals are forced to learn by themselves and to share what they have learned with colleagues (INT5 and 8). The time taken to train workers is therefore not considered (FG1).
- Fourthly, with regard to the contents and means available for training, the majority of workers are trained on the basis of information that comes to them from the salesperson. Alternatively, one worker is trained, and he or she trains the rest. In some cases, this procedure is formal (as certain machines require certification). In the case of state-of-the-art machines, training does take place; otherwise it is impossible to use the machine (FG1). In the field of data management, services requiring advanced skills have been privatised due to the lack of staff in this field (INT8).
- Fifthly, serious training gaps and needs have been detected. Thus, there is a large gap in training between job categories: while medical and nursing staff and midwives seem to have more opportunities, the other categories – ward staff, auxiliary nurses and technical staff – are somewhat neglected. Likewise, replacements should be trained, with coordinators and training contracts. For certain categories, there is a need for training in basic tools and basic digital training (FG1). Moreover, there are training gaps related to age. Older workers have difficulties in using the applications and the information given (PDF with instructions), if they do not even use the computer[24] (FG1). Age is a major determinant of digital skills and willingness to learn and incorporate digitalisation (INT5 and 8).
- Sixthly, training is seen as a key element for the career path. The type of programmes that the staff member can handle determines his or her ability to move between different departments in the hospital. In this area, some trade unionists are proposing common

24. The trade unions help these workers to do this; the hospital should have trained its workers (FG1).

homologation of a degree which includes all the health care technical studies (X-ray, radiography, etc.).

- Finally, workers are not involved with regard to their training needs. It is commonly felt that workers are not asked what training they need, or how machines can be used in the different services to achieve the best results (FG1).

Regarding **career prospects**, the age of staff can be considered a key element, as hospitals tend to have somewhat ageing workforces. Older people seem to be more reluctant to make certain changes to their tasks in relation to technological development, and the lack of adequate training complicates this. There is a clear age gap in digital re-skilling, which means there is even more of a need to have certain resources such as a digital certificate to be able to carry out tasks or access promotion options (INT8). Moreover, this lack of interest creates mistrust of the effects that digitalisation may have on employment. There is a fear that there will be a reduction in staffing needs as certain tasks are automated or as the efficiency of each individual is increased (INT5).

In general, there is a very positive **perception** of the impact of **digitalisation**. 37% of respondents strongly believe that it has benefited society in general and a further 34% that it has benefited society in some way. 33% consider that it greatly benefits the public service in general and another 32% that it does so in some way. Similar percentages see improvements in the quality of service for users, the level of employment. To a lesser degree, there is also a very positive perception of the effects in terms of improved welfare in society, the general quality of work or improved working conditions in society (more than 50% of respondents see benefits in these aspects). Fewer seem to see an impact on the reduction of inequalities and discrimination, on the improvement of salaries in the sector or on the work-life balance.

In terms of the impact on the individual, there is also a generally good perception of the benefits of digitalisation. 60% of the people surveyed consider that their productivity has improved at least somewhat, 59% that the quality of their work has improved and 61% that their personal well-being at work has improved at least somewhat.

Generally speaking, it can be said that workers' representatives are not **informed or consulted** about the changes being made. There is also no direct involvement of workers in the digital transformation. Workers are not involved, as machines are purchased without taking into account the workers and their needs. There is no direct or indirect involvement in the introduction of new technology, the changes that are taking place, or the existing needs (FG1). In this respect, 29% of the respondents of DGQS say that they were formally informed or consulted about the digitalisation process and its implementation strategy as well as the possibilities and options for

implementing digital methods in their work and 33% about the reasons for digitalising tools and working methods. Of these, half were informed both individually and through trade unions.

There is a mixed impact on the exercise of labour rights (individual and collective). Numerous references were made to the right to disconnect. Teleworking implies isolation and direct communication with the boss or supervisor. In such cases, the opportunity for collective problem management, which often occurs in hospitals, is lost. Moreover, given the low status of teleworking, professionals accept worse working conditions in exchange for the possibility to telework, which is presented as an option that makes it easier to combine personal, family and working life.

3.3.2 Conclusions for the sector

The benefits of digitalisation in improving care and quality of work are generally acknowledged, but it seems that the workload has intensified and the working day has lengthened in the hospital sector. It cannot be overlooked that part of this perception is probably due to the profound impact of the Covid-19 pandemic on the healthcare system, which overstretched it significantly and highlighted its shortcomings.

The impact of digital change and the facilities provided to carry it out clearly depend to a large extent on the management of the hospitals and services themselves, on the professional category and the age of the workers in the sector. Our research highlighted the difficulties caused by the lack of resources for training during working hours, particularly for technical staff, which results in longer working hours, a stressful learning process and, ultimately, under-utilisation of existing resources.

SECTION 4. Impact of digitalisation on social dialogue

4.1 Trade unions' position on digitalisation

Digitalisation raises many questions about its effects on the world of work, and its intensification with the onset of the pandemic has abruptly opened up new areas for bargaining. From a trade union perspective, both legislation and collective bargaining have a key role to play in regulating these processes. Digitalisation is understood to be more than the introduction of new technologies; it involves changes in how work is organised. Trade unions, which still seem to play a reactive rather than a proactive role (INT1 and 2), are demanding their role in this transformation through the exercise of information and consultation rights.

Thus, the question arises: why is it that collective bargaining is not initiated until the consequences become apparent, and not the other way around? According to an interviewee, the answer lies in

two reasons: firstly, because the responsibility for organisation lies with the employer and secondly, because in most cases the information about the whole organisational change is handled by the employer without prior consultation with the workers (INT3).

One trade union interviewee (INT3) recognises that they are at a serious disadvantage as social partners and confronted with a growing imbalance of forces, in an economic, productive and business logic that sidelines them from decisions. in addition, priority is given to defending the working conditions of traditional jobs and ensuring conditions in new jobs. In the words of an interviewee: '*What have we trade unions done? We have been trying to manage the changes in the production processes, both in traditional and new jobs, through the achievement of labour rights. And now we are trying to raise the discourse to generate a much more powerful theoretical space that allows our delegates to know where this originates and where it will go in the coming years'* (INT3).

The trade unions identify various positive aspects of digitalisation, including the reduction of the physical strain resulting from certain tasks, the potential for reducing the working day due to increased efficiency, the possibilities opened up by the development of remote work to reduce costs, travel time and the facilities it opens up for reconciling work and family life (Comisión Ejecutiva y Secretaría de Política Sindical de UGT, 2019; Secretaría Acción Sindical CCOO, 2020). However, the accelerated implementation of digital change in the last few years of the pandemic has made the risks very clear. The role of trade unions, they believe, is crucial if we are to reap the benefits of digitalisation for working conditions and to avoid and minimise the risks. (INT1 and 2).

Trade union concerns about the impact of digitalisation are numerous: from potential job destruction, to the various possibilities it opens up for the casualisation of working conditions. Other concerns include the new unrecognised formulas of work through digital platforms, the role of algorithmic systems in the organisation of work, the new mechanisms for monitoring and surveillance of the activity of workers, the increased vulnerability to work overload and long working hours, the need for reskilling of workforces, and taxation (INT1 and 2; Comisión Ejecutiva y Secretaría de Política Sindical de UGT, 2019; Secretaría Acción Sindical CCOO, 2020).

All these concerns are reinforced by the unequal impact they have, influenced by socio-economic criteria such as age, gender, or socio-cultural and economic level, as well as labour criteria such as economic sector or professional occupation (INT1 and 2; Comisión Ejecutiva y Secretaría de Política Sindical de UGT, 2019; Secretaría Acción Sindical CCOO, 2020). UGT has therefore proposed the creation of a *Digital Gap Observatory* to develop benchmark indicators and annual targets to be met, including gender targets.

In general terms, the trade unions warn, in several documents, that, in practice, digitalisation is leading to greater discretionary power for companies, in a situation of imbalanced forces in the capital-labour conflict: on the one hand, they consider that in the last decade 'the social contract in terms of the distribution of wealth between workers and governments and companies has been violated. Pushed by globalisation and new technologies, the economic returns generated for workers, through increased productivity in companies, are increasingly lower' (Comisión Ejecutiva y Secretaría de Política Sindical de UGT, 2019). On the other hand, new technologies provide employers with tools to control work, workers' autonomy and quantify objectives. This is having a clear impact on work rhythms, especially in certain sectors, where monitoring implies a strong intensification of the pace of work. Thus, one respondent explains, 'what used to be used only in the productive part, to facilitate the work of management, efficiency and productivity of companies, is now also being used in the management of workers. It is an element of control, from selection and recruitment to the process of evaluating and monitoring productivity in a much more exhaustive way. This generates risks of stress, psychosocial risks, etc.' (INT2).

Technological advances such as artificial intelligence, automation and robotics generate a clear skills gap that will have to be addressed by the workforce. In this context, the confederal trade union technicians (INT1 and 2) emphasise three problems: a) there is a comparative disadvantage due to the low volume of workers specialised in this type of advanced ICT; b) in relation to training, there is a Matthew effect, so that those who have more digital skills are those who receive more training, which provides them with greater opportunities for job retention and promotion; and c) there are significant gaps marked by age, gender, territory or sector. Anticipating the need for re-skilling can be a key element in avoiding job loss and taking advantage of new opportunities (INT1 and 2).

Specifically, there are several areas for trade union action. Documents produced by two major trade union organisations *Guia Negociación Colectiva y Digitalización* ([25]) (Secretaría Acción Sindical CCOO, 2020) and *UGT Ante la Digitalización: tres años de acción sindical* ([26]) (Comisión Ejecutiva y Secretaría de Política Sindical de UGT, 2019) set out the central elements that they consider should guide trade union action in companies in order to protect working conditions: information and consultation rights, training and vocational skills, data protection rights, health effects, regulation of telework, protection of collective rights, communication between trade unionists and workers and environmental impacts.

Ultimately, the main objectives that the trade unions expressed in their documents are to achieve participatory mechanisms that ensure their bargaining power over how new technologies are

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implemented, and to have the capacity to minimise the negative impacts they may have on employment and working conditions. To ensure this, unions must refute the business perspectives that consider this to be the sole preserve of management as it involves the organisation of work, but must also make a major commitment to training negotiators.

In practice, bipartite social dialogue and collective bargaining have so far played a limited role in governing the digitalisation of productive sectors and companies in Spain. In particular, it is striking to see the low volume of collective agreements that include content related to this matter (Agra and González, 2020; Álvarez, 2019; Cuatrecasas, 2020; Muñoz, 2020; García, 2021; Rocha and De la Fuente, 2018; Vicente and Rocha, 2021).

The limited role of collective bargaining in technological change can be explained, to a large extent, by the position of the employers, who consider it a component of work organisation and therefore the exclusive competence of the firm. But other factors also come into play, such as those linked to the characteristics of Spanish production (low technological content and a high percentage of small firms), the lack of knowledge on the part of bargaining actors about the elements involved and even the asymmetry of bargaining power between capital and labour resulting from labour reforms (Rocha and De la Fuente, 2018; Vicente and Rocha, 2021).

However, in recent years, collective agreements have increasingly addressed issues related to digitalisation, such as training, working time, telecommuting, employment, anticipation of change, management of restructuring processes and participation of workers' representatives (Agra and González, 2020; Álvarez, 2020; Cuatrecasas, 2020; Gallego, 2022; García, 2021; Rocha and De la Fuente, 2018; Tascón, 2020). In addition to these matters, there are other still anecdotal accounts involving information rights linked to the use in human resources of data analytics or artificial intelligence systems (XXIV banking collective bargaining agreement 2019-2023).

Trade union experts (INT1, 3 and 4) consider that the ability to steer the impact of digitalisation on working conditions to one end or the other of the scale depends to a large extent on the bargaining power of the workforce over how new technologies are applied in the organization of work. In this sense, new rights must be created, such as the right to digital disconnection, and social dialogue is called to play an important role. To do this, social partners must have knowledge and skills.

The digital revolution could be a potential agent of change for trade unions, opening up new channels of communication with workers who, due to the temporary nature of their employment or the digital nature of their work, are now more isolated from fellow workers than in the past. The new participation tools facilitated by digital technologies could also help make trade unions more democratic and representative.

4.2 Social dialogue concerning digitalisation in the electricity sector

There is no national collective bargaining framework for the electricity sector or the energy sector. There is no energy sectoral collective bargaining agreement. Therefore, working conditions are regulated at company level. Digitalisation is addressed generally, in the trade union demands for an industrial pact at state level. 'It is essential to define as soon as possible a Plan for the Digitalisation of Industry with clear and defined support for investment that will allow the modernisation of Industry' (UGT-FICA, CCOO Industry, 2022).

Most of the trade union delegates interviewed do not consider that **collective rights to information and consultation** have changed substantially due to technological change. There are no information mechanisms prior to the implementation of new systems or digital tools, so no information is given either to the workforce or to trade union representatives (FG2). Moreover, the DGQS survey shows a serious lack of knowledge: between 43% and 46% say that they do not know if there have been any information and consultation processes in relation to the different levels of implementation of digitalisation. Around 25% said that no such process was carried out.

Trade union **participation and representation rights** have changed as a result of the widespread introduction of digital technologies. On the one hand, communication between unions and staff has been facilitated, thanks to the possibilities offered by new technologies. The new possibilities for holding mass training meetings or the collection of information by trade union representatives open up new opportunities (INT9 and 10). However, trade union activity has become very difficult. Without direct contact, it is very difficult to build a solidarity network with the necessary commitment (FG2).

In recent years, collective bargaining has focused on the negotiation of various agreements which, while not directly addressing the company's digitalisation strategy, include it as a central element. There have been several agreements related to digitalisation, structured along two axes. Firstly, there are employment regulation agreements, which include agreed retirement systems. These agreements allow the exit of more technical staff whose work has been outsourced and who have difficulties adapting to digital change. Secondly, there are other agreements more closely linked to the implications of digital change. These include an agreement on time tracking (associated with the digital clocking-in system), another agreement on teleworking and a final agreement on disconnection. In addition, a flexibility roundtable was set up, with the participation of the social partners, to monitor these agreements (INT12 and FG2).

The CCOO trade union in the company is also promoting reflection on the need to democratise labour relations. This is the union's counterproposal to 'The statute of the person', a regulation agreed between management and trade unions in the parent company in Italy, which has been

proposed unilaterally by management in Spain. Although the aim of this statute is to implement 'a new model in which the person and their harmonious interrelationship with the world around them is placed at the centre', the union criticises the real lack of both collective and individual participation in this model. For this reason, they are working on three lines of action: a) to carry out a research project to analyse the consequences of the new working methods on the workforce; b) to introduce democratic practices of direct participation of the membership through assemblies; and c) to exercise transparency and transmission of information to include the workforce. These three elements are intended to give content to trade union action to proactively introduce proposals instead of taking a reactive and confrontational position vis-a-vis company initiatives (INT9).

To conclude, the electricity sector does not have a state-wide collective bargaining framework and there is no sectoral reference agreement. Collective bargaining therefore takes place at company level. From a trade union perspective, digitalisation is being addressed transversally in many of the negotiations and agreements on other issues, such as time tracking, teleworking, flexibility and the democratisation of labour relations.

4.3 Social dialogue concerning digitalisation in public administration

In the public administration, formal information and consultation processes at the time of the digital switchover are considered insufficient. As one focus group participant put it: *'the power to organise the work lies with the public administration'* (FG3). In this respect, 37% of the DGQS respondents say they have been informed or consulted on the process and implementation of the digital strategy, 31% on the possibilities and options for use of new digital tools and methods in everyday tasks and 27% on the reasons for this implementation and the opportunities it offers. Of these, half say they have been informed or consulted both individually and through trade unions.

Employees' perceptions of trade union action in negotiations on digitalisation are very mixed. But in general terms, action at sectoral level seems to be more appreciated than in the workplace. Respondents fear that the individualisation linked to teleworking will have an impact on collective awareness and will result in loss of union power to negotiate working conditions (INT6 and 11, FG3).

In the area of digitalisation, the main issue negotiated in the public administration sector is teleworking. In April 2021, the General Negotiating Committee of the General State Administration reached an agreement on teleworking that envisaged the possibility of teleworking three days a week (and two face-to-face), whenever possible and on a voluntary and reversible basis. In October 2022, an agreement was signed between trade unions and government in which wage issues are addressed and which tangentially includes the need to develop the Public Administration Digitalisation Plan 2021-2025. This aspect of the agreement has yet to be finalised.

Telework is high on the trade unions' agenda. Trade unionists criticise the fact that, up to now, this issue has been addressed unilaterally by the government, and it is the focus of trade union concerns in the public administration, given the extensive demand from public employees. The unions call for effective implementation of teleworking. The application of the law means that workers have arbitrary levels of access to telework for the performance of their functions. The trade unions are calling for collective teleworking agreements on issues such as identifying the needs of the services and the conditions applicable to teleworking, thus extending collective rights in an agreement that is considered to be individual (FG3).

Trade unions see a need to reinforce training and the provision of resources in homes where teleworking takes place (INT6). From the perspective of public employees, the fact that certain measures such as teleworking are proposed as a contingency for the pandemic or the energy crisis but are not considered as measures to improve working conditions and regulated as such, generates disaffection with the public company (INT7).

One interviewee mentions two areas for future negotiation: a) implementation of the transformation, recovery and resilience plan in its firm and decisive commitment to the development of the employment stability plan; and b) an end to precarious and temporary work and the modernisation of the electronic headquarters so that all applications, from benefits to subsidies, can be made electronically.

On the one hand, digitalisation should not lead to an increase in the digital gap and should ensure equal rights for users, without inequalities based on gender, place of residence or socio-economic level. On the other hand, unions propose that the incorporation of technology should be accompanied by training and qualification measures that make it possible for workers to exercise their right to training (INT12).

To sum up, digitalisation as such is not a central issue in collective bargaining in the public administration, which is currently focused on securing employment and its quality, through job stability, as well as securing the purchasing power of public staff in a context of rising prices. However, since teleworking has become common in many public administrations, negotiations on agreements at different levels and their practical application in the various institutions and services have been a major focus of trade union work.

4.4 Social dialogue on digitalisation in the hospital sector

Digitalisation is not a subject that is dealt with as such in hospital collective bargaining, but its consequences for work organisation and working conditions are addressed. Teleworking is one of the issues that have been addressed by the negotiating parties. At regional level, regulations on

telework define and set out the applicable requirements and areas of the health service that can telework. According to one interviewee (INT5), a minority of people access teleworking, as its practical implementation is based on the conditions determined by the centres, departments or units, which ultimately define the individual agreements on this matter.

The introduction of technology is not an issue discussed by the social partners at the sectoral negotiating tables. Given that policies for the incorporation of new technologies, their purchase and introduction in hospitals are often centralised, at least at the regional level, trade unions are calling for the different needs of the hospital centres, their size, specialisations and services to be taken into account. As mentioned in Section 3, the lack of training is one of the major shortcomings in the implementation of technological changes. However, according to the information we were given, trade unions are sometimes excluded from the training committees set up in hospitals. On other occasions, they take part but only to be informed (INT5).

The impact of the pandemic on work in hospitals has been the focus of much of the social partners' recent negotiations. Since the pandemic, other issues (wages, employment, training, etc.) have regained importance and acquired new impetus in collective bargaining.

Regarding recruitment and training, unions point out that there are people who are very committed to their work, who do not want to do it badly and demand training. The union provides basic training in digital tools, among other subjects (FG1). The sectoral level also manages the training needs of affiliates (INT8).

Focus group participants (FG1) and interviewees (INT5 and 8) underline the need to address the impact of digitalisation on the following cross-cutting issues: a) recruitment of staff; b) coordination of equipment policies between the different hospitals; c) training and retraining of staff to adapt to the new machines and digital tools; and c) greater participation of workers' representatives, who demand a consultative and negotiating role both in the introduction of new technologies and in the vocational training of workers. Finally, trade unions are beginning to exchange experiences between hospitals on how to adapt to changes in tools and equipment. This area of trade union cooperation, it is felt, should be enhanced (FG1).

There is broad agreement, among over 70% of DGQS respondents, on the need to regulate digital disconnection and make it a topic for collective bargaining. In general, the perception is that collective bargaining is less effective at workplace level than at sectoral level.

With regard to **collective rights**, the exercise of representation rights has been enhanced by the use of digital tools in trade union work (telegrams, email). In hospitals with a large number of members, these tools allow them to reach many workers, with great immediacy. In addition, it

allows them to address the common problems faced by the different representations in the different hospitals (FG1).

To sum up, the introduction of new digital technologies in hospitals is not in itself a focus of collective bargaining, which has been marked in recent years by the impact of the pandemic and the shortage of material and professional resources. In any case, digitalisation cuts across many of the needs raised regarding working conditions. Particularly striking is the need for quality training for professionals, as well as the involvement of workers' representatives in the management of digital change.

SECTION 5. Cross-cutting conclusions

The analysis has shown that the digital transformation process is well advanced in Spain. In the sectors under scrutiny, many of the processes, tasks and public services provided are already digitalised. However, it should be noted that digitalisation can occur either in the whole set of work processes and occupations (e.g. the electricity sector) or in an uneven way, with differences between types of workplaces (hospitals), services and work processes (public administration). For all three sectors, the Covid-19 pandemic gave a major boost to the digital transformation process.

Regarding the quality of work, digitalisation has had an uneven impact on the variables examined in the project. On the one hand, there has been an increase in work intensity and workload, as well as an increase in working hours. These are elements linked to work organization. On the other hand, with regard to other elements, such as teleworking, the impact on working conditions is less evident. Factors such as age, professional occupation or service/area of work partly determine the perception of digital change. Finally, our analysis shows that the digital transformation has been carried out, in many cases, with insufficient human resources, and with a lack of vocational training for workers.

Regarding social dialogue, digital transformation is taking place with little social partner involvement; it happens ex-post, in order to address changes in work organization and working conditions. Collective bargaining deals with the regulation of specific matters that are modified by digitalisation, which means that there are no 'digitalisation' agreements: social partners instead negotiate on specific aspects of the reality of work. In this respect, the main issues addressed relate to teleworking (public administration, hospitals, electricity), training (public administration, hospitals, electricity), time tracking and flexibility (electricity).

Trade unions stress the importance of addressing the changes brought about by digitalisation in a comprehensive and proactive manner. They are critical of the conditions in which digital change is taking place (mainly lack of staff and training for workers), as well as the lack of participation in

the process. This way of proceeding contrasts with the way in which the Covid-19 pandemic was tackled, when social dialogue had major results, concluding important agreements on various issues.

SECTION 6. Policy recommendations

The digitalisation of public services is a process under construction, whose intensity has yet to be determined and whose results depend on various factors, linked to technology, but also to the demographic, economic, social and institutional characteristics of each country. This process of change must be approached from a holistic perspective, in order to guarantee, on the one hand, the quality of public services for all citizens, and on the other hand, the quality of employment and working conditions of civil servants and public employees.

To this end, the analysis carried out allows us to highlight several priority lines of action:

Job stability: public services must have the necessary staff to provide these services. The digitalisation of processes should not be an argument for reducing staff or privatising/outsourcing activities and services, which would have an impact on the quality of service and the working conditions of public employees.

Quality of employment: the effects of digitalisation on employment need to be analysed not only from a sectoral perspective, but also from an occupational perspective, given the uneven impact of digitisation on different professional categories. Gaps also need to be addressed so that they do not turn into discrimination (by age, occupation, etc.).

Working conditions: the impact of digitalisation on the content of work and its organisation needs to be addressed. Staff shortages and changes in work content have resulted in increased work intensity, with a decisive impact on physical risks, but above all on psychosocial risks. It is therefore necessary to take account of these risks. In particular, psychosocial risk studies should be carried out in a participatory way, considering the approach to these issues, the measures to be taken to resolve them and monitoring of their functioning. Regarding working conditions, two areas are of equal importance: work organisation and training and qualification. Regarding work organisation, it is necessary to specifically address the intensification of the pace of work and its impact on workers' health. In this field, issues related to the possibilities for reducing working time could be explored. Workers' needs for a work-life balance should also be addressed.

Training and qualification of workers: it is very important to address the challenges brought by digitalisation in this regard. The analysis carried out has highlighted the current shortcomings in training on the new digitalised work processes. It is important therefore to guarantee the right to

training and retraining, during working hours and ensuring that trainees are replaced in the workplace to make access to training effective.

The process of digital transformation must be approached in a pre-emptive and participatory manner, so that both the management and the workers' representatives take the reins of the process of change, in all phases of development (from design to evaluation). This requires two fundamental premises:

- **Strengthening of information and consultation rights:** information, consultation and participation rights need to be improved and strengthened at all levels to anticipate change: representative trade unions should be included in digital switchover strategies at state, sectoral, institutional and workplace levels. Representatives should also monitor compliance with digital labour rights (e.g. the right to disconnect).
- **Enhanced social dialogue and collective bargaining:** digitalisation requires an enhanced role for labour relations, as well as mechanisms for internal democracy in the public sector. Likewise, spaces should be created for the direct participation of workers, to identify needs, involve workers in changes and ensure the well-being of the workforce.
- Regarding the trade unions, joint and coordinated work should be strengthened on issues related to trade union renewal. In this regard, trade union representatives must receive training on individual and collective digital rights.

Finally, the digital transformation of public services requires attention to be paid to two particularly important areas, to ensure their quality:

- **Assessment of the public-private relationship:** digitalisation can have negative consequences if governments see it as a way to outsource functions and their responsibilities. But it can have positive outcomes if standards are defined, limits are set and monitoring procedures are implemented to help improve the working conditions of public employees and make services more user-friendly and accessible to users.
- **Data protection:** digitalisation led by technology companies alone can lead to a breach of the privacy of data and of users of public services, resulting in a deterioration of the quality and efficiency of public services. Particular attention needs to be paid to data protection and the control of public services by administrations.

Within this general framework, the study puts forward some general recommendations on social dialogue in public services, from both a national and European perspective.

At **national level**, progress should be made on the creation of specific and clear procedures to ensure the proper implementation of digital transformation in the workplace. The digitalisation framework agreement signed by Spanish social partners (Ametic et al., 2018 and 2019), calls for the implementation of protocols for action, as cross-cutting tools designed with the participation of representatives of administrations and workers, incorporating a clear and specific procedure to ensure that new technology is not intrusive for workers or the establishment of bipartite monitoring committees, with regular meetings, able to adapt recommendations based on experience and problems that may arise during implementation, to facilitate early resolution.

At the **European level**, progress should be focused on agreements that establish minimum requirements to ensure the proper implementation of new digital technologies in the workplace, ensuring equal opportunities and treatment, good working conditions, proper organization of work and the prevention of health risks, as well as guaranteeing human control of artificial intelligence tools and promoting social dialogue and trade union rights at different levels.

In line with the European social partners (TUNED and EPAE, 2022), collective bargaining frameworks should be promoted in the different areas related to the implementation of new technologies in the workplace: teleworking, health and safety at work, training and professional qualifications, data protection and use, user access, and other matters such as subcontracting, employment protection and 'agile' working methods. The European social dialogue plays a very important role in supporting the social dialogue in the different countries, generating and promoting the negotiation processes of the social partners on matters affected by digitalisation, in the various areas and at the different recognised levels.

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Annex 1. List of interviews

ID	Gender	Institution	Sector	Position	Date	Method
INT1	M	Comisiones Obreras	Confederation	Union expert	04/04/2022	Zoom
INT2	M	Comisiones Obreras	Regional Confederation	Union expert	26/04/2022	Zoom
INT3	M	Comisiones Obreras	Confederation	Confederal Secretary of strategic transitions	05/05/2022	Zoom
INT4	M	Comisiones Obreras	Confederation	Union expert	05/05/2022	Zoom
INT5	M	Comisiones Obreras	Health and hospitals	Sectoral delegate	26/04/2022	Zoom
INT6	F	Comisiones Obreras	Public Administration	Sectoral delegate	09/05/2022	Zoom
INT7	F	Observatorio Nacional de Tecnología y Sociedad		Public administration expert	17/05/2022	Zoom
INT8	M	Comisiones Obreras	Health and hospitals	Sectoral delegate	17/06/2022	Zoom
INT9	M	Comisiones Obreras	Electricity	Sectoral delegate	14/07/2022	Face to face
INT10	F	Comisiones Obreras	Electricity	Sectoral delegate	14/07/2022	Face to face
INT11	F	Comisiones Obreras	Public administration	Sectoral delegate	11/06/2022	Zoom
INT12	M	Comisiones Obreras	Electricity	Sectoral delegate	27/09/2022	Zoom

Annex 2. List of focus groups

Focus group 1: hospitals

ID	Gender	TU affiliation	Sector	Occupation
FG1.1.	Male	Comisiones Obreras	Hospitals	Radiology Technician
FG1.2.	Female	Comisiones Obreras.	Hospitals	Nurse
FG1.3.	Female	Comisiones Obreras	Hospitals	Warden
FG1.4.	Female	Comisiones Obreras	Hospitals	Warden
FG1.5.	Male	Comisiones Obreras	Hospitals	Radiology technician
FG1.6.	Male	Comisiones Obreras	Hospitals	Radiology technician
FG1.7.	Male	Comisiones Obreras	Hospitals	Radiology technician
FG1.8.	Male	Comisiones Obreras	Hospitals	Radiology technician

Focus group 2: energy

ID	Gender	TU affiliation	Sector	Occupation
FG2.1.	Female	Comisiones Obreras	Energy	Commercial
FG2.2.	Female	Comisiones Obreras	Energy	Commercial
FG2.3.	Male	Comisiones Obreras	Energy	Generation
FG2.4.	Male	Comisiones Obreras	Energy	Distribution
FG2.5.	Male	Comisiones Obreras	Energy	Distribution
FG2.6.	Male	Comisiones Obreras	Energy	Distribution
FG2.7.	Male	Comisiones Obreras	Energy	Commercial
FG2.8.	Male	Comisiones Obreras	Energy	Distribution
FG2.9.	Male	Comisiones Obreras	Energy	Distribution
FG2.10.	Female	Comisiones Obreras	Energy	Systems

Focus group 3: public administration

ID	Gender	TU affiliation	Sector	Occupation
FG3.1.	Male	CC.OO.	Regional Administration. C. Madrid	Administrator
FG3.2.	Male	CC.OO.	Regional Administration. C. Madrid	Administrator
FG3.3.	Female	CC.OO.	Education Administration. C. Madrid	Administrator
FG3.4.	Male	CC.OO.	State General Administration. Ministry of Economy	Computer technician
FG4.5.	Female	CC.OO.	Higher Council for Scientific Research	Researcher