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EXECUTIVE SUMMARY

This Research paper presents the Polish case study of the European Commission-funded project 'DIGIQU@LPUB', which examines the impact of digitalisation on job quality and social dialogue in the public services in three sectors: electricity, public administration and healthcare. Conclusions were drawn from desk research (literature, legal acts, strategic documents and statistical records) and from field research. Thirteen individual interviews were conducted with trade union representatives and three focus groups were organised with employees in the sectors under scrutiny. In addition, an online survey was conducted with a sample of 447 employees in public administration, 47 in healthcare and 32 in the electricity sector. Due to the small sample sizes in the latter two sectors, the survey data only complement the qualitative data analysis for illustrative purposes.

Background information

In Poland, the main strategic document in force in recent years determining the country's medium- and long-term economic policy was the 'Strategy for Responsible Development until 2020 – Looking ahead to 2030', adopted in 2017. It contained two key points on the issue of digitalisation: E-Administration and Digitalisation. At the same time, specific programmes such as the 'Programme for the Integrated Informatisation of the State', the 'National Broadband Plan', 'Skills in the information society' and the 'Open Data Programme' are being implemented. Our study demonstrates that many advanced digital tools have been implemented in recent years in the public service sectors under scrutiny. The magnitude of the impact of digital tools on the situation of workers varies from sector to sector.

The digitalisation process is particularly advanced in the electricity sector, consisting of four large groups, partly owned by the State Treasury, where intensive modernisation of power plants and transmission networks has already been underway for more than three decades. Currently, the country's electricity infrastructure is fundamentally digitalised and various digital tools (such as systems and programmes for supervising production processes, for monitoring and servicing the transmission network or for servicing customers remotely) are used extensively by employees. Additionally, tools have been introduced in recent years to improve the sale of electricity to the end user, based on remote and automated solutions. In the case of the healthcare sector, in addition to specialised equipment for diagnosing and treating patients, and its integration with hospital IT systems, important innovations in recent years include tools for the electronic exchange of documents (e.g. e-prescriptions, e-referrals) between doctors and patients. What is more, a system for electronic medical records is currently being developed, ensuring that these can be exchanged between hospitals. The digitalisation of public administration is stimulated by the 'Programme for the Integrated Informatisation of the State'. A single portal will be created for citizens, from which they can handle a significant number of issues. Internet portals already enable

the issuing of identity documents and dealing with mandatory social security matters, among other things. Digital document circulation between public institutions (e.g. by means of electronic document management systems) is also increasingly taking place.

Key findings

The assessment of both the importance of digitalisation and its impact on job quality varies between the sectors surveyed. Representatives of the electricity sector consider this process to be fundamental and essential to the operation of the sector, while pointing out some challenges that the implementation of certain technologies implies for employees, typically adding to their workload. Interviewees pointed out that the impact on working conditions varies over time: the introduction of digital tools initially results in increased work intensity and longer working hours. Once they are fully adopted, their impact on these aspects of work is seen as positive. The study also revealed that the implementation process depends to a large extent on the attitudes and skills of managers. It was also highlighted that digitalisation leads to an increase in the efficiency of the electricity network and the quality of the services provided to consumers. Digitalisation in the sector has also had a positive impact on health and safety. In contrast, there has been no significant impact on the work-life balance, apart from for office workers, who can work more from home thanks to digitalisation. The respondents are convinced that digitalisation does not, in principle, lead to a reduction in the number of jobs.

In healthcare, digitalisation has had a more limited impact on both work content and employment conditions. Representatives of the sector indicate that, in general, digital tools, if implemented correctly, streamline work and reduce the burden of administrative duties. The problem may be a lack of diligence in the process of implementing digital solutions or an ill-considered way of implementing them. An example of this is the obligation to keep digital and 'paper' records in parallel, which is severely hampering mid-level medical staff in some hospitals. Provision of training in new tools, especially in the field of telemedicine, enabled new solutions to be adopted smoothly, although some older employees had a problem with getting used to them. On the other hand, there has been no significant impact on the nature of the tasks performed. Digital tools also have had no significant impact on various aspects of working conditions, such as working time schedules or autonomy, as these are specifically regulated in the healthcare sector and depend on factors other than the technologies used by employees, such as the applicable legislation or job hierarchy. Therefore, with some exceptions, there has been no impact on the work-life balance. On the other hand, the implementation of digital tools has not resulted in a reduction in the number of jobs, with still very serious labour shortages and ageing of employees in the healthcare sector.

In the public administration, digital tools, firstly, standardise administrative processes, making them more transparent and improving the circulation of information. At the same time,

digitalisation, in the opinion of both survey participants and interviewees, has contributed to increased work intensity. This is true for employees in all levels of the administration, including the Social Insurance Institution; however, it should be considered that in the years when digitalisation took place, the responsibilities of Polish civil servants also increased, due to greater regulatory complexity and implementation of European Union law. Digitalisation, in the opinion of the respondents, increased the routine nature of the tasks performed, but also the autonomy of employees in organising their work, and improved cooperation with colleagues. At the same time, it contributed to better management of subordinates by superiors. The study revealed the adverse impact of digitalisation on employees' health – intensive computer work leads to musculoskeletal and visual problems. According to respondents and interviewees, the level of training on digital tools is unsatisfactory.

Social dialogue on the issue of digitalisation in the sectors studied is very weak in Poland at various levels, from national to company level. This is, moreover, a feature of social dialogue in the country in general, which is influenced, among other things, by the low level of unionisation of employees, the low collective bargaining coverage, with agreements concluded mainly at company level, and the lack of interest among the employers' organisations in participating in collective bargaining. Although the electricity sector stands out positively in terms of the level of unionisation and collective bargaining coverage, digitalisation is not a prominent topic of negotiation between the social partners in any of the three sectors studied. Digitalisation is also only rarely on the agenda of the tripartite sectoral dialogue bodies, which have a consultative function: the government side initiates the implementation of digital tools, while the trade union side plays a reactive role. Adequate dialogue is also lacking at the company level – there were many complaints about the absence of consultation on digital tools to be implemented. At the same time, digitalisation can lead to improvements in the exercise of workers' rights to engage with trade unions. Many organisations use new remote methods of communication, which improve their operation and allow for more effective acquisition of new members.

Conclusion and policy pointers

The overall conclusion from the cross-sectoral analysis is that the impact of digitalisation on working conditions, employee well-being and job satisfaction is rather positive in Poland. The assessment of digital solutions may be less positive than it could be, due to the flawed or at least suboptimal way in which they are implemented. This may also be due to the weakness of social dialogue at both the national and sectoral level, where consultation takes place on the legislative changes accompanying the implementation of digital tools, and at the workplace level, where there are often no strong trade unions, a superficial dialogue with staff is conducted and there are no effective consultation mechanisms. In general, the digitalisation of public services is driven by

the state. It is the government that takes the initiative and therefore has a decisive influence on the design of the tools being introduced. The role of the trade unions is reactive: they are always at least one step behind new digitalisation trends.

In view of the fundamental structural failures of the national social dialogue system, it is difficult to formulate far-reaching recommendations on the specific topic of digitalisation. Undoubtedly, trade unions need to be encouraged to broaden their scope of interest to include new trends (such as digitalisation), whereas so far, they have mainly focused on basic aspects of employment conditions, such as wages. The prospect of involvement of the trade union side in shaping selected policies at the national level is very promising, one particular example being the right to disconnect (considered an important issue by many workers in Poland), as well as issues of financing and training in new technologies. At the company level, trade unionists should use all legal and organisational possibilities to more effectively influence the shape of the new digital tools, by engaging in consultations on specific solutions, taking account of their ergonomics and user-friendliness. This will help raise the profile of the unions and improve their image in the eyes of workers, as actors which effectively address new developments in the labour market.

1. Introduction

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 in eight European Union (EU) Member States: 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 themselves.
- 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.

The study in Poland was carried out in 2022 and early 2023 based on a methodology which was the same for the six project countries; this allows for comparative analyses, as the same set of research tools were used in each country. Four main research methods were applied: desk research, individual interviews, focus groups and an online survey.

The desk research examined the documents constituting the country's public policies on digitalisation, public statistics, as well as the literature on the subject available primarily at national level. In-depth individual interviews were conducted with 13 representatives – mainly chairpersons – of the most important trade unions in the public administration, electricity and hospital sectors. The key selection criterion for interviewees was membership of one of the three representative trade unions in the country: Independent Self-governing Trade Union 'Solidarność' (*NSZZ*

'Solidarność'), All-Poland Alliance of Trade Unions (*Ogólnopolskie Porozumienie Związków Zawodowych, OPZZ)* and Trade Union Forum (*Forum Związków Zawodowych, FZZ)*. Between three and five interviews were conducted in each sector – giving a total number of 13 in-depth interviews in the study. A detailed description of the sample can be found in the introductory part of each sectoral chapter. Also, three focus group interviews were organised – one for each of the sectors covered by the study – with a total of 17 participants. The focus groups were attended by regular workers, who shared their experiences of the impact of using digital tools on their daily work (for the details of the focus groups, see Annex 2). The individual interviews – due to the COVID-19 pandemic and the limited availability of respondents – were conducted by telephone, while the focus group interviews were conducted by teleconference using Zoom. These remote interviews provided access to interviewees from various geographical parts of the country. An anonymised list of interviewees for the individual and group interviews can be found in Annex 1. Whenever claims in the text below draw on statements from a focus group, the source mentions 'FG X'; the equivalent reference to an interview is 'Interview X' (see the Annexes).

In addition, a survey was conducted by the European Social Observatory in the form of an online questionnaire, which was distributed through the sectoral trade unions. The DIGIQU@LPUB survey (DGQS) collected a total number of 542 completed questionnaires among respondents from Poland, including 447 from the public administration sector, 47 from the hospitals sector, 32 from the electricity sector and 12 from unspecified sectors. Due to the uneven distribution of the sample, the results for the public administration sector will be presented more extensively in this report, while the results for the other two sectors will only be presented as a background to the qualitative findings. In interpreting the quantitative results presented, account should be taken of the methodological limitations outlined above, which only allow inferences to be made about a group of survey respondents and do not enable conclusions to be extrapolated to the entire sector. This Research paper consists of five main parts: an overview of public policies and research on digitalisation in the country (Section 2), the results of the study on the impact of digitalisation on job quality in the three sectors (Section 3), digitalisation and social dialogue (Section 4). Cross-cutting conclusions as well as recommendations made by the social partners can be found in Section 5.

2. Setting the scene

2.1 State of play and national strategies

The highest-level public document bringing together various threads related to digital development in Poland is the 'Responsible Development Strategy until 2020 (looking ahead to 2030)' ([1]) (Council of Ministers 2017). The Strategy – dubbed 'SOR' in its Polish abbreviation – was adopted in 2017 ([2]) by the Law and Justice (*Prawo i Sprawiedliwość*, PiS) government at the beginning of its first term in office and covers various priority public policy areas. The SOR refers to digitalisation in two key aspects:

- E-administration (*e-państwo*), defined as a priority area in the third detailed goal of the strategy 'Effective state and institutions for growth, social and economic inclusion' (*Skuteczne państwo i instytucje służące wzrostowi oraz włączeniu społecznemu i gospodarczemu*). The SOR assumed the creation of the Integrated State Informatisation Programme (*Program Zintegrowanej Informatyzacji Państwa* (PZIP), Council of Ministers 2019a), which was adopted in 2019.
- Digitalisation (*cyfryzacja*) is listed as one of six areas (as well as human and social capital, transport, energy, environment and national security) impacting how the strategic goals of the SOR will be achieved. The SOR stipulates the setting up of several strategic programmes and plans, including the following:
    - National Broadband Plan (Council of Ministers 2020a) (*Narodowy Plan Szerokopasmowy*). The first version of the National Broadband Plan was adopted in 2014 by the previous government (Civic Platform and Polish People's Party). The Plan was updated in 2020 and covers the period until 2025. An Integrated Ongoing Cyberspace Security Management System (*Zintegrowany System Zarządzania Bieżącego Bezpieczeństwem Cyberprzestrzeni*) was eventually adopted under the name 'Cybersecurity Strategy of the Republic of Poland, 2019-2024' (Council of Ministers 2019b) (*Strategia Cyberbezpieczeństwa Rzeczypospolitej Polskiej na lata* 2019-2024).
    - Skills in the information society (*Kompetencje w społeczeństwie informacyjnym*). The 'Programme for the development of digital competences by 2030' has been adopted in early 2023 ([3]) (Council of Ministers 2023).

1. Strategia Odpowiedzialnego Rozwoju do 2020 roku (z perspektywą do 2030 roku), SOR, Council of Ministers.
2. The SOR has not been updated since 2020 or replaced by any other national strategy.
3. https://www.gov.pl/web/cyfryzacja/ponad-25-mld-na-program-rozwoju-kompetencji-cyfrowych

- The Open Data Programme (*Otwarte Dane Publiczne*), which took the form of the Data opening programme for 2021-2027 (*Program otwierania danych na lata 2021-2027*), adopted in 2021 (Council of Ministers 2021).

- The Nationwide Educational Network (Ogólnopolska Sieć Edukacyjna ([4]), OSE) aiming to create an Internet access network connecting all schools in Poland (approx. 30.5 thousand). The network was established in 2018 and is now coming to an end.

In addition to the above-mentioned programmes announced in the SOR, the government is responsible for several other public policies and projects in the field of digitalisation, including the 'Policy for the development of artificial intelligence in Poland from 2020' (Council of Ministers 2020b) (*Polityka dla rozwoju sztucznej inteligencji w Polsce od roku* 2020). This discusses artificial intelligence (AI) developments in six areas: society, education, science, business, public affairs and international relations. The overarching goal is to protect human dignity while supporting fair competition in international relations, as the use of AI is essential for the competitiveness of economies.

One of the key mechanisms for financing digitalisation in Poland are the funds from the EU. The document 'European Funds for Digital Development 2021-2027' ([5]) (*Fundusze Europejskie na Rozwój Cyfrowy* 2021-2027) defines three priorities: increasing access to ultra-fast broadband Internet connection, advanced digital services ([6]) and technical support (Council of Ministers, 2022). The programme will have a budget of approx. €2 billion.

The most recent EU initiative that includes a digitalisation aspect is the Recovery and Resilience Facility (RRF). The national Recovery and Resilience Plan (RRP) for Poland was signed on 1st June 2022 and approved by the Council of the EU on 17th June 2022 ([7]) – this is significantly later than most other EU countries, which commenced implementation of the national plans in 2021. The Polish plan allocates 21.3% of the €35.4 billion funds to the digital transition ([8]). The largest part of the budget (€2.6 billion) is devoted to ensuring access to high-speed internet and deployment of the 5G network. Additionally, €1.4 billion will be spent on the education sector, including developing digital infrastructure and equipment for schools, as well as digital skills for teachers. The funds will also support digitalisation of the public administration: €443 million are foreseen to

4. https://www.gov.pl/web/cyfryzacja/ogolnopolska-siec-edukacyjna1
5. The programme is a direct continuation of the 'Programme Digital Poland 2014-2020'.
6. This priority covers the following issues: high quality and access to public e-services, strengthening the national system of cybersecurity, digital accessibility and re-use of data, cross-sectoral cooperation on digital solutions to socio-economic issues, support of digital skills.
7. See:https://www.gov.pl/web/planodbudowy/o-kpo
8. See:https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility/recovery-and-resilience-plan-poland_en

strengthen the State's cybersecurity capacity and €420 million to digitalise public services. The start of the RRP is conditional on compliance with the rule of law in Poland, which has been questioned in recent years – especially the independence of the judiciary system (Atanasova and Rasnača 2022).

The content review of the above strategic documents, as well as the interviews conducted under the DIGIQU@LPUBL study, revealed that the social partners played a marginal role (if any) in elaborating and shaping the policies and they are rarely mentioned as actors involved in implementation of public policies. This statement has been confirmed also in a study focusing on Artificial Intelligence policies in the EU that also covered Poland (Eurofound 2022a).

2.2 State of play at sectoral level

2.2.1 Overview of the three sectors

The electricity sector – like other parts of the Polish economy – was privatised in the 90s as a result of the transformation process. Currently, there are four large groups, partly owned by the State Treasury: Polish Energy Group (PGE), Tauron, Enea and Energa, which jointly generate approximately 70% of the country's electricity. Additionally, the power grid in the capital city Warsaw is managed by the E.ON Polska company. The energy transmission is operated by the *Polskie Sieci Elektroenergetyczne* (PSE), which is a fully state-owned company.

According to Eurostat (2023) (Structural Business Statistics), the total production value of the sector was €19,220.5 million in 2020, and €19,812.7 million in 2019. Value added at factor cost amounted to €11,294.1 million in 2019 (57.0% of the production value). According to the same source, 103,614 people were employed in 2020 in the electricity sector (defined as NACE D351) in Poland. This is equivalent to 0.65% of total employment. The average monthly salary amounted to PLN 8,661.01 gross (approx. €1,925) in 2021 (PLN 8,521.08 in the public sector and PLN 8,782.42 in the private sector), which represents an increase of 5.3% compared to the previous year (Statistics Poland 2022).

Poland has a dualistic model of **public administration**, consisting of central and local public administration. The central public administration consists of ministries and central offices, which are government agencies, e.g. the Social Insurance Institution (*Zakład Ubezpieczeń Społecznych*, ZUS), Statistics Poland (*Główny Urząd Statystyczny*, GUS), as well as field administration ('*voivodeship*' offices in each of the 16 regions). As a result of the 1999 administrative reform, local public administration consists of three levels: 16 voivodeships, divided into 373 poviats, divided in turn into 2,478 communes. The reform not only introduced a new administrative division of the country, but also equipped the local government with real powers and responsibilities; local government administration receives a secured budget for the implementation of these tasks.

In 2020, some 993,300 people were employed in the public administration, defined as NACE 84, i.e. 6.3% of the total number of employed people in Poland (Statistics Poland 2021). In 2019, this number was 996,000 (ibid.). The average monthly salary in the public administration amounted to PLN 6,899.14 gross (approx. €1,535) in 2021, an increase of 6.5% compared to the previous year (Statistics Poland 2022). The average wage in the central public administration amounted to PLN 7,629.88 gross (approx. €1,695), while in the local administration it stood at a significantly lower level: PLN 5,828.24 gross (approx. €1,295), with the lowest average at poviat ([9]) level: PLN 5,349.13 (approx. €1,188).

As regards the **healthcare sector,** in 2021, some 801,600 people worked in the entire area of human health activities (NACE 86), including 164,400 men and 637,200 women. This number is equivalent to 4.8% of all persons working in the national economy. In the previous years, the number of people working in the sector fluctuated quite significantly: between 2016 and 2019 there was a reduction from 722,600 to 685,300, followed by a rapid increase, of over 80,000 people, between 2020 and 2021. In 2021, a significant number of people working in the sector were over 50 years old – as many as 41%. As indicated above, the medical professions in Poland are strongly feminised, especially nurses and midwives, laboratory diagnosticians and pharmacists. Also, among doctors, women constituted the majority (57.6%) in 2020 (ibid.: 59).

One significant human resources problem in healthcare is the constant shortage of staff, with a small number of available doctors and nurses for a given population (241 and 499 per 100,000 in 2020, respectively) (ibid.: 56). The audit conducted by the Supreme Audit Office (*Najwyższa Izba Kontroli*, NIK) in one of the regions revealed significant shortcomings related to the shortage of staff in intensive care units, including, among others, temporary absence of patient-facing staff with appropriately high qualifications (NIK 2022).

2.2.2 Patterns and history of digitalisation in the three sectors

The electricity sector – both electricity production and distribution – is one of the most digitalised sectors in the country, to ensure effective operation of the critical infrastructure and cost-effectiveness of business models in this partly privatised sector. All Interviewees in the sector emphasised that the digitalisation processes had already started in the early 1990s and developed in line with technological advances in the area. The solutions applied in Poland appeared almost in parallel with the latest solutions applied in Western European countries. Nowadays, next-generation systems are already in use, and have replaced the old solutions from the 1990s and later. In the words of one respondent:

9. The poviat is a secondary level of local public administration, between the gmina (the lowest level) and the voivodeship / regional administration (the highest level of local public administration).

'I can't imagine operation of the energy industry without digitalisation in order to work in a responsible, efficient, but also safe way'. (INT3)

According to the interviewees (INT1-INT5), electricity production is fully digitalised and equipped with numerous systems and programmes – especially in the new power plants in Opole ([10]) (INT1) – enabling management and monitoring of production processes. The distribution of electricity is also fully managed thanks to digital systems that enable storage of data on transmission network elements, identification of failures and anomalies in the distribution system, remote energy metering from power allocators at the customer's premises, etc (INT2, INT3). Additionally, there is some supporting software, such as an operational logbook (to record, register all operational activities), a programme for recording power supply interruptions, applications allowing for contact with consumers coupled with a call centre service (INT4). Electricians responsible for servicing the power network use tablets linked to the network management system to receive orders, instructions and report on repairs made (INT2). This allows them to work and bill fully remotely without having to come to the office. In the company Tauron, a smart grid solution (AMI programme) has been developed in recent years (INT4). This allows fully digital communication with clients and remote management of electricians servicing the grid.

General (non-sector specific) digital instruments are also applied in the companies, i.e. *Content Management System (CMS)* or SAP software systems supporting management and human resources (covering leave, business trips, car fleet management, etc.), as well as e-chancellery for the circulation of documents, and electronic signatures within the companies studied (INT5).

Digitalisation has affected virtually all types of jobs and occupations in the sector, in the opinions of both interviewees and focus group participants. Some of the most important occupational groups that are affected are office workers (cognitive work, easiest to perform remotely e.g. during a pandemic) and operational and maintenance workers. The latter category includes, for example, energy production workers operating power units (service workers), grid transmission dispatchers and field electricians operating the grid. However, the type of impact and its scale varies depending on the occupation. In response to the DIGIQU@LPUB online survey, almost all respondents declared that they used mobile devices as well as information and communication tools in their work.

Due to the digitalisation process, which has been ongoing in the sector for more than three decades already, the challenge is to adapt to the latest solutions used worldwide and to replace old systems. Several focus group participants (FG9, FG10, FG11) emphasised that modernisation

10. Blocks 5 and 6 in the Opole power plant were opened in 2018.

processes often result in incompatibility between old and new systems. This problem is particularly serious when a new system is intended to work with other systems – in such cases, modernisation takes longer and generates more difficulties for both the company and workers. Often, digital systems are supplied by different sub-suppliers, and coordinating their operation and servicing can also present difficulties. All focus group participants also emphasised the need to tailor individual digital programmes not only to the specifics of work, but also to the needs of the workers who will use them daily. Respondents pointed to insufficient consideration of these needs, as well as the incompleteness of the process by which developers create digital solutions. The design process should include from the outset a stage for modification and consideration of employee feedback. Some focus group participants indicated that managers responsible for designing and implementing digital solutions often focus on achieving quick results and being able to declare success (FG9, FG10). Consequently, consultation processes on digital tools are rarely or never planned:

> *'Managers are held accountable for results and want to see quick success. Programmes are usually delivered by large IT companies, which are able to deliver a good quality product, but the corrections to the software cost twice as much and take much more time. Managers want to prove themselves, and sometimes managers come from other industries, often they are financiers, economists, lawyers. This is the problem of Polish managerialism, which needs to show success'. (FG9)*

According to the Programme for the Integrated Informatisation of the State (Council of Ministers 2019a), several projects aimed at the digitalisation of **public services** have been carried out and are planned in the immediate future. Under the Programme, citizens, by using a single public administration portal, will gain access to information on the functioning of the entire administration and access to all e-services offered by the public administration in the country. Currently, citizens can already use several hundred public e-services located on various government platforms and portals. These include the obywatel.gov.pl portal ([11]), where many official matters can be handled (issuing identity cards, driving licenses, health insurance cards, registering marital status and children, etc.), the electronic platform of the Public Administration Services (ePUAP) ([12]), the Electronic Services Platform of the Social Insurance Institution (PUE ZUS) ([13]), and the biznes.gov.pl portal ([14]), ([15]). In addition, the central and local public administration, as well as government agencies such as the Social Insurance Institution (*Zakład Ubezpieczeń Społecznych*, ZUS), use specific internal electronic tools to process administrative matters.

11. https://obywatel.gov.pl/
12. https://epuap.login.gov.pl/
13. https://www.zus.pl/portal/logowanie.npi
14. https://www.biznes.gov.pl/pl
15. Links to other public electronic services can be found here: https://www.gov.pl/web/cyfryzacja/e-uslugi

The level of digitalisation in the government agencies examined in this study – the Social Security Institution, the Financial Supervision Authority and the State Fund for Rehabilitation of Disabled People – appears more advanced than in the government ministries.

According to INT8, digitalisation at the Social Insurance Institution (ZUS) had already begun in the late 1990s with the introduction of a key pension reform in Poland in 1999. Since then, digitalisation has been a continuous process that includes the replacement of analogue data sets on insured persons, payers and benefit recipients, as well as the introduction of numerous applications that enable the digitalisation of ZUS procedures. The central IT system is the Electronic Services Platform of the Social Insurance Institution (PUE ZUS). Paper-based processes are now very rare; one important exception is the sending of decisions to pensioners by letter, due to their low assumed level of digital literacy and lack of computer/internet access.

According to the FG6, in the case of the Financial Supervision Authority (KNF), advanced and diverse digital tools are also used, covering many areas of the institution's activities. Digitalisation has gone so far that paper documentation has been almost eliminated from KNF's core activities. Similarly, in the case of the State Fund for the Rehabilitation of Persons with Disabilities (PFRON), there are advanced, multi-faceted digitalisation processes. Internal digital systems include: an electronic document workflow (SZD system), personnel programme (OCP system), system for reporting irregularities to the IT department (ZEN Desk) and fully digitalised accounting (FG7). Contact with PFRON's clients uses, for example, the Support service system (SOW). This system is used to process applications submitted to PFRON by individual and institutional clients (e.g.: job centres, social services, employers) and is linked to the systems of the Social Insurance Institution and the National Health Fund.

In contrast, digitalisation processes are less advanced in the local government administration. Moreover, the level of digitalisation varies greatly: most often small municipalities have a low level of digitalisation, while large cities and wealthy municipalities are usually much more advanced in this respect (INT6 and INT7). In small rural municipalities, only the most basic digital tools are used: e-mail and computers (but documentation is still analogue) as well as a mandatory electronic Public Information Bulletin ([16]) website (but not all rural municipalities have their own website) (INT7). Large cities, on the other hand, use an intranet for archiving and processing documents, and sometimes for internal communication between officials and various departments; there are also numerous electronic services for the public (INT7, FG1). These include digital portals for public consultations and electronic registration systems for care and educational facilities. Larger municipalities also cooperate with nationwide public service portals such as mObywatel or ePUAP.

16. https://www.gov.pl/web/bip

According to an interviewee from local government (INT7), the reasons for the low level of digitalisation (especially in small municipalities) are mainly limited financial resources, insufficient competence of local government management in procuring digital tools and insufficient digital skills of the workers themselves in using the new tools. Focus group participants representing a job centre in Warsaw (FG4, FG5), in addition to the above factors, also mentioned the issue of the obsolete and hierarchical management models applied in the public administration, which is reluctant to build relations with workers based on trust, dialogue and participation. Management models continue to reproduce, in the opinion of these respondents, the culture of amber organisations ([17]). In the words of a focus group participant:

> *'The amber colour of the organisation's culture is often an obstacle. The management mentality is still rooted in highly hierarchical, paternalistic and bureaucratic structures. Unfortunately, this is often accompanied by a lack of appropriate managerial qualifications, because managers are not professionally trained and therefore prepared for managing workers'. (FG4)*

In recent years, digital tools have been introduced that significantly change the way work is performed in **healthcare** entities and how certain services are provided to patients. The following solutions should be indicated here:

- The Patient Online Account (IKP), accessible through a trusted profile, introduced in 2018.
- Digital sick-leave notes (e-sick note, e-*zwolnienie*), introduced in 2016. It can be issued by a doctor or medical assistant, and is then automatically sent to the individual profile of the insured person on the Electronic Services Platform of the Social Insurance Institution (*Zakład Ubezpieczeń Społecznych*, ZUS). Digital prescriptions (e-prescription, e-*recepta*) were introduced as mandatory on January 8, 2020 (Ministry of Health 2019).
- Digital referral (e-referral, e-*skierowanie*), introduced as mandatory in 2021. Thanks to this tool, the patient can receive a digital referral to specialist treatment or to a hospital. Until January 2021, it was also possible to use the paper version of the referral. Since that date, all the types of referrals included in the statutory regulations function only in digital form (Patient's Portal 2021).

17. Amber organisations are one of the types of organisation (red, amber, orange, green, teal) defined by Frédéric Laloux in 'Reinventing Organisations: A Guide to Creating Organisations Inspired by the Next Stage of Human Consciousness' (2014). They are characterised by a static, pyramidal structure with stacked layers of hierarchy and a clear chain of command. 'Command and control' is the dominant leadership style: decisions are made at the higher levels of the hierarchy, while the lower levels simply follow orders.

The solutions were introduced gradually: for some time, traditional analogue solutions functioned in parallel with them. Financial incentives were provided to institutions for early implementation of the new tools.

Additionally, in recent years, the introduction of electronic medical documentation systems in hospitals in Poland has continued. The term 'electronic medical documentation' was introduced into the national legal order by the Act of 28 April 2011 on the information system in healthcare (Journal of Laws of 2011, No. 113, item 657). Electronic medical documentation is understood as a set catalogue of medical documents bearing one of the available and accepted types of electronic signatures listed in the Act. This form of documentation became mandatory for all medical entities from July 1, 2022, and each medical event will be reported on one nationwide e-health system.

According to an interview with a representative of the nurses' trade union (INT10), there has not been a single nationwide solution for handling documentation in individual hospitals. The state of implementation and the assessment of the usefulness and ergonomics of these solutions from the employees' perspective are also different. According to the same interviewee, the largest, specialised hospitals in cities have the most effective solutions:

> *'Nurses from inferior poviat hospitals, such as those who come to us for internships, during their specialisation, are surprised how many electronic items we have to care for patients'. (INT10)*

Digitalisation has also resulted in several tools for the direct diagnosis and treatment of patients. In an interview with a representative of the nurses' trade union, who works in the intensive care unit, the respondent explained that for many years modern electronic solutions have been gradually introduced in this type of units, to measure the vital parameters of patients and to conduct therapy in a life-threatening situation. In the respondent's opinion, intensive care units were ahead of other organisational units of hospitals in terms of digitalisation. Over the years, more and more modern devices with an increasing degree of automation and improved ergonomics have been used – for example, analogue knobs have been replaced over time by liquid crystal touch displays. Another field in which digitalisation has been taking place for a long time is radiology-based imaging diagnostics. These changes, which started in the 1990s, consisted of a shift from traditional photography to photography using digital detectors as well as introducing solutions for transmitting the image by electronic means (INT9).

3. Impact of digitalisation on job quality in the sectors

3.1 Electricity sector

The findings presented in this chapter are based on qualitative research, consisting of in-depth individual interviews and a focus group with union and employee representatives from the electricity sector. Individual interviews (five persons, see Annex 1) were conducted with the officials of the representative sectoral unions: the National Section for Power Plants of NSZZ Solidarność, the National Energy Section of NSZZ Solidarność, the National Energy Section of the All-Poland Alliance of Trade Unions of Continuous Process Industry Employees and the National Energy Section of the Trade Union of Engineers and Technicians. One interview was also conducted with a representative of the energy company ENEA, responsible for the implementation of digitalisation in the company. The focus group (see Annex 2), on the other hand, included representatives of employees and the above-mentioned unions, as well as from the Association of Energy Workers' Unions, representing different cities in Poland and covering different sections of the energy sector: a dispatcher from Tauron Bielsko Biała, an electrician of PGE Dystrybucja energii in Łódź, another electrician from Tauron Polska Energia and an administrative worker from Turów Power Plant. In addition, the DIGIQU@LPUB online survey (DGQS) was also distributed through the sectoral unions but was filled in by only 32 respondents in the electricity sector. Due to the very small number of completed questionnaires, the results of the quantitative survey will only be used for illustrative purposes.

3.1.1 Selected job quality dimensions

The DIGIQU@LPUB study covered a number of job quality dimensions, and investigated the impact of digitalisation on these. In this Working Paper, research analysis results are presented only with regard to selected dimensions in which a significant impact of digitalisation has been observed or where it has stabilised jobs. The selected dimensions include the following: work organisation, health and safety, skills and learning, reconciling work and personal life, career prospects and employment security. Workers' rights in the sector in the context of digitalisation are discussed further in the next chapter (Impact of digitalisation on social dialogue). The full country report on Poland and other countries covered by the study is to be found on the DIGIQU@LPUB project website ([18]).

Work organisation

Digitalisation is generally viewed positively by most interviewees and focus group participants in the electricity sector: its is generally considered as an instrument for modernising energy production and distribution, and even as a prerequisite for functioning in the modern world. The interviewees emphasised that the introduction of the latest digital solutions and their constant

18. https://www.ose.be/digiqualpub/

updating improves the efficiency of the electricity network, the quality of the public services provided, but also working conditions. According to the DGQS survey, most respondents assessed positively the impact of digitalisation on the following spheres: public service of respondents in general, society in general, the quality of the service to users, overall quality of jobs and improvement of working conditions in the electricity sector. The respondents also reported a positive impact on personal well-being at work and improved job quality. In the words of one interviewee:

> *'It is difficult to imagine the energy sector without modern digital technologies. It is a matter of civilisation and a matter of energy system security to maintain critical infrastructure at the highest level and at the same time to provide the highest quality public services. There is no going back to analogue solutions'. (INT5)*

Interviewees INT1 and INT2 distinguished between the introduction phase of digital tools and the regular operation phase. The introduction of new digital solutions involves an increased workload and learning of new systems, as well as checking that they work properly. It is often associated with increased working hours and higher work intensity. The duration of this period can vary depending on the solution being implemented: from a few months for human resources programmes to several years for the activation of new units in a power plant. Once in the regular operation phase, respondents overwhelmingly pointed to the many advantages and conveniences of digital solutions.

One interviewee (INT3) pointed out that proper change management is crucial: workers need to be prepared by the provision of adequate information, schedules and training. It was also stressed that time was needed for new skills and proficiency in using the new equipment to become widespread. Such conditions were not fully provided in this company, which generated tensions between workers and the manager implementing the change. The conflict that arose was recognised by senior management and, as a result, another person was delegated to lead the implementation process.

Typically, digitalisation has been associated with increased autonomy of workers in the sector and at the same time more routine work. For example, the work of electricians, who carry out repairs to the electricity network in the field – also in case of breakdowns – has become much more flexible (INT1, INT3). Full digitalisation of the network has made it possible to obtain real-time information about the state of the network and breakdowns. Electricians receive maintenance work orders remotely. This allows them to arrange their working day flexibly according to their preferences. On the other hand, the routine of work has also increased due to the digital classification of breakdowns (each type of breakdown has been classified), and since the service procedures in each of them have been described. In the words of a focus group participant:

> *'Digitalisation should not be a tool to put pressure on workers. On the contrary, digitalisation should be a subordinated tool in work management in order to improve both working conditions and the quality of services provided'. (FG10)*

The interviewees, representing almost all categories of professions in the electricity sector, described reduced work intensity in connection with the introduction of digital solutions, which results from the ordering of procedures, routinisation, introduction of greater transparency and accessibility for employees. Thus, the digital tools used have fulfilled their role to support employees in their duties. On the other hand, however, irrespective of the digitalisation processes, the energy sector is experiencing a labour shortage – especially of skilled workers. A generation gap is also observed, because retiring experienced employees are not being replaced by suitably qualified younger workers. This triggers a tendency towards increased multi-tasking, working after hours and greater work intensity. The facilitating effect of digitalisation is only partly able to mitigate this trend.

An exception among the professions investigated in the electricity sector is that of dispatcher (FG8), whose work consists of managing the operation of the electricity network and controlling all network parameters. Therefore, by definition, this occupation involves 24/7 work – three shifts a day – with high work intensity, constantly checking the network parameters and processing data. Our interviewee (FG8) believed that the problem is the lack of hierarchy of information produced by digital tools, and pointed out that this could be a role for artificial intelligence (AI). AI could be used to pre-select and pre-prioritise data. In a second step, the dispatcher would make decisions based on the pre-processed data.

Health and safety and outcomes for workers

According to most of the interviewees, digitalisation processes are improving health and safety standards in their companies (i.e. INT1, INT2, INT3, INT4). With technological progress, production processes and energy distribution are better monitored, more transparent and therefore safer (e.g. reduction in the number of accidents at work, less exposure of workers to harmful conditions and substances). There is also increased awareness of potential risks and types of accidents, which are more quickly identified and dealt with before they escalate. Thanks to digitalisation, procedures are standardised, so the conduct of employees is better targeted. In addition, workers are supported by dedicated health and safety services whose main task is to monitor health and safety at work.

In some professions, digitalisation reduces stress levels, e.g. in the case of electricians (INT2). Thanks to remote management, electricians have better access to information about networks and failures and can manage their work more flexibly. Reduced stress levels were declared by office workers after the introduction of a human resources management programme. Increased stress

under digitalisation, on the other hand, was felt by dispatchers (FG8), who had to learn to process an increasing amount of information and react appropriately in a short period of time. All respondents underlined that the first stage of introducing new digital technologies was associated with more stress, as it required learning to operate in a new environment.

Skills and learning

The processes of introducing new technologies in the electricity sector were usually accompanied by training. The employers both ensured the implementation of digital solutions and tried to prepare workers (or some groups of workers directly affected by the change) to operate the hardware or software in the companies covered by the study. The scope of training and its duration were adapted to the specifics of the digital change and the employee group. Consequently, it lasted from a few days to several months. The longest period of training was conducted in connection with the launch of new units at the power plant in the city of Opole – employees attended a multi-stage course spread over several years (INT1). Often, training was combined with a period of implementation and work with new technologies to test the acquired knowledge in practice. In the second step, supplementary training was provided. Training was mainly conducted face-to-face, but e-learning was used quite often, e.g. use of the digital human resources programme and training for electricians on the operation of the transmission network.

Some of the training in the use of new technologies is mandatory and is related to the need to obtain appropriate certificates and attestations. Such training is conducted regularly and the employer provides full organisational facilities. In some companies, employee training is regulated by a collective agreement which defines the scope, schedule and group of employees covered by training (INT1, INT2).

When asked about their level of satisfaction with training, several interviewees indicated that the employer's actions are needed and helpful, while employees are mostly satisfied with the knowledge and skills provided (INT1, INT2, INT4, INT5). Workers want to be given training, while management understands that effective implementation of technological changes requires preparation of employee teams and their support at the operational level. As one interviewee explained:

> *'The employer always provides training to accompany the introduction of new technologies. Employees are generally satisfied with the training and tend to feel prepared to work with the new tools'. (INT4)*

Reconciling work and personal life

In most cases, the introduction of digital solutions has not had an impact on working time and on the work-life balance. The exception remains office work which, however, is a supportive service to essential activities, and represents a small proportion of employment in the sector. In this

group, however, the greatest change occurred during the COVID-19 pandemic. Office workers, thanks to the earlier implementation of digital tools (intranet, electronic HR programmes, etc.), could start working remotely almost overnight (INT3, INT5). Office workers working remotely reported a smoother division of work and home duties and indicated an increase in the level of satisfaction with such work organisation. For some workers in this group, working in isolation without the possibility of direct contact with other colleagues was a burden. After the end of the pandemic, however, office workers also returned to working in the office and this is the most common situation in the energy sector.

Career prospects and employment security

According to the trade union representatives interviewed, employment in the energy sector is characterised by a high level of stability compared to other sectors in Poland. The introduction of digital solutions has not changed this general characteristic in the view of interviewees.

Focus group participants unanimously expressed the opinion that digitalisation in its current form is not a way of eliminating workers from the labour market. There is currently a very high saturation of digital programmes in energy companies and there is still a shortage of employees. In particular, there is, precisely, a shortage of employees to operate highly sophisticated digital equipment and programmes, and of workers who need to demonstrate creativity and advanced analytical skills. In addition, some work cannot be carried out by digital programmes or even robots, including most network servicing and installation replacement work. In the words of a focus group participant:

> *'Even in the case of smart grids – someone has to supervise this, watch over the functioning of the artificial intelligence. Then analogue human intervention, knowledge, knowledge of the matter, of the terrain, of the procedures to work safely, is essential. Not everything can be written down in standardised procedures. In critical situations, humans always perform best'. (FG10)*

3.1.2 Conclusions for the electricity sector

In general, digitalisation is seen by trade unions as a necessary process to modernise the workplace and services provided in the energy sector. Initial fears and doubts accompanying digitalisation have blurred over time, and the return to analogue control would be considered a step backwards. In the opinion of the respondents, the energy sector should adopt all the latest digital solutions to provide the latest infrastructure and quality of services. They are also aware that with the European Green Deal, the share of renewable energy sources will increase, and these require the use of modern digital solutions as well.

Based on the experience to date, most of the interviewees and focus group participants are not afraid of losing their jobs or of technological unemployment. However, they realise that the

organisation and the content of their work may undergo further transformations, involving even more digital work equipment, e.g. creating intelligent networks, such as 5G. In the opinion of trade unions, these changes will entail a need to raise the qualifications of workers, necessary to operate new technologies. They hope for an increase in salaries along with the improvement of employees' qualifications. On the other hand, in the opinion of some trade unions, the development of digitalisation will result in a reduction in the total number of jobs because of growing automation of processes. Although there will be new jobs for service technicians and programmers, to support the new technologies, the total number of jobs will be lower. Trade union representatives also indicate that the development of green energy will generate jobs, but it will be accompanied by a reduction in employment in the conventional energy sector. In this context, trade unions propose to increase investments in renewable energy in Poland (by energy companies and the state) to preserve as many jobs as possible in this sector, instead of buying new technologies from abroad.

3.2 Public administration sector

The individual and group interviews conducted with representatives of the central and local public administration allowed us to analyse the impact of digitalisation on working conditions in the sector. The individual interviews were conducted with trade union representatives from the National Section of Government and Local Government Administration Employees of NSZZ 'Solidarność' and the Trade Union of Workers at the Social Insurance Institution. The focus groups included representatives of the following institutions: the central public administration – the Financial Supervision Authority (*Komisja Nadzoru Finansowego*, KNF), State Fund for Rehabilitation of Disabled People (*Państwowy Fundusz Rehabilitacji Osób Niepełnosprawnych*, PFRON), local public administration in Warsaw and Szczecin, and the job centre in Warsaw. In addition, this section presents the results of the DIGIQU@LPUB online survey (DGQS) carried out among public administration employees, with a sample of 447 respondents (completed surveys).

3.2.1 Selected job quality dimensions

Work organisation

All those interviewed in the study – individually or in the focus group – highlighted that digitalisation has improved and speeded up the performance of officials. The DGQS showed that all respondents regularly use information and communication tools (like internet, email, etc.) – mostly for the purpose of exchanging emails (35%) – while use of web-based applications of various kinds was less frequent (15%-27%). Only half of the survey respondents regularly used mobile devices such as laptops, smartphones or tablets. Most of them used the devices for the purpose of communicating with colleagues and internal or external services (30%), while other purposes were rarely mentioned (15%-18%).

According to two interviewees, administrative processes have become more standardised and transparent as documents are archived and easily accessible in one place; no time is wasted searching for them in different paper collections (INT6 and INT7). 46% of respondents in the DGQS declared that digitalisation allowed them to focus more on significant aspects of their jobs. In addition, in the opinion of interviewees and according to the results of the survey, digital systems improve communication and information exchange. As a result, the work of officials is less time-consuming and more organised. The quality of interaction with public service users was assessed positively by 47% of respondents.

However, with the introduction of digital tools in the public administration, work intensity has increased at both local and central levels, according to interviewees and focus group participants. This conclusion was confirmed by the DGQS: 54% of respondents claimed to have an increased pace of work and work intensity due to the acquisition of digital tools. However, it should be emphasised that the development of digitalisation was also accompanied by an expansion of the scope of officials' responsibilities, for several reasons: new requirements related to EU membership, new reporting obligations and an increase in the number of enquiries through the access to public information procedure (increased civic awareness). As one interviewee explained:

> *'The intensity of work in the public administration has been steadily increasing for at least two decades now. Above all, this is the result of new responsibilities assigned to various public institutions by the legislator and by EU regulations. At the same time, administrative procedures are being digitalised, which gives even more impetus to these changes and increases the intensity of work. It is impossible to separate these two factors in my view'. (INT6)*

The Social Insurance Institution (ZUS) workers also face similar challenges. According to the trade union representative in ZUS (INT8), work intensity is increasing over the years – even more so than in the central public administration. One of the factors in this regard is precisely digitalisation and the emergence of new digital applications that are often not compatible with each other. In some cases, work requires simultaneous confirmation of information in paper documentation and case processing through a digital application, which increases the work.

According to two interviewees, work in the public administration at both local and central levels has also become more routine due to the introduction of digital systems in connection with the standardisation of administrative procedures (INT6 and INT7). According to the same respondents, the use of digital tools in the local and central public administration, on the other hand, has not affected the autonomy of work, because this depends mostly on the organisation of work in the team and the degree of freedom decided on by the supervisor. This is especially true for the local administration, which to a large extent remains undigitalised. Digital tools affect the content of the work itself and not the way it is done. ZUS workers even feel increased autonomy in connection

with the use of digital tools (INT8), as employees can make decisions on their own without direct supervision by the employer. However, the fundamental limitation is the legal framework within which workers must act. Thus, the extent of workers' autonomy is strongly regulated anyway. According to the DGQS, digital tools give the worker more autonomy to schedule work tasks (48%) and to organise work tasks (48%), as well as improving coordination of tasks with colleagues (50%).

Moreover, digitalisation – according to the respondents to the DGQS – may be useful in managing work: 54% of them declared that digital tools give them better oversight over subordinates carrying out tasks and give a clearer overview of the implementation of their own tasks (50%).

In all public administration institutions covered in this study, remote working started from the beginning of the pandemic, made possible, among other things, by pre-existing digital systems for document circulation and internal communication (INT6). However, not all institutions were able to work remotely. Some institutions were not prepared for remote working at all (for example the job centre in Warsaw, FG4), others had to clearly reorganise their work and upgrade their equipment (for example the ministries (INT6), ZUS (INT8), local governments in Warsaw and Szczecin (FG1, FG2)), while employees of the KNF who worked remotely before the pandemic did not notice any major changes due to the pandemic (FG6). In addition, not all professions could work remotely: people whose work required the processing of documents available only in analogue form, or classified documents, as well as the front officers in local municipalities, were obliged to work in an office. In the words of a focus group participant:

> *'The possibility of using remote working depends on the organisation – frontline workers cannot afford it, while white collars can. This is the fundamental inequality between the two groups'. (FG3)*

For those who could work remotely there was no need for new digital systems due to the pandemic, as they were already in place in most of the institutions studied. However, the availability of adequately secured computers proved to be a challenge. At ZUS and local governments in Warsaw and Szczecin (INT8, FG1, FG2), the employer was sceptical about remote working at the beginning of the pandemic, precisely because of the security of the data being processed. With time, however, the employer gained trust in the workers and remote working was allowed. Otherwise, the institutions' operations could have been paralysed, in the assessment of the interviewees. As a result, a significant number of employees were forced to use private computers, which, however, were not always suited to the software used in the office. In some institutions – for example in local government in Szczecin – a rotational working scheme was introduced: some employees worked remotely, so that the remaining employees could maintain an appropriate distance in the office, then there was a swap between working remotely and working in the office (FG3).

According to the DGQS, which was conducted in mid-2022, only 5% worked entirely from home, 30% declared hybrid arrangements, while another 30% replied that working from home was possible only during the COVID-19 pandemic. The remaining 34% declared that working from home is not possible at their institution. Half of the respondents stated that remote working at the user's home / premises, or a satellite office or structure was also possible, one in four declared that these options were partly available, and only 19% declared that it was possibly only during the COVID-19 pandemic.

Hybrid working schedules were first established in the public administration after the lockdowns related to the pandemic. As many as 55% of the DGQS respondents declared that they work from home one day per week or less, while other options are far less frequent. Over 35% of respondents had difficulty in answering how many days per week they telework. For example, in the Ministry of Family and Social Policy, employees can work from home a maximum of 20% of their working time (e.g. one day a week for full-time employees) (INT6). At the Social Insurance Institution, on the other hand, workers returned entirely to working in the office (INT8). Employees also demanded an allowance to cover expenses related to working from home (to cover electricity, water, internet costs, etc.), but the employer rejected these demands citing a lack of legal basis (INT6). In some institutions, however, the opportunity to work remotely is seen as a reward for the employee that must be earned, rather than a regular work arrangement (FG4, FG5). This is particularly the case in institutions where a paternalistic management model still prevails. As one focus group participant explained:

> *'Most employees want to work remotely because it is easier to combine work and home responsibilities. In our institution, unfortunately, remote working is looked upon as a reward – this should not be the case'. (FG5)*

The DGQS revealed also that 33% of respondents felt that their job does not involve any need to connect from outside their workplace, and therefore they do not feel any pressure to log in remotely. A further 29% do not feel the pressure at all under any circumstances. Only 12% feel the pressure to log in as a result of their own choice and 11% occasionally feel the pressure from their employer / supervisor. Despite the above answers, 70% of respondents are of the opinion that the right to disconnect is essential in an increasingly connected professional and social environment and that this right should be clearly established, a) in the labour legislation (78%); b) in collective bargaining agendas at their workplace (64%); and c) in sectoral and cross-sectoral collective bargaining agendas (64%).

Health and safety and outcomes for workers

According to all the interviewees, digitalisation in the public administration has had an impact on healthy and safe working conditions. Although the number of accidents at work is decreasing, the

need to use digital applications forces people to sit at their desks for longer periods of time and spend more time in front of a computer screen. As a result, workers move around a lot less. Sedentary work patterns increase complaints of musculoskeletal disorders. Increased intensity of work is more likely to cause stress, increased routine causes fatigue with the duties performed, and in the long term both these factors may lead to professional burnout. Computer work via digital applications can lead to greater alienation of employees and a sense of separation. Communication in the workplace also becomes less personal, anonymous. As a result, individual workers can have a sense of working without a team.

According to the DGQS, 34% of respondents claimed that digitalisation caused a new physical pain/condition or (28%) worsened an existing physical pain/condition. Another 28% of respondents did not notice an impact on their physical heath. The respondents declared the following physical health problems: vision problems (20%), back pains (18%), neck pains (15%), headaches (12%), physical fatigue (12%), hand pains (9%) and other health problems (13%). Also, respondents declared that digitalisation had caused psychological problems (20%) or aggravated an existing psychological condition (7%). This included the following: mental fatigue (23%), stress (21%), burn-out (15%), demotivation (14%), overwhelming emotional demands (8%), anxiety (8%), depression (6%), sense of isolation and distress (5%). Just over 60% of respondents did not notice any changes in their mental health ([19]).

Skills and learning

According to most of the trade unionists interviewed, the skills development and training provided in the public administration in the area of digitalisation is not satisfactory. Respondents indicated that training is conducted rarely and is often insufficient. According to the DGQS, some sort of training was provided to 45% of workers (use of specific tools: 26%, general digital skills: 11%, both general and specific skills: 9%). Some 20 % of respondents said that no training in digital skills was provided, a further 22% said that they learn informally in their workplace.

Some applications are introduced without a training package and the employer expects employees to navigate the application environment from the beginning. Current workers are often expected to introduce new workers to the digital systems. However, inadequate time is set aside for the implementation period, which is challenging in a situation of increasing work intensity and more new responsibilities. New workers can therefore often feel confused and insufficiently introduced

19. Unfortunately, we were not able to cover this issue in the focus group. It seems that H&S is not a priority issue for the workers with regard to digitalisation. Interviewees did not mention this on their own initiative.

to their responsibilities in the entry period. These problems result in more mistakes, longer procedures and frustration among staff. One interviewee explains:

> *'Workers are not always prepared to use digital tools. Training is insufficient, the workers learn by doing (on-job training), one will catch on faster the other slower. Training should be extended and more adapted to the needs of the workers. Younger workers learn faster and older workers find it more difficult. In-house training comes at the expense of other responsibilities in the workplace.' (INT7)*

According to the DGQS, only 24% of respondents were fully satisfied with the training provided, the largest group (56%) were satisfied only partly. But as many as 60% of respondents declared that the skills development increased the range of their personal skills, opened up other job or career opportunities in the current institution (35%) or outside the current institution (45%).

3.2.2 Conclusions for the public administration sector

The Programme for the Integrated Informatisation of the State (Council of Ministers 2019a) envisages an ambitious process of digitalisation of the public administration. Some electronic services have already been implemented, but their scope will be gradually extended and improved. Digitalisation affects both the delivery of services to meet citizens' needs, but also the ways of organising work inside public institutions. So far, several dozen electronic tools for public services have been implemented, as well as many digital applications used internally by administration employees. Among the institutions studied, the Social Insurance Institution and the Financial Supervision Authority are particularly advanced in terms of digitalisation.

According to trade union interviewees, digitalisation is associated with an increase in the intensity and routine of work, while the level of autonomy of employees does not change or increases only slightly. Digitalisation has no impact on employment stability in the sector. One important period was the pandemic, in which remote communication tools enabled the continuity of the public administration. However, the lack of computer equipment and appropriate software, combined with insufficient IT support, led to numerous problems. In the first phase of the pandemic, employers adopted a reluctant attitude towards remote working, but in the second stage they made remote working possible in order to enable the uninterrupted delivery of public services.

According to most interviewees and focus group participants, digitalisation does not fundamentally affect other elements of working conditions such as working time, work-life balance, career prospects and employment security or workers' rights. In this respect, other elements play a more important role, such as overload of duties, low wages or labour shortage. Trade unions highlighted increased psychosocial risks and musculoskeletal disorders due to frequent computer use. They also pointed to insufficient preparation in terms of digital competences and training, which is mostly not sufficiently provided by the employer. Focus group participants highlighted reluctance

of the management to involve workers in implementing digital instruments in their daily work, despite the fact that procurement procedures allow for agile work with programmers. They see the reason for this as being the hierarchical and obsolete management structures in their institutions.

3.3 Hospital sector

For the purpose of the study, four interviews with representatives of trade unions present in the sector were conducted, including an expert from the National Health Care Section of Poland's largest unitary trade union, NSZZ 'Solidarność', a representative of the regional authorities of the largest trade union of nurses and midwives, a representative of the authorities of the trade union for radiographers, and the chairwoman of the public services section of the largest national trade union confederation, OPZZ. The focus group for this sector was attended by six representatives from the health sector, including one trade union representative (from NSZZ 'Solidarność'). In addition, a representative of the 'Digital Nurses' association and the following employees of various hospitals participated: a laboratory diagnostician, the head of the hospital's medical records department, the head of the hospital's ICT department and a hospital ICT technician. As in the case of the electricity sector, a small number of completed questionnaires were obtained during the online survey in Poland (47): the results are therefore used for illustrative purpose only.

3.3.1 Selected job quality dimensions

Work organisation

In general, digital innovations identified during the study, such as telemedicine tools, electronic documentation, advanced devices for measuring patients' vital signs or hospital information systems, have not had a radical impact on the organisation of work in the health facilities, as declared by the representatives of the trade unions interviewed. Medical procedures take place subject to a certain regulatory framework, and there is a clear organisational structure and hierarchy within the medical staff. The changes are largely limited to the nature of specific activities: working with printed documents has been replaced by activities consisting in handling dedicated applications. This, in turn, requires employees to change certain habits. A representative of a sectoral trade union covering various occupations in public healthcare (INT9), referring to the issue of routine tasks, indicated that 'one kind was replaced by another', as some processes replaced others (e.g. transmission of certain information by e-mail, while in the past the telephone or traditional mail was used for this purpose). In turn, a representative of the nurses' union (INT10) felt that working with electronic medical documentation may cause a worker to fall into a routine, and in turn to miss some important observations. At the same time, in her opinion, the digital equipment of hospitals reduces the autonomy of her professional group in such a way that doctors have greater insight into the work of nurses and can verify their truthfulness in certain situations. These devices record the patient's condition and store information on whether certain events took place during someone's duty hours, such as cardiac arrhythmias.

Some focus group participants emphasised that the digitalisation of the workflow in the hospital makes the work of many employees more efficient, due to a certain standardisation of the information exchanged. For example, the nurse receives the doctor's instructions regarding the medicines to be given to the patient in a much more precise way – the system does not allow errors in the prescription of a medicine, the name or dosage must correspond to the actual specification of the given drug.

In the online survey, most respondents were positive about the impact of digitalisation on work in their sector: more than 50% answered 'strongly agree' and 'somewhat agree' to the statement concerning improved quality of jobs as well as working conditions, and 60% when asked about the impact on the quality of services provided to users.

Working time

Before discussing the assessment of the impact of digitalisation on working time in the hospital sector, we should describe the general problem posed by the issue of working time in healthcare in Poland. Doctors and nurses have very long average working hours, caused, among other things, by significant labour shortages in the sector (Bury 2018; NIK 2015). The problem is exacerbated by the burden on medical workers of excessive reporting obligations and other administrative activities. According to the audit results of the Supreme Audit Office, the use of digital solutions, such as e-referrals, can significantly reduce time-consuming administrative activities (NIK 2021). A representative of the trade union covering various occupational groups in public healthcare (INT9) was of the view that the impact of digital solutions on work intensity and time is complex. Undoubtedly, they allow employees to perform certain activities faster, but additional factors also matter. He indicated three important ones: a) the level of digital qualifications of the employee and proficiency in using digital technologies; b) the position they hold in the organisational structure along with the related entitlements; and c) the IT tools already used in a given medical entity.

Digital tools related to the treatment and monitoring of the health condition of patients in the hospital's intensive care unit, mentioned by the representative of the nurses' union (INT10), are assessed as positive by employees because they reduce the intensity of work, simplifying it and shortening the time needed to perform certain activities. For instance, in the past, some measurements – such as blood pressure – had to be performed by a nurse in person, which was not always an easy task. Currently, this measurement is performed on an ongoing basis by the equipment to which the patient is connected. In the words of one respondent:

> *'For example, measuring pressure. I put the cuff on and I don't have to listen with the stethoscope... sometimes we listened for hours because the heart rate was weak. I have the*

> *cuff on and everything is displayed on the monitor. Got it in five seconds. It is also very good for the patient'.* (INT10)

On the other hand, the assessment of the impact of electronic health documentation is more complex, as the interview with the nurses' representative (INT10) showed. It turns out that in some hospitals there were errors in the introduction process – on which there was no consultation with nurses, as the respondent indicated – which even increased the intensity and time taken to do work. The biggest problems are: maintaining the obligation to also keep documentation in paper form, different structures of e-documentation and traditional documentation, the quantity of e-documents, or even the lack of a sufficient number of computer workstations for entering documentation. One interviewee explained:

> *'We were about to switch to all electronic documentation by the end of last year. And it is very difficult, because despite the fact that the hospital has received a subsidy to introduce this digitalisation, there are so many of these workstations for record-keeping that we do not have enough computers. If there are four nurses in the ward and we have one desktop computer, not connected to the patient monitoring system, where I have to enter everything that I observe in the patient's electronic card, plus keep paper records, it is a very big problem for us'.* (INT10)

At the same time, this interviewee expressed the conviction that in hospitals where there has been a complete transition to electronic documentation, this tool facilitates the work of nurses.

Health and safety and outcomes for workers

The interviewee representing nurses pointed to possible vision problems and musculoskeletal effects from sitting in front of a computer and staring at a screen for long periods of time:

> *'Due to the fact that there is a lot of electronics at work, my colleagues get tired more. Eyes… a lot of us wear glasses. Nobody cares that this can happen because of the constant presence of electronics. I used to have two lights during the night shift, now the whole room is lit up. (...) Before, I was sitting over the report, now I am sitting in front of the monitor all the time'. (INT10).*

On the other hand, the focus group participant representing nurses (FG12) indicated that digitally controlled patient lifting aids could help nurses and members of hospital support staff to avoid musculoskeletal problems.

One interviewee also referred to stress, which can sometimes be associated with the operation of new devices (INT10). Some of her colleagues are concerned that they may damage the complicated digital devices used in hospital wards. On the other hand, digital equipment in intensive care units may reduce another source of stress, related to certain painful medical

procedures. They become less invasive. The new tools make it easier to monitor the patient's health condition while reducing punctures, which, especially in the case of the youngest patients, mitigates their suffering and anxiety, thus improving the mental state of employees. The issue of stress also came up during the focus group, with one focus group participant pointing to problems of older workers, less familiar with modern technology and, in her view, not always provided with adequate training in the use of newly implemented digital tools (FG12). Also, a representative of the hospital IT department (FG15) mentioned the frustration sometimes shown by medical staff members when certain tools fail.

Skills and learning

Training in and learning new technologies were an important part of implementing digital solutions. In the budget of the Ministry of Health, sufficient funds were secured to make medical personnel acquainted with the use of these tools through free training. The nurses gave a less clearly positive assessment of the training in new tools. The representative of the nurses' trade union (INT10) expressed her opinion that her hospital lacked sufficient training in the use of electronic documentation. Also, the DGQS shows a mixed assessment of the availability of training on the tools being implemented. Only just over a third of the respondents indicated that they had had the opportunity to receive such training, while less than a third declared that they learn new technologies informally in the workplace, for example by taking advice from colleagues.

At the same time, some other positive observations were made by the group of professional nurses. First, a trade union representative (INT10) said that the introduction of e-prescriptions encouraged nurses to issue prescriptions to patients for medicines previously issued by a doctor, as part of continuing treatment. This possibility was introduced in January 2016 (Warmińska and Urban 2016). Initially, however, not many nurses took advantage of this opportunity because they were afraid of making a mistake and saw some inconveniences related to issuing traditional prescriptions. The introduction of e-prescriptions improved this situation, thus increasing the scope of activities undertaken by nurses, extending the range of their professional skills.

The same representative of the nurses' union (INT10) also described the increased access of her professional group to knowledge resources in the form of digital repositories or electronic courses. At the same time, it seems that digitalisation can also discourage certain good practices and weaken skills due to the fact that many activities are now performed on a computer. A representative of the radiographers' trade union (INT11) – referring to trends observed in various countries, not only in Poland – indicated a tendency to increase the radiation doses during the examination of the patient. When there is no risk of overexposure of the image thanks to computer controls, technicians no longer strictly follow the principle of dose minimisation, which is important in this profession. In the words of one interviewee:

> *People start to take the easy way out of positioning and projection, and this is starting to reflect on the quality of examination. They no longer remember about the basic conditions that should be used for a given body part, for a given organ, because it is all done by the machine. It starts to look a bit like an 'idiot camera'.* (INT11)

However, an example of opposite attitudes among employees came from a representative of the nurses' trade union. Many nurses do not fully trust digital equipment and closely monitor its operation, which in some situations may turn out to be important for the patient's health. In the interview with a nurses' representative (INT10), an example was given of an employee who quickly realised that the pump used was delivering the drug into the patient's bloodstream at much too fast a pace, which saved that person's life.

Reconciling work and personal life

Generally, in the opinion of the representative of the trade union covering various occupations in the sector (INT9), digital solutions have no impact on work schedules or total working time. He is not aware of any changes in the work regulations of medical facilities caused by the digital solutions analysed here. Consequently, the impact on work-life balance is not significant (as is also confirmed by the focus group participants, including FG12). There is one positive exception to this, namely for medical workers who provide services outside the place of employment. Thanks to digital tools, they can issue or verify certain documents online anytime and anywhere.

The results of the online survey confirm that the overall impact of digitalisation on the work-life balance is small. Less than one fifth of respondents spoke of such an impact in the health sector. Even smaller was the proportion of respondents indicating a direct impact of digitalisation on their situation, e.g. on the amount of time they can spend with their families. This was just over one-tenth of respondents, with no people strongly agreeing with the statement on this topic.

Career prospects and employment security

In the opinion of the representative of the trade union covering various healthcare occupations (INT9), the digital solutions analysed have no impact on staff professional development prospects. These are closely related to the specific structure of medical professions and specialisations. The impact of new health protection solutions on employment security is similarly questionable. Their use takes place within the framework of established medical procedures, and the digital tools themselves only modify the technical aspect. The powers to implement these procedures are vested in representatives of specific professions and specialisations. It is therefore not possible, for example, for lower-level personnel to take over the duties of doctors. At best, they can support the latter in simpler tasks, such as administrative matters or continuing the patient's treatment. According to the representative of the nurses' trade union, digital tools have no impact on job security for her professional group. There are no reasons to dismiss nurses because of digitalisation.

3.3.2 Conclusions for the hospital sector

The technology analysed has not caused a radical change in the quality of work in the hospital sector, associated with the specific nature of the sector, which is strongly regulated by law, with strictly defined procedures and clear job hierarchies. The new digital solutions, such as e-prescriptions or e-referrals, facilitate the daily work of medical personnel and simplify and shorten some procedures. However, it seems that they do not make any fundamental changes to work organisation, work time and schedule, work-life balance or the structure of work positions. At the same time, in some hospitals, mistakes resulting from an insufficiently thorough implementation of digital tools have caused problems for nurses, such as an increase in work intensity.

4. Impact of digitalisation on social dialogue

The most relevant bodies for social dialogue in Poland are established at central level. There are 21 tripartite sectoral committees and two subcommittees ([20]), including the Energy Sectoral Committee ([21]) and the Healthcare Sectoral Committee ([22]). There is no committee covering the public administration sector. There are also eight cross-sectoral thematic teams ([23]) in the Social Dialogue Council (*pl.* Rada Dialogu Społecznego, RDS) – the peak-level tripartite social dialogue body, including the Public Services Thematic Team ([24]) covering the National tax administration team, the Uniformed services team and the Temporary healthcare thematic team. No RDS team has dealt with the issue of digitalisation. At the regional level, the regional social dialogue councils discuss local-level issues and play an advisory role on issues relevant for the social partners ([25]).

4.1 Electricity sector

4.1.1 Social dialogue on digitalisation in the electricity sector

Compared to the other sectors, industrial relations are well developed in the energy sector. Trade unions are present in all four major companies (PGE, Tauron, Enea, Energa) and are included in company level collective bargaining. There is only one employers' organisation in the sector: - the Association of Polish Power Industry Employers (*Związek Pracodawców Energetyki Polskiej,* ZPEP). The ZPEP brings together all companies (nearly 40) belonging to the four largest groups of energy companies (PGE, Tauron, Enea, Energa) and covers over 90% of the sectoral workforce.

One of the key conclusions of the DIGIQU@LPUB study is that, despite relatively well-developed social dialogue in the energy sector, digitalisation processes are primarily employer-driven, but supported by trade unions and workers in general. The unions perceive the progressive digitalisation and evaluate it positively in general terms, but they do not see the need to have it as a subject of negotiations with the employer. They seem to accept the solutions proposed by employers and try to adapt to them. Moreover, digitalisation issues are not covered by collective bargaining or collective agreements. Collective agreements focus rather on wages, employment plans and social benefits. Some agreements also include a training schedule, but training in the use of digital tools is not explicitly mentioned. With the obligation to ensure the protection of personal data introduced by law in 2018, regulations in this area and relevant policies have been

20. See: https://www.gov.pl/web/dialog/trojstronne-zespoly-branzowe
21. See: https://www.gov.pl/web/dialog/zespol-trojstronny-ds-branzy-energetycznej
22. See: https://www.gov.pl/web/dialog/zespol-trojstronny-ds-ochrony-zdrowie-przy-ministerstwie-zdrowia0
23. See: https://www.gov.pl/web/dialog/rada-dialogu-spolecznego3
24. See: http://rds.gov.pl/zespoly-rds/zespol-problemowy-ds-uslug-publicznych/
25. A detailed description of the Polish industrial relations system has been presented in the full-length country report elaborated under the DIGIQU@LPUB project to contextualise the results of the study presented below.

established in other documents, separately from collective agreements. Also, the issue of the implementation of the European Green Deal is gaining more attention in this sector, according to INT1 and INT2.

According to INT1, INT2, INT4, INT5, remote work is also not a major challenge for the energy sector, as it is very rarely used in these companies. The COVID-19 pandemic did require remote working for some office workers, but they have now returned to in-office mode. On the issue of the right to disconnect, unions in the energy sector are only observing the European debate and are not active participants, as potential regulations in this area will affect the sector to a very limited extent (INT2).

4.1.2 Conclusions

Trade unions in the electricity sector see digitalisation in terms of opportunities rather than threats (INT1, INT2, INT4, INT5). Previous concerns about technological unemployment and job losses in the sector have disappeared with the development of new technologies in the workplace. While unions forecast a reduction in employment in the sector due to automation, this will consist of a reduction in the need for new manual workers while maintaining the employment of existing workers with appropriate training (INT4). They also see opportunities for new jobs for the highly skilled workers who will be needed to operate the new technologies (INT2).

At the same time, the process of digitalisation is seen by the unions as an issue of little relevance to collective labour relations, although they recognise its impact on the quality of work.

4.2 Public administration sector

4.2.1 Social dialogue on digitalisation in the public sector

There are a number of representative trade unions in the central and local public administration sector, which reflects the diversity of the public administration itself and the perspectives of different groups of workers. It is also an indicator of the pluralism and fragmentation of the labour movement in the sector (and the whole economy – Gardawski 2023). One of the structural factors shaping the position of workers and trade unions in the public administration is that these workers have no right to strike (Act on resolving collective disputes 1991). There are no employer organisations that meet the statutory definition in the public administration sector. There are no supra-company collective agreements in the public administration sector, and collective bargaining coverage is less than 1% (Eurofound 2022b: 37). Collective employment relations are settled either through legal regulations (legal acts or resolutions) or at company level. Moreover, according to the Labour Code, certain public administration workers cannot be covered by collective agreements. This group includes civil servants, as well as state and local government workers employed based on election, appointment and vocation. Thus, digitalisation is not subject to collective agreements. However, some elements of digitalisation can be the subject of dialogue

at company level. In the Social Insurance Institution, where digitalisation processes are advanced and have been going on for more than two decades, trade unions are involved in advising on the development of new digital applications for customer service and internal work in the institution, as well as making comments on IT systems already in place. Due to the important role that these digital tools play for working conditions, trade unions conduct constant monitoring of the quality of these systems and are involved in the ZUS digitalisation process. Comments made by trade unions are often considered by the employer (and IT system developers), but not always. Trade unions point to several drawbacks and challenges in working with these IT systems (INT6, INT7, INT8): their low level of integration and incompatibility with each other, incomplete digitalisation of databases, failure to take into account legislative changes in some systems, etc. Another challenge is the lack of training or insufficient training for employees – especially those workers starting out their jobs. Senior staff are burdened with the responsibility of training new staff.

The conditions for remote working during the COVID-19 pandemic were also discussed between the public administration unions and employers – at both central and local level. A key challenge was securing enough computers with appropriate software, as well as data security (INT6, INT7, INT8). The unions also demanded an allowance for working from home to cover the increased expenses involved (electricity, internet, water bills, etc.), but these demands were rejected (INT6). The main way to shape working conditions in the public administration sector is through legislation rather than collective agreements. Therefore, trade unions focus on participating in the consultation on legislation via their representatives in the Social Dialogue Council. In recent years, the most important digitalisation issue has been the regulation of telework, which is to be introduced into the Labour Code as a permanent solution. During the COVID-19 pandemic, only temporary legislation was adopted in this regard, which expired in August 2022. The new, permanent regulations pertaining to telework enter into force on 7th April 2023 ([26]).

When asked about other digitalisation issues in the DGQ survey, respondents pointed to the need to implement the European social partners' framework agreement on digitalisation (ETUC, Business Europe, CEEP and SME United, 2020). The issue of the right to disconnect is of special interest to the unions, and they have declared their readiness to discuss the regulations at European and national level.

4.2.2 Conclusions

Digitalisation is a marginal issue on the agenda of the trade unions in the public administration. It is not the subject of collective agreements due to their almost complete absence from the sector. The unions see, however, the prospect of progressive digitalisation in connection with the

26. Act of 1 December 2022 amending the Act - Labour Code and certain other acts (Journal of Laws of 2023, item 240). Overview of the new provisions on telework might be read under the following link: https://www.gov.pl/web/rodzina/praca-zdalna

Programme for the Integrated Informatisation of the State (Council of Ministers 2019b). In some institutions such as ZUS, the implementation of IT systems is subject to constant monitoring. Unions also played a role in shaping working conditions for telework at company level during the pandemic period, by reporting on employees' needs for access to computers, software and training, and unsuccessfully demanded payment of work-from-home allowances. Trade unions in the public administration highlight the problems of low wages, work overload and overtime, staff shortages (especially in larger cities) and insufficient training. Issues related to digitalisation – with the exception of telework – are not high on their list of priorities.

4.3 Hospital sector

4.3.1 Social dialogue on digitalisation in the public sector

There is almost no collective bargaining in the health sector. According to a Eurofound study, in 2018 the coverage of the sector by collective agreements was as little as 2% (!) (Eurofound 2022c: 24). Collective bargaining, if conducted, takes place at company level (ibid), which is a typical situation in Poland. During the current study, however, no cases of medical facilities were identified in which a collective agreement was in force or was being negotiated.

The most common way in which the sectoral social partners are involved in developing national public policies is participation in social consultations, i.e. issuing opinions on draft legal acts relating to healthcare. At the same time, there are two tripartite teams within the Social Dialogue Council, the national advisory body of tripartite social dialogue. The first is the Tripartite Sectoral Team for Healthcare (within the Ministry of Health). This is a sectoral body existing since 2005, made up of representatives from the Government side, as well as from nationwide representative trade unions and representative national employer organisations.

The second tripartite body within the Social Dialogue Council is the Sub-Team for Healthcare within the Problem Team for Public Services. During the Covid-19 pandemic and six months after the pandemic was lifted, this body was replaced by the Ad-Hoc Tripartite Team for Healthcare.

As indicated above, collective bargaining is almost absent from the health sector. There is also no habit of concluding agreements for the entire sector. Generally, issues related to employment and working conditions are regulated through legislation. Social partners which are representative at the national level are primarily involved in issuing opinions on draft legal acts during public consultations. This was also true for the implementation of the digital tools described in this working paper.

It also seems that in the last two years, the consultation agenda within the tripartite bodies has been dominated by current events, such as the COVID-19 pandemic or the recent influx of

refugees from Ukraine. The implementation of digital solutions – if not related to these issues – was not a priority issue for the social partners. Also, certain issues that have long been the subject of disputes, such as the level of remuneration of middle-level medical personnel, seem to be a more important topic of discussion amongst stakeholders in the healthcare system. In the opinion of a participant in the social dialogue bodies (INT12), the issue of digitalisation of healthcare, including the introduction of e-health tools, has sometimes been discussed among social partners in recent years. At the same time, she could not recall any in-depth discussion on the impact of digitalisation on various aspects of work in healthcare.

Due to the lack of collective bargaining, we can only discuss broader attitudes of trade union representatives towards digitalisation, which may result in them issuing specific positions in the course of social consultations conducted within tripartite social dialogue bodies. Based on the interviews INT9 and INT11, and also on the basis of the firm refusal of certain relevant trade unions in the sector to give an interview on digitisation, it can be concluded that these attitudes range from moderate interest (digitalisation is considered as a factor that may affect certain aspects of work, and therefore should be included on the agenda of the stakeholder debate, but not as one of the most important topics) to disinterest.

However, the attitude of the representative of the nurses' trade union (INT10) is different, as she works in the intensive care unit daily and sees the influence of digital tools on the situation of her professional group. It was this respondent who described the greatest shortcomings of the tool implementation process. She said, among other things, that nurses are not consulted on these tools at either sectoral or hospital level, which makes the implementation process worse than it would be if their opinions were considered:

> *'If the nurses could be more involved in the preparation of these documentation applications, or in the implementation of this documentation in the hospital, it would make our work easier. Because the worst way to learn is to learn from mistakes. And we could learn together with the person who introduces it'.* (INT10)

4.3.2 Conclusions

The impression may be given that only part of the medical community sees digitalisation as a problem that requires in-depth debate and consideration of the views of employees. These are the nurses, who have been experiencing problems resulting from excessive workload due to labour shortages for years. Within the institutional framework in Poland, it is very unlikely that these tools will become the subject of social dialogue in a way that is binding for policy makers. There is no collective bargaining in the sector and the government side arbitrarily decides which views of the social partners will be considered.

5. Cross-cutting conclusions

In the studied sectors, digitalisation is a phenomenon that significantly influences various aspects of the work performed, although it has not resulted in radical organisational or working time changes. It is also assessed rather positively by the trade union representatives interviewed, although their assessment depends on the context of the introduced changes. It may be adversely affected by insufficiently careful implementation or mistakes made during it, but also by additional circumstances, such as if employees are burdened with increased tasks. In the latter situation, although the use of digital tools simplifies and speeds up procedures, employees may experience increased work intensity, as can be seen in the public administration sector. The analysed cases of implementation of digital tools also show the importance of considering the 'human factor'. The implementation should be accompanied by the provision of effective training (this was achieved in relation to e-health solutions, for example) and the right attitude of managers, respecting the employees' abilities to adapt to new technologies.

The digitalisation process changes certain practices and habits of employees. It also generates some new problems and difficulties in place of the old ones. For example, the number of accidents at work may decline, but at the same time there are increasing health problems resulting from long periods sitting in front of a computer and staring at a screen. The impact on work autonomy varies – for some employees it increases due to the ability to make certain decisions independently, for others, such as nurses – it decreases due to the increased capacity for monitoring by doctors. Among the interviewees, the dominant belief is that work is overall becoming more routine, although, in some cases, the use of standardised digital forms may significantly shorten the time needed to perform specific administrative tasks. The work-life balance is unlikely to improve unless it is possible to work remotely from home. Thus, we can assess that digitalisation resolves some old problems of employees and improves some aspects of work, but also generates new challenges.

In the three sectors analysed, the impact of digitalisation on employment conditions is generally not a subject for collective bargaining. The reason for this is the general weakness of this form of social dialogue in Poland. While collective bargaining agreements exist in some sectors, notably in industry, for example in the electricity sector, even then they mainly cover basic or 'traditional' issues affecting employment conditions. The most common form of social dialogue are talks of a consultative nature within the relevant tripartite teams of the Social Dialogue Council. By participating in these, as well as by submitting opinions on draft legal acts in their bilateral relations with ministries, social partners try to influence legislation, which is virtually the only mechanism for regulating public policies in individual sectors. Thus, we are dealing with a state-driven social dialogue system, in which the government side in many cases initiates certain

changes – including digitalisation of certain public services – and the unions play a reactive role, adapting to the current direction of government activity.

The drawback of such a system is undoubtedly the fact that employee representation always remains a step behind the decision-makers, and its influence on the changes introduced in the field of employment is therefore limited. This is especially true of such dynamic phenomena as digitalisation. And although some social partners ignore these phenomena, middle-level personnel may experience the negative effects of the introduction of new solutions without due consideration of the voice of employees and a thorough consultation process.

6. Policy recommendations

Digitalisation is far down the list of interests of unions, which negotiate basic employment conditions or wage levels. However, some recommendations were formulated by the interviewees in the study.

The issue was raised of insufficient (or often a lack of) mechanisms for consulting on the technical aspects of the ICT systems being planned and implemented. One way in which unions could demonstrate their effectiveness vis-à-vis their membership would be by putting pressure on the authorities and managers of individual organisations/companies or their subsidiaries to consider the voice of the users of the digital tools being implemented. Employees want to have a say in the design of the systems they use, as they know best how particular tools should be designed to enable them to work as efficiently and comfortably as possible. At the same time, implementation of consultation mechanisms seems to be relatively feasible.

Another issue, mainly concerning the national social dialogue, is the right to disconnect, a topic which has potential for trade unions. Both the survey and some of the interviews, especially in the public administration, show that this is an important issue for workers. Trade unions should take these views of representatives of their membership into account and make more vigorous efforts to introduce appropriate legislative solutions on this issue.

In the opinion of one interviewee, the current framework agreements of the European social partners, for instance on digitalisation, play a positive role, but they are not binding, and their implementation does not always bring tangible results in terms of improving working conditions or establishing solutions to the challenges of digitalisation (INT13). The value of these agreements is to initiate discussions at national level, raising awareness among different stakeholders, including employers and legislators, for example on the issue of the right to disconnect.

The same interviewee pointed out that there are situations where dialogue at EU level is used as an excuse by the national government to stop legislative work. Such a situation is encountered in relation to the current negotiations at the EU level on the regulation of the right to disconnect. From this point of view, it is important to have a timetable for the negotiations at EU level and to coordinate this work with the national unions to aim for solutions that are favourable to workers, and to deliver them in an acceptable period of time.

In the next stage – when priority, binding and sustainably raised labour standards in the EU have been resolved – it will be worthwhile to have activities such as exchanges of experience and knowledge between trade unionists from different countries concerning digitalisation. Many levels of exchange of such experiences can be imagined, e.g. with regard to the implementation of Recovery and Resilience plans, in which considerable resources are to be allocated to digitalisation ([27]), or regarding the European Green Deal, which presents digitalisation as a way of reducing CO2 emissions. There is also a need for training for union leaders to familiarise them with the risks of digitalisation, and with solutions from other countries to protect workers' rights and working conditions (good practices). On the other hand, at the national level, there should be appropriate funding mechanisms for training workers to acquire the necessary competences, for upskilling, reskilling, etc. in the context of the digitalisation of workplaces.

One interviewee regretted that Polish trade unions are not very familiar with the threats and regulatory loopholes that enable digital business giants to operate as they do. In contrast to NGOs dealing with the digitalisation of the economy, trade unions do not raise the issue of fair taxation of digital business to use resources at the national level where added value is generated, or the issue of regulations preventing manipulation, the spreading of fake news or the influencing of democratic procedures.

27. It is worth noting that the European Commission has still not released the RRF funds for Poland due to doubts over breaches of the rule of law. From this point of view, it would be helpful to benefit from the experience of other countries which are already more advanced in the implementation of RRF projects.

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Act of 2 March 2020 on specific solutions related to the prevention and combating of COVID-19, other infectious diseases and crisis situations caused by them [Ustawa z dnia 2 marca 2020 r. o szczególnych rozwiązaniach związanych z zapobieganiem, przeciwdziałaniem i zwalczaniem COVID-19, innych chorób zakaźnych oraz wywołanych nimi sytuacji kryzysowych].

Act of 1 December 2022 amending the Act - Labour Code and certain other acts (on telework) [Ustawa z dnia 1 grudnia 2022 r. o zmianie ustawy – Kodeks pracy oraz niektórych innych ustaw].

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All links were checked on 15.04.2023.

Annex 1. List of interviews

ID	Institution*	Sector**	Occupational group ***	Position****	Date	Method *****
INT1	National Section for Power Plants of NSZZ 'Solidarność'	Electricity		Official of the National Section	20.05.2022	Phone
INT2	National Energy Section of NSZZ 'Solidarność'	Electricity		Official of the National Section	13.05.2022	Phone
INT3	Manager at ENEA	Electricity		Manager at energy company responsible for digital processes	17.05.2022	Phone
INT4	National Energy Section of the All-Poland Alliance of Trade Unions of Continuous Process Industry Employees	Electricity		Official of the National Section	17.05.2022	Phone
INT5	National Energy Section of the Trade Union of Engineers and Technicians	Electricity		Official of the National Section	13.05.2022 and 17.05.2022	Phone
INT6	National Section of Government and Local Government Administration Employees of NSZZ 'Solidarność'	Public administration		Member of the Board	10.06.2022	Phone
INT7	National Section of Government and Local Government Administration Employees of NSZZ 'Solidarność'	Public administration		Official of the National Section	07.07.2022 and 08.07.2022	Phone
INT8	Trade Union of the Workers of Social Insurance Institution	Public administration		Official of the union	16.05.2022	Phone
INT9	National Healthcare Section of NSZZ 'Solidarność'	Hospitals		Expert, adviser	27.04.2022	Teams
INT10	All-Poland Trade Union of Nurses and Midwives	Hospitals	Nurses	Member of the National Board	10.06.2022	Google Meets
INT11	All-Poland Trade Union of Radiographers	Hospitals	Radiographers	Official	28.05.2022	Phone
INT12	Al-Poland Alliance of Trade Unions (OPZZ) – Public Services Section	Hospitals		Official of the Public Services Section	11.08.2022	Face to face
INT13	Expert Office, NSZZ 'Solidarność'	Cross-sectoral		Expert	04.01.2023	Face to face

Annex 2. List of focus group participants

Public administration – 17.08.2022 – online – 2h 10min

ID	Trade union affiliation	Sector	Occupation
FG1	Warsaw City Hall, Confederation of Labour	Public administration	Manager
FG2	Szczecin City Hall, Confederation of Labour	Public administration	Manager
FG3	Szczecin City Hall, Confederation of Labour	Public administration	Specialist
FG4	Job centre in Warsaw, Confederation of Labour	Public administration	Employment agent
FG5	Job centre in Warsaw, Confederation of Labour	Public administration	Employment agent
FG6	Financial Supervision Authority, Confederation of Labour	Public administration	Auditor
FG7	State Fund for Rehabilitation of Disabled People, Confederation of Labour	Public administration	Specialist dealing with digital matters

Electricity sector – 25.08.2022 – online – 1h 56min

ID	Trade union affiliation	Sector	Occupation
FG8	National Energy Section of the All-Poland Alliance of Trade Unions of Continuous Process Industry Employees	Electricity	Dispatcher
FG9	Association of Energy Workers' Unions, PGE Dystrybucja in Łódź	Electricity	Electrician
FG10	Association of Energy Workers' Unions, Tauron Polska Energia	Electricity	Electrician
FG11	National Energy Section of the Trade Union of Engineers and Technicians	Electricity	Administrative worker

Hospitals sector – 6.10.2022 – online – 1h 51min

ID	Trade union affiliation	Sector	Occupation
FG12	None; representative of the 'Digital Nurses' Association	Hospital	Nurse
FG13	None	Hospital	Laboratory diagnostician
FG14	None	Hospital	Manager dealing with medical records
FG15	None	Hospital	Manager dealing with ICT matters
FG16	None	Hospital	ICT technician
FG17	National Section of Healthcare of NSZZ 'Solidarność'	Hospital	Physician, Doctor of Medicine