STUDY

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The impact of teleworking and digital work on workers and society

Special focus on surveillance and monitoring, as well as on mental health of workers

Policy Department for Economic, Scientific and Quality of Life Policies
Directorate-General for Internal Policies
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Abstract

The study analyses recent trends in teleworking, its impacts on workers, employers, and society, and the challenges for policy-making. It provides an overview of the main legislative and policy measures adopted at EU and national level, in order to identify possible policy actions at EU level. The study is based on an extensive literature review; a web survey; interviews with representatives of European and national stakeholders; and five case studies of EU countries: Finland, Germany, Ireland, Italy and Romania.

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LIST OF ABBREVIATIONS

AEPD	Agencia Española de Protección de Datos *(Spanish Data Protection Authority)*
ASGS	Annual Strategic Growth Strategy
BAUA	Bundesanstalt für Arbeitsschutz und Arbeitsmedizin (*Federal Agency for Health and Safety at Work and Occupational Medicine*)
CCOO	Federacion de Servicios de Comisiones Obreras (*Federation of Workers' Commissions*)
CCTV	Closed-circuit television
CEF	Connecting Europe Facility
CFDT	Confédération française démocratique du travail *(French Democratic Confederation of Labour)*
CFE-CGC	Confédération française de l'encadrement - Confédération générale des cadres *(French Confederation of Management – General Confederation of Executives)*
CFTC	Confédération Française des Travailleurs Chrétiens *(French Confederation of Christian Workers)*
CIPD	Chartered Institute of Personnel and Development
CJEU	Court of Justice of the European Union
CLA	Collective Labour Agreement
CNBC	Consumer News and Business Channel
CNIL	Commission nationale de l'informatique et des libertés *(French Data Protection Authority)*
CO_2	Carbon Dioxide
COV19R	COVID-19 social distancing risk index
COVID-19	Coronavirus Disease 2019

CPME	Confédération des Petites et Moyennes Entreprises *(General Confederation of Small and Medium Companies)*
CSE	Comité social et économique *(Social and Economic Committee)*
DGE	Direction Générale des Entreprises *(Directorate General for Enterprises)*
DPAs	Data Protection Authorities
DSI	Digital Service Infrastructures
EASPD	European association of service providers for persons with disabilities
ECHR	European Convention on Human Rights
EDPB	European Data Protection Board
EEA	European Economic Area
EESC	European Economic and Social Committee
EIGE	European Institute for Gender Equality
ENWHP	European Network for Workplace Health Promotion
EPSR	European Pillar of Social Rights
ERDF	European Regional Development Fund
ERM	Electronic Performance Management
ESA	European Skills Agenda
ESF	European Social Fund
ETR	Enterprise Technology Research
ETUC	European Trade Union Confederation
ETUI	European Trade Union Institute
EU	European Union

EU-OSHA	European Agency for Safety and Health at Work
EWCS	European Working Conditions Survey
FEMCA-CISL	Federazione Energia, Moda, Chimica ed Affini della Confederazione Italiana Sindacati Lavoratori *(Energy, Fashion, Chemical and Allied Federation of the Italian Confederation of Workers' Trade Unions)*
FILCTEM-CGIL	Federazione Italiana Lavoratori Chimica Tessile Energia Manifatture della Confederazione Generale Italiana del Lavoro *(Italian Federation of Chemical, Textile, Energy and Manufacturing Workers for the Italian General Confederation of Labour)*
FRA	Fundamental Rights Agency
GDPR	General Data Protection Regulation
GHG	Greenhouse Gas
GPS	Global Positioning System
HPWS	High Performance Work Systems
HRM	Human Resource Management
H&S	Health and Safety
IAB	Institut für Arbeitsmarkt *(Institute for the Labour Market)*
ICT	Information and Communications Technology
ILO	International Labour Organisation
IoT	Internet of Things
IPC	Infection Prevention and Control
IRS	Istituto per la Ricerca Sociale (Institute for Social Research)
JRC	Joint Research Centre

LCGB	Lëtzebuerger Chrëschtleche Gewerkschaftsbond *(Luxembourg Confederation of Christian Trade Unions)*
MEDEF	Mouvement des entreprises de France *(Movement of the Enterprises of France)*
MSDs	Musculoskeletal Disorders
OECD	Organisation for Economic Co-operation and Development
OGB-L	Onofhängege Gewerkschaftsbond Lëtzebuerg *(Independent Luxembourg Trade Union Confederation)*
ONS	Office for National Statistics
OSH	Occupational Safety and Health
PC	Personal computer
R2D	Right to Disconnect
REVISAL	Registrul general de evidenţă a salariaţilor (Electronic Registry of Employees)
RON	New leu (since 2005), Romanian currency
RQ	Research Question
SMEs	Small and Medium Enterprises
STEM	Science, technology, engineering and mathematics
STOA	Panel for the Future of Science and Technology
TICTM	Telework and ICT-based mobile work
TUC	Trade Union Congress
U2P	Union des entreprises de proximité *(Union of proximity enterprises)*
UEL	Union des entreprises luxembourgeoises *(Union of Luxembourg Companies)*

UILTEC-UIL	Unione Italiana Lavoratori Tessile, Energia e Chimica della Unione Italiana del Lavoro *(Italian Union of Textile, Energy and Chemical Workers of the Italian Union of Labour)*
UNRIC	United Nations Regional Information Centre for Western Europe
UK	United Kingdom
US(A)	United States (of America)
VET	Vocational Education and Training
VPN	Virtual Private Network

EXECUTIVE SUMMARY

The study analyses recent trends in the use of telework and ICT-based mobile work (TICTM), its impacts on workers, and society, and the challenges for policy-making, identifying possible policy actions to be taken at EU level.

The COVID-19 pandemic has led to a massive increase in the use of home telework. Hybrid forms are more likely in the future.

The massive increase in full-time home-based teleworking during the pandemic has encompassed a much wider range of sectors and occupations than in the pre-pandemic past. Even so, TICTM working arrangements are still predominantly used by white-collar, highly-educated workers with strong digital skills.

With the return to post-COVID 'normality', the extensive use of teleworking is expected to continue, although not on a full-time basis. Hybrid forms are more likely to prevail, combining remote and office working.

The extensive use of telework poses a number of challenges and requires a re-think of the way work is performed, co-ordinated, and regulated.

For workers, telework may entail **greater time and place flexibility, enhanced job autonomy, improved work-life balance and reduced commuting time**. Telework may also improve **employment opportunities for persons with disabilities, older workers, women with care responsibilities, people living in rural or peripheral areas. However, to be fully grasped, these opportunities require a number of enabling conditions**, e.g. child-care facilities and services, digital skills training, access to adequate and affordable broadband and ICT equipment.

Moreover, the higher flexibility and autonomy associated with TICTM is often accompanied by **greater work intensity and longer working hours**, with negative effects on workers' work-life balance, especially in the case of women with children. **Long working hours and the sense of isolation** associated with TICTM, together with the increased use of **online monitoring and surveillance methods,** may **also negatively affect the mental health of teleworkers**, besides raising privacy issues. At the same time, a lack of space and ergonomically sound equipment may increase the **physical health risks of teleworkers**. Women teleworking from home, also face increased risks of domestic violence.

On the employers' side, **TICTM work arrangements may reduce companies' production costs and improve workers' productivity**, although the latter declines as working hours and work intensity increase. Crucially, the effects of TICTM for companies depend on the **capacity of managers to effectively engage and motivate teleworkers**. This requires a major shift in organisational cultures towards managing by results (as opposed to inputs, e.g. office attendance) and establishing trust-based relationships, which may be quite challenging in some sectors and companies.

At societal level, **the positive effects of TICTM relate to the expected lower carbon emissions and more balanced spatial development**. However, the energy savings impact of teleworking is rather modest given possible rebound effects. Conversely, by facilitating remote work in peripheral geographical locations, TICTM may support a re-distribution of workers and companies from urban centres and metropolitan areas towards suburban, peripheral and rural areas.

On the negative side, TICTM may **contribute to the greater fragmentation of the workforce, the individualisation of the employment relationship, the shifting onto workers of the costs of working from home** (e.g. ICT equipment, workstations, energy and connectivity costs). It may also contribute to the **emergence of new employment and social inequalities**, between those who can telework and those who cannot, because they are employed in non–teleworkable sectors/occupations, or lack the required digital skills or equipment, or have no access to a broadband connection.

EU and national legislation, policies and collective agreements address some of the challenges of TICTM work arrangements.

Although at European level there are no specific legislative measures targeting TICTM, there is robust legislation on working conditions that can be applied to these new working arrangements, e.g. the Working Time Directive, the Work-life Balance Directive, the Transparent and Predictable Working Conditions Directive, and the European Framework Directive on Safety and Health at Work. In addition, many EU initiatives and policies address the digital divide, support equal opportunities in access to telework, and address territorial inequalities. The European Social Partners' Framework agreements on telework (2002) and on Digitisation (2020) also cover many TICTM related issues.

Many Member States have also introduced policies and laws addressing TICTM. National approaches are quite varied, reflecting the great diversity in terms of institutional, legislative, industrial relations, cultural contexts, and digital development. Most Member States (21 out of 27) have introduced legislation directly addressing TICTM or regulating aspects of such work. The remaining countries either leave the regulation of TICTM to collective bargaining (as in the Scandinavian countries), or are adopting 'softer' measures, e.g. codes of conduct or guidelines (as in Ireland).

Despite these differences, in most EU countries, collective agreements and practices in large companies are the main instruments currently shaping the use of TICTM in practice. In recent years, the **right to disconnect** has emerged in legislation, collective agreements and company practices in an attempt to mitigate the inimical effects of TICTM work, and to safeguard the non-working time of employees.

The debate among EU stakeholders centres on whether there is need for new EU regulations on TICTM or whether it is sufficient to update (or just enforce) existing ones.

According to some of the stakeholders interviewed, the implications of TICTM for work intensity, work-life balance, and health and safety **can be addressed by the proper application (and/or enforcement) of the EU regulations and policy instruments already in place**, as long as they are revised in order to address the specificities of TICTM work arrangements. This would avoid the risk of excessive and overlapping regulations and promote a better balance between hard and soft intervention approaches, including collective bargaining and supportive policies. Conversely, others point out the **need for a more comprehensive European directive on telework**, including minimum requirements for workers' health and safety, the **right to disconnect**, and the **establishment of specific workers' data protection and privacy rights**.

Representatives of the EU social partners underline, however, the risk of excessive regulation. They call for a greater role for collective agreements in relation to: workers' right to telework and to disconnect; equal pay and treatment (also in terms of working hours) between teleworkers and other workers; company support for digital skills training and suitable TICTM equipment; limitations to invasive surveillance and protection of workers' privacy rights; safeguards against cyber-harassment/violence.

Besides regulation, the stakeholders interviewed and those responding to the study's web-survey underline the need for **policy strategies and approaches to address the societal implications of extensive use of TICTM**. The aim of these should be to both enhance the opportunities offered by such forms of work in the labour market and increase social inclusion of currently marginalised groups and territories, and to mitigate any negative effects. Such strategies should address the digital divide and its implications for spatial and social inequalities by, *inter alia*, supporting the (digital) upskilling of the population, and ensuring widespread access to a good quality and affordable broadband and suitable ICT equipment. They should also support the creation of neighbourhood co-working spaces and child-care services, and the re-design of housing, mobility and spatial planning policies.

EU institutions could have a key role in facilitating and supporting these developments. They could revise existing legal and policy instruments to take into account the specificities of TICTM work, including minimum workers' rights. EU institutions could also support Member States and the social partners in implementing these regulations and policies, providing guidance and financial support. Another key role of EU institutions is to improve knowledge on TICTM and its effects, monitoring TICTM trends and related policy developments, and supporting mutual learning and capacity building among EU and national stakeholders, including companies (particularly SMEs) and social partners.

1. AIMS, RESEARCH QUESTIONS AND METHODOLOGY

The aim of the study is to analyse the trend towards the increased use of remote (teleworking) work, and to assess its impact on workers and on society and the consequent challenges in terms of policy-making, in order to identify possible policy actions that could be taken at EU level.

The study uses 'Telework and ICT-based mobile work' (TICTM) as defined in Eurofound (2020a): 'any type of work arrangement where workers work remotely, away from an employer's premises or fixed location, using digital technologies such as networks, laptops, mobile phones and the internet'. The study focuses on home-based telework which is at the centre of the current debate. Platform work and digital work at the usual workplace are not part of the study.

The study is structured in 5 chapters, each providing evidence to answer the following research questions and provide indications on the risk areas where EU level intervention could be relevant:

- **RQ1**: What has changed due to the COVID-19 pandemic in teleworking and ICT-based mobile working? What are the main expected trends in the medium to long term (Chapter 2)?
- **RQ2**: What are the potential positive/negative effects of TICTM for workers, employers and society overall (Chapter 3)?
- **RQ3**: How are national and EU institutions and the social partners addressing the challenges posed by these new forms of employment (Chapter 4)?
- **RQ4**: What conclusions can be drawn and recommendations formulated as regards the key risks and gaps in policy making resulting from the increasing use of teleworking? What role could EU Institutions have in enhancing the positive aspects of teleworking and mitigating the negative ones (Chapter 5)?

The study is based on the triangulation of quantitative and qualitative data and information resulting from a review of academic literature and policy documents and findings resulting from fieldwork. Field work included: i) online interviews with representatives of EU and international institutions and associations; ii) a web survey, answered by 156 EU and national stakeholders; and iii) five country case studies involving desk research and interviews to national stakeholders. The selected countries are representative of different types of EU Member States with regard to the use of and the approach to TICTM: Finland, Germany, Ireland, Italy, and Romania.

Additional details on the methodology are illustrated in Annex 7.1, while Annex 7.2 presents additional Tables and Figures. The five country case studies are available online only.

2. RECENT AND EXPECTED TRENDS IN THE USE OF TICTM IN EU COUNTRIES

2.1. Scope of the analysis and definitions

This section presents an overview of the use of telework and ICT-based mobile work (TICTM) before and during the COVID-19 crisis in the EU-27 Member States with attention to its incidence, the personal and job characteristics of teleworkers, and the frequency of its use. The analysis is based on the most recent available information on telework and ICT-based mobile work.

As previously stated, the focus is on TICTM as defined in Eurofound (2020a): '*any type of work arrangement where workers work remotely, away from an employer's premises or fixed location, using digital technologies such as networks, laptops, mobile phones and the internet*', with particular attention to home-based telework, at the centre of the current debate and available data. This concept also includes the self-employed when they work in a place other than their usual workplace using ICT. Besides TICTM, when dealing with work *outside the normal place of work*, three different but often overlapping concepts can be identified: remote working, teleworking and working from home[1]. **Remote working** can be performed by both dependent and independent workers and occurs when work is fully or partially carried out outside the normal place of work (ILO, 2020a), not necessarily from home. **Telework** is instead generally restricted to employees (Mandl et al., 2015; Messenger et al., 2017), and entails the use of information technology and digital devices (Eurofound, 2020a). Finally, **working from home** refers to work that takes place fully or partly within the worker's own home, can be performed by both dependent and independent workers, and does not necessarily entail the use of digital devices. Each of these concepts overlaps with TICTM. Eurofound studies also mention *Highly Mobile TICTM workers*, those workers who work in at least two locations, several times a week.

In addition to these concepts, as shown in the country reports, slightly different concepts and definitions are adopted in Member States. For example, as illustrated in the country case studies, in Italy, legislation and debate often refer to the concept of smart working (*lavoro agile*) as a method of work execution characterised by the absence of place and time constraints, which during the COVID-19 emergency, has been often used to refer to "remote work"; in Germany, the widely used term is mobile working; and in Ireland, the term most commonly used seems to be *remote working* as a synonym for *teleworking*.

As shown in Table 1 below, most of the comparative **data available** capture the number of workers (employees and self-employed) 'working from home'. As most home-based workers make intensive use of ICT devices, the terms 'workers from home' and 'teleworkers' are often used interchangeably in literature (Sostero et al., 2020) and in the following statistical analysis.

[1] Differences among these three concepts are well described in Sostero M., et al. (2020), Teleworkability and the COVID-19 crisis: a new digital divide?, Seville: European Commission, JRC121193, available at: https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/teleworkability-and-covid-19-crisis-new-digital-divide.

Table 1: Definitions of telework adopted in the available comparative data sources

Type of work	Definition	Source
TICTM (Telework and ICT-based mobile work)	Is a work arrangement characterised by working from more than one place (not necessarily form home), and is enabled by ICT. It can be performed by both dependent and independent workers.	EWCS-2015/Eurofound, 2020a
Work from home/ Home-based telework	Refers to work that takes place fully or partly within the worker's own home, can be performed by both dependent and independent workers, and does not necessarily entail the use of digital devices	EU-LFS European survey on ICT usage in households and by individuals Eurofound's Living working and Covid online surveys

Source: Eurostat and Eurofound.

2.2. TICTM diffusion before the COVID-19 pandemic

According to Eurofound's (2020a) estimations based on the European Working Conditions Survey (EWCS), in 2015 in the EU around 19% of EU workers (employees and self-employed) were TICTM workers. Of these, almost half were employees who occasionally used ICT to work from outside their employer's premises; almost one-quarter were employees who frequently used ICT for work and worked in at least two locations, several times a week; about 15% were employees who frequently used ICT to work from home; and about 15% were self-employed workers who occasionally or frequently used ICT to work from locations other than their own premises.

As shown in Figure 1, TICTM arrangements were more widespread in the Scandinavian countries (involving 38% and 33% of workers in Denmark and Sweden, respectively), the Netherlands (31%), Luxembourg (29%), France (26%) and Estonia (25%). On the contrary, the incidence of TICTM workers in several southern and eastern European countries was much lower, compared to the EU average (19%). For instance, in Greece, Poland and Italy the share of workers with TICTM arrangements was around 10% or less. Germany, with 13% also showed a value below the EU average.

Figure 1: Shares of workers (employees and self-employed) with a TICTM arrangement (%), 2015

Source: adapted from Eurofound (2020), based on Eurofound- EWCS 2015.

Note: data not available for CZ.

A number of factors account for such significant country variations, including: the diffusion of digital skills in the country and among workers; the availability/coverage, speed, and quality of its ICT infrastructure (i.e. broadband and high-speed internet connection); the regulatory frameworks (legislation, collective agreements); the industrial structure of the economy and the (sectoral) occupational composition; the organisational and management culture and the company drive for it; the country use of flexible working arrangements and employees' needs for spatial and temporal flexibility (Eurofound, 2020a, 2020b; Sostero et al. 2020; Eurofound and ILO, 2017). For example, differences in national industrial structures are a key factor to explain the large differences in the prevalence of teleworking and ICT-based mobile work across the EU. TICTM was indeed much more widespread in countries such as Sweden, Finland, and the Netherlands, where workers in knowledge and ICT-intensive service sectors accounted for a larger share of total employment compared to the EU average (Sostero et al. 2020).

2.2.1. Evolution of telework before the COVID-19 pandemic

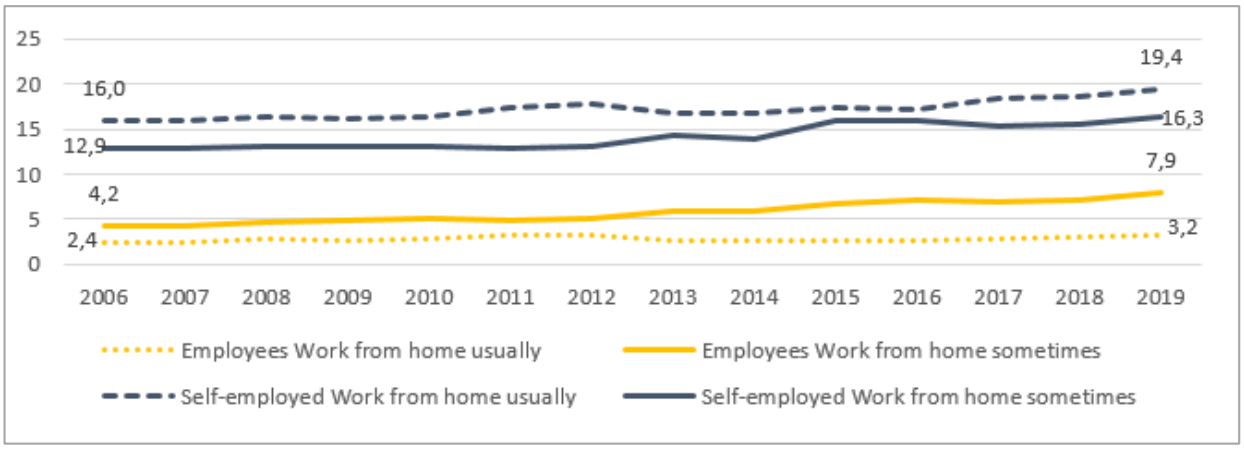
Because the European Working Conditions Survey (EWCS) is only carried out every five years, the Eurostat Labour Force Survey data is used to look more closely at trends in working from home over the past 15 years[2]. The European Labour Force Survey collects information on those working from home usually, sometimes or never. **Between 2006 and 2019 the incidence of workers working from home grew slowly in the EU27**, from 10% in 2006 to 14.3% in 2019. This increase was mainly due to the **increase in the share of those working from home only sometimes** (from 5.5% in 2006 to 9% in 2019), while the share of those usually working from home increased only very little (from 4.6% in 2006 to 5.4% in 2019).

As shown in Figure 2, between 2006 and 2019 work from home (at least sometimes) in the EU-27 has been **more than three times higher among the self-employed than among employees**, although in the period considered it increased at a higher rate among employees than the self-employed. Over time, **the share of employees working from home increased especially for those working from home sometimes**, reaching 7.9% in 2019. Among the self-employed, on the other hand, there has been an increase in the share of both those working from home sometimes and usually, with the latter remaining the most prominent (19.4% compared to 16.3% of self-employed working from home

[2] The Eurostat Labour Force Survey (EU-LFS) collects information on whether the employed person interviewed worked at home usually, sometimes or never, irrespectively of the use of digital devices. Therefore, statistics on work from home based on EU-LFS include both ICT-based and non-ICT-based work from home.

sometimes, in the EU-27 in 2019).

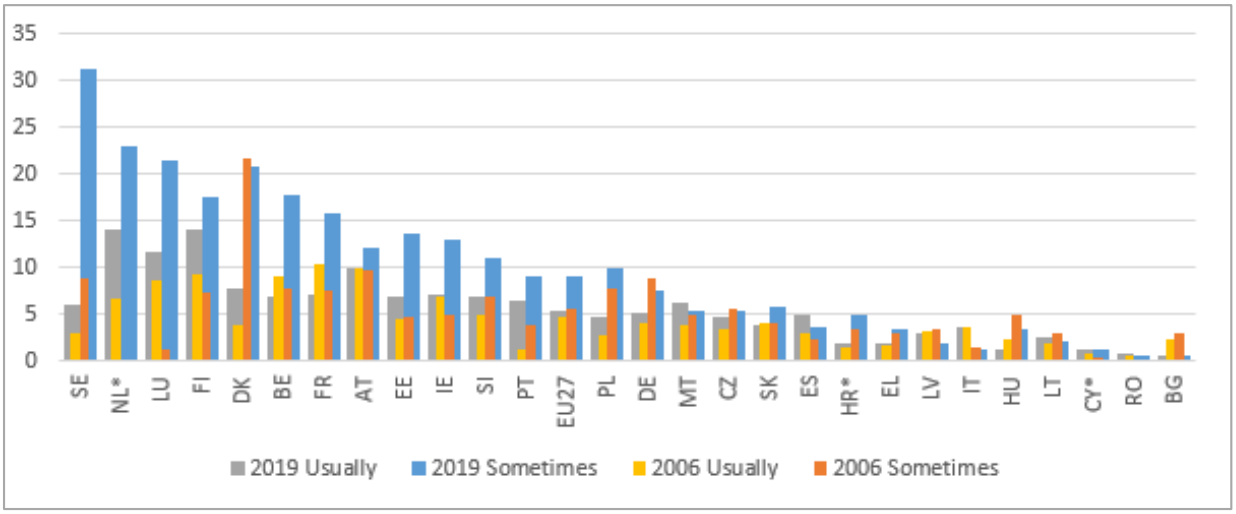
Figure 2: Share of workers aged 15-64 working from home by status and frequency (%), EU-27, 2006-2019



Source: Eurostat (LFSA_EHOMP).

Confirming the 2015 EWCS results presented above, **work from home was much more present in northern European countries** (SE, NL, LU, FI, DK) **in 2019**, where the share of workers working from home usually or sometimes was above 25% (Figure 3), compared to the very low shares in Bulgaria and Romania (below 2%), and in Cyprus, Lithuania, Hungary, Italy and Latvia, with less than 5% of workers working from home regularly or sometimes.

Figure 3: Share of workers aged 15-64 working from home by frequency of work from home (%) and country, 2006 and 2019



Source: Eurostat (LFSA_EHOMP).

Note: For 2006 data: NL "sometimes" not available, and CY with low reliability; HR low reliability for the "usually" item.

Box 1: Use of TICTM before the pandemic in the focus countries

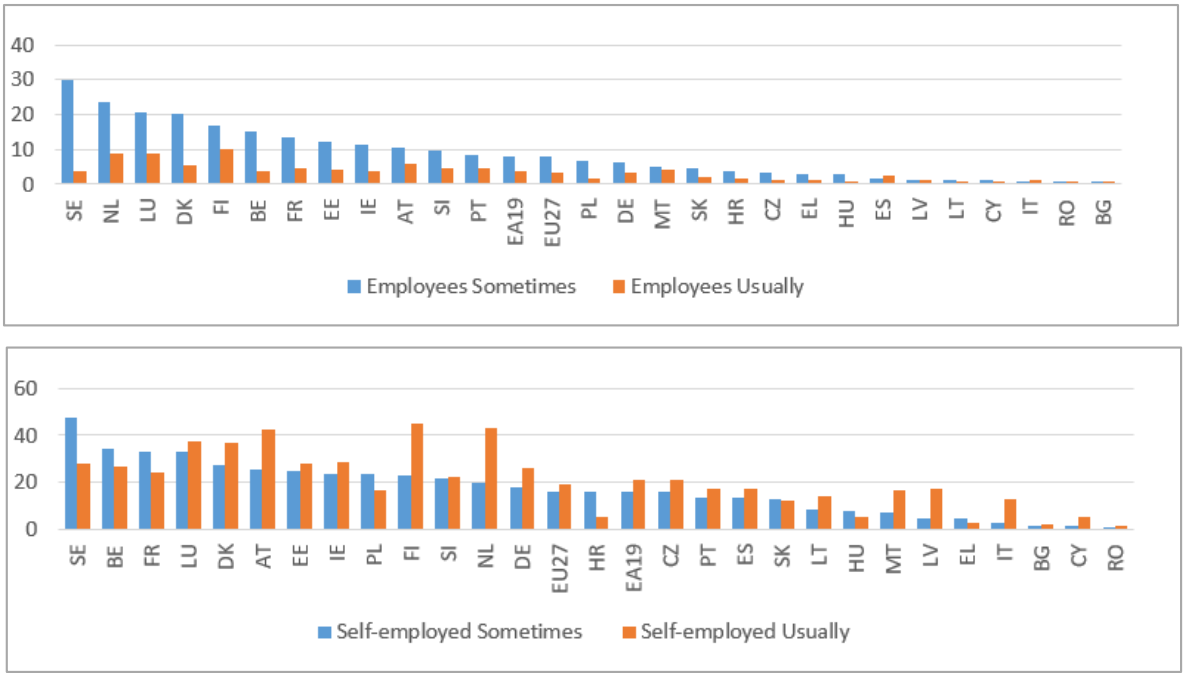
In 2019, before the COVID-19 pandemic, **Ireland** (19.9%) and especially **Finland** (31.7%) showed a higher than average (14.4%) share of workers (employees and self-employed) working from home usually or sometimes. **Germany** (12.6%) was in line with the EU-27 average (14.4%); while **Italy** (4.7%) and, especially, **Romania** (1.4%) showed relatively low shares. Working from home increased between 2006 and 2019 in Finland and Ireland, particularly among those working from home sometimes. While, in the other three countries the share of those working from home usually or sometimes remained more or less the same over the years.

Source: Eurostat, dataset: [LFSA_EHOMP].

Concerning employees, between **2006 and 2019, the share of employees involved in home–based teleworking** increased particularly in Sweden and Luxembourg[3], especially among those working from home sometimes (above 20 p.p.). Other countries that registered sizeable increases in home-based teleworking among employees usually or sometimes are Finland (+15.4 p.p.), Portugal (+ 9.9 p.p.), Estonia and Ireland (+ 9.3 p.p.).

Despite the growth in employees working from home, **in 2019 in all EU countries work from home was more prevalent among the self-employed than among employees** (Figure 4). Finland, the Netherlands and Austria registered the highest shares (above 40%) of self-employed people working from home usually. Finland, the Netherlands, and Luxembourg are also the countries with the highest share of employees working from home usually (close to 10%).

Figure 4: Share of employed aged 15-64 working from home by frequency and professional status (%), 2019



Source: Eurostat dataset [LFSA_EHOMP].

[3] For the Netherlands, data on occasional (sometimes) home-based telework for employees is not available for 2006; while the share of regular (usually) telework for 2006 amounts to 1.2%.

2.2.2. TICTM jobs and workers' characteristics before the COVID-19 pandemic

Some sectors and occupations have historically been more amenable to telework (JRC, 2020a). According to EWCS data, in the EU in 2015, **the sectors with the highest share of workers with TICTM arrangements were: the ICT sector** (57%), **professional and scientific activities** (53%), **financial services** (43%), **real estate** (43%), **and public administration** (30%). These are all sectors with a high degree of ICT dependency and use, as well as greater flexibility as regards work location (Eurofound, 2020a). Moreover, most of these sectors tend to employ higher skilled employees who, as discussed later, are also much more likely to be working remotely (Sostero et al., 2020).

Sostero et al. (2020) estimate that in 2018, close to 35% of employees in ICT and other communication services in the EU-27 carried out home-based telework usually or sometimes. The share of home-based teleworkers among employees was also relatively high in publishing activities (25%) and in a range of knowledge-intensive business services (26%), as well as in education (32%), where teachers consider preparing classes or grading papers from home as work from home.

However, also **within these sectors**, **working from home greatly varied across EU countries**. For instance, according to Eurostat data on ICT usage in households and by individuals, in 2018 the share of workers (employees and self-employed) working from home at least once a week in the ICT sector ranged from 57% in Ireland to 14% in Romania. Similarly, in real estate activities this share ranged from 60% in Belgium to 20% in Denmark, Germany or Cyprus[4]. Cross-country differences in the use of telework within sectors may also depend on differences in their occupational composition, the distribution of employment by firm size, the share of self-employed workers, workers' and firms' affinities with digital technologies, as well as organisational and management cultures (Sostero et al, 2020).

Company size has also been found to affect the incidence of teleworking and ICT-based mobile work: **larger companies are more likely to adopt flexible work arrangements** (including teleworking and ICT-based mobile work) than smaller ones (Sostero et al., 2020). For example, the share of teleworkers in knowledge-intensive business services is higher in countries such as the Netherlands, Sweden, and Finland where between 30 and 40% of this sector's workforce was employed in firms with 50 employees or more. In contrast, the share of teleworkers was much lower in countries such as Italy and Croatia, where firms with 50+ employees account for less than 15% of employment in knowledge-intensive business services.

In relation to **occupations**, Eurofound (2020a), based on EWCS 2015 data, reports that TICTM professionals represented 6.5% of the EU workforce, TICTM technicians and associated professionals were 4.5% of the EU workforce, and clerical workers and managers with TICTM arrangements account for 2.5% of the EU workforce, each.

TICTM was therefore **prevalent among highly-educated** workers, with tertiary education degrees. For example, data from the EU survey on ICT usage[5] among workers show that 23% of EU-27 workers with tertiary education worked from home at least once a week in 2018, against an average of 6% of those with secondary education and around 2% for those with low or no education.

The prevalence of TICTM in specific sectors and occupations is also reflected in **the gender and age composition of TICTM workers and their work arrangements**. While men were more likely to engage in TICTM than women, being overrepresented in the ICT sector, women were more likely to be

[4] Sectoral data are not available for all EU countries.

[5] Eurostat, data set [ISOC_IW_HEM], data extracted on 21/02/2021 (data last updated: 26/01/2021).

involved in regular home-based telework (Eurofound and ILO, 2017), both in the case of employees (3.7% versus 2.7%) and the self-employed (23.4% versus 17.4%), mirroring their over-representation in occupations with relatively high teleworkability (e.g. office-based, teaching, secretarial or administrative jobs).

The higher share of women than men among workers from home was registered in most EU countries, with some exceptions, such as Finland and Luxembourg among the self-employed, and the Netherlands among employees, possibly because of the very high incidence of part-time work among women (75.2%)[6]. The gender gap in work from home among employees was highest in France, Croatia, Malta, Poland, Romania and Slovenia, where the incidence among women was twice or more than the incidence registered among men. Similar gender gaps among the self-employed were registered again in Croatia and Romania, and also in Cyprus, Czechia and Hungary (Figure 5).

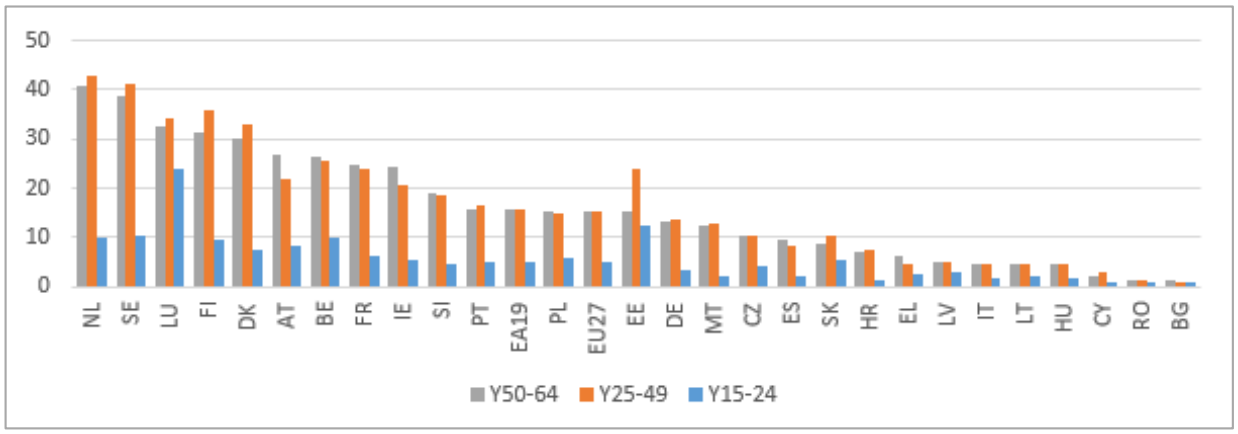
Figure 5: Share of workers aged 15-64 usually working from home by sex and status (%), 2019

Source: Eurostat (LFSA_EHOMP).

In 2019, **working from home was also more frequent among those aged above 25 years** than among very young workers (15-24 years) in all the EU Member States (Figure 6). Estonia and Luxembourg were the only EU Member States where the share of telework among young workers (15-24) was close to the share registered among those aged above 25 years.

[6] Share of women aged 15-64 in part-time work in 2019. Eurostat (lfsa_eppga).

Figure 6: Share of workers working from home usually or sometimes as a % of total employment by age, 2019



Source: Eurostat (LFSA_EHOMP).

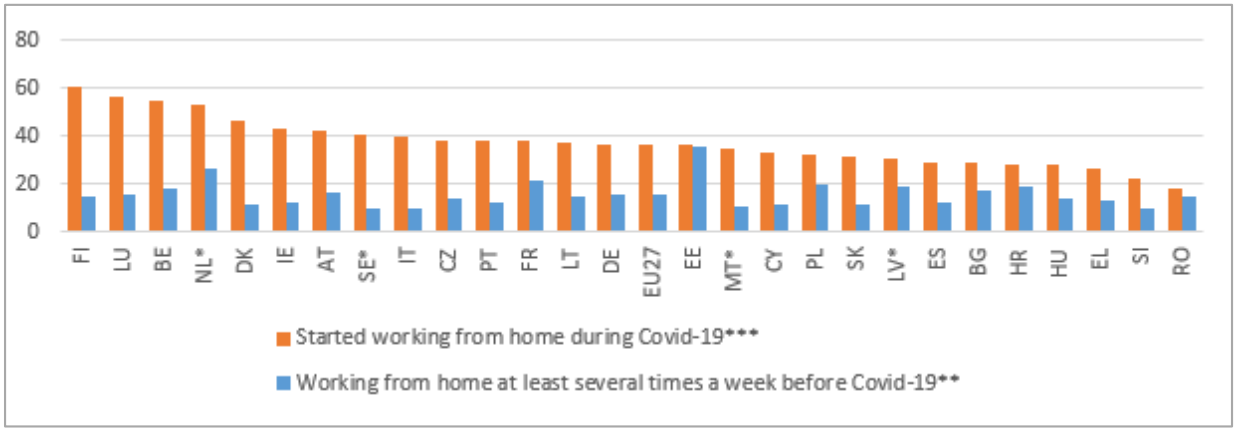
2.3. The expansion in the use of TICTM during the COVID-19 pandemic

The COVID-19 pandemic has resulted in a massive expansion of TICTM, mostly as a result of measures introduced by governments across the EU, such as the closure of schools and child care services, recommendations and obligations to work from home, as well as strict lockdown measures.

Although official EU-wide statistics on the phenomenon are still not available, preliminary data from the Eurofound survey "Living, working and COVID-19" (Eurofound, 2020b), show a substantial increase in the share of Europeans working from home during the first wave of the pandemic.

Figure 7 reports the results of Eurofound's Living, Working and COVID-19 Survey conducted in April 2020 (Eurofound, 2020b). Among EU-27 respondents the share of those who started to work from home was 36.5% in the wake of the pandemic, compared to only 15.8% who declared working from home at least several times a week before the pandemic. Those who started working from home because of COVID-19 were in part employees who were already regularly teleworking before (54%), although 46% were 'new' teleworkers, with no previous experience of remote working (Sostero et al. 2020).

Figure 7: Share of population (18+) working from home before the COVID-19 pandemic and share of those who started working from home as a result of COVID-19 pandemic (%), (April 2020 wave)



Source: Eurofound (2020b).

Note: *Low reliability; **Before COVID-19: worked from home at least several times a week before the pandemic (How frequently did you work from home before the outbreak of COVID-19? Answers "daily" or "several times a week"); ***During COVID-19: started to work from home as a result of the situation (Have you started to work from home as a result of the COVID-19 situation? Answers "Yes").

These figures mask significant differences across EU Member States. The highest shares of workers starting to work from home have been registered in those countries where teleworking was already well developed before the pandemic (e.g. BE, FI, LU, NL, SE), and in those that were most affected by the outbreak of the pandemic, such as, for example, Italy (ILO, 2020a).

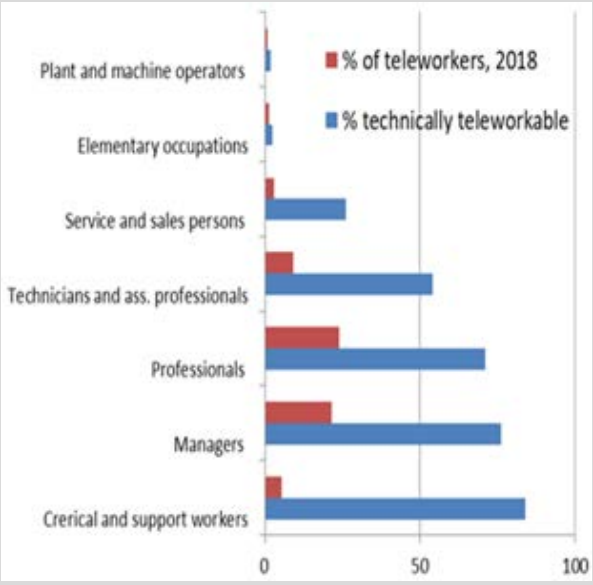
As shown in Box 2 below, the share of those who started to work from home because of COVID-19 pandemic is close to the share of 'teleworkable' employment (about 37%) estimated by Sostero et al. (2020) and Milasi et al. (2020).

Box 2: Teleworkability and job characteristics

Teleworkability indicates the degree to which an occupation can technically be performed remotely. This concept is key for analysing the impact of the COVID-19 pandemic on the adoption of telework (Fana et al., 2020c). According to Sostero et al. (2020), given current technology and work tasks, the ultimate determinant of occupational teleworkability is the lack of physical handling tasks. Occupations involving physical handling tasks – e.g. nurses, manufacturing production line workers, farmers – cannot be performed remotely with the technologies available. All the other occupations may be performed remotely or from home to different extents. Some factors either constrain or qualify the ability to telework, like the extent of social interactions required in a job, while others facilitate it, like the quality of ICT infrastructure connectivity. In the same study, Eurostat estimates that around 36% of dependent employment in the EU is currently teleworkable.

A recent study by Sostero et al. (2020) has elaborated an index of teleworkability[7] for occupational groups in order to assess how many and what types of jobs are "technically" teleworkable in Europe. According to their estimations, the share of actual **employment that is potentially teleworkable in the EU is about 37%; 45% for women and 30% for men**, according to their different distribution in teleworkable occupations. When compared to the incidence of telework among employees before the COVID-19 pandemic (just above 11% in 2019), this, in turn, highlights the large gap between the share of dependent employees who could do home-based telework and the share that usually or sometimes did so prior to the COVID-19 outbreak. Figure B1 below shows the share of teleworkers in different occupations and the (estimated) much larger 'teleworkability' of the same occupations, i.e. the potential of teleworking for those occupations (Milasi et al., 2020; JRC, 2020c).

Figure B1: 'Teleworkability' and actual teleworking as a share of employment by broad occupation group, EU-27, 2018



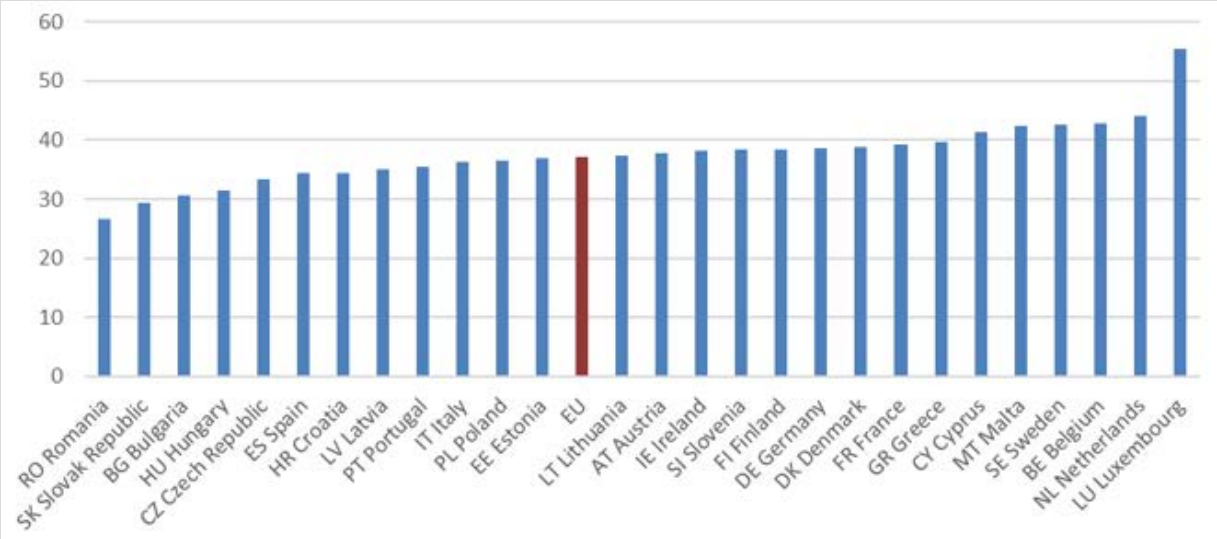
Source: JRC (2020c); Milasi, S., et al. (2020).

[7] The index of teleworkability is based on an existing conceptual framework and taxonomy of tasks for occupational analysis. Physical tasks required by the job are used to identify technical teleworkability: if a job has a significant amount (i.e. above 40 points over a scale of 100) of task content that requires the physical manipulation of objects or people, then it is classified as not teleworkable. In particular, the variables used to operationalise the index are the following: manual dexterity; finger dexterity; performing general physical activities; handling and moving objects, inspecting equipment/structures/material; operating vehicles/mechanised devices/equipment; lifting or moving people.

According to Sostero et al., 2020 and Milasi et al. 2020, this gap amounts to over 20% of total EU-27 employment (corresponding to over 40 million workers). Technically, **84% of clerical support workers and over 70% of managers and professionals** could work from home. While less than 55% and 30% of technicians and service and sales workers, respectively, could telework, at the other end of the spectrum, less than 3% of workers employed in manual occupations could technically telework. Therefore, **teleworkability is highest in financial services** (93% of the employed could in principle telework), **in the ICT sector** (79%), as well as in real estate, professional, scientific and technical activities, public administration and in the education sector (between 60-70%). However, it should be noted that in the education sector the use of telework for teaching, which is an activity rich in social interaction tasks, will inevitably involve some loss of quality given the limitations of existing ICT technologies (Sostero et al, 2020). On the other hand, lower shares of teleworkable employment are estimated for health (30%), retail (27%) and accommodation/food services (16%). The primary sector, manufacturing and construction sectors show the lowest shares (10-20%). Moreover, employees in medium and large firms are also significantly more likely to be in occupations susceptible to teleworking and ICT-based mobile work, than those working in micro-enterprises. For example, more than 40% of workers in medium-sized and large firms are in teleworkable occupations, compared to just 23% of employees in micro-enterprises. (Sostero et al, 2020; Milasi et al., 2020).

The same estimates (Sostero et al., 2020) show that the share of employees in "teleworkable" occupations ranges between 35% and 41% in two thirds of EU countries, according to the different composition of their workforce. In line with the actual incidence of teleworking (and ICT-based mobile work) prior to the COVID-19 outbreak, the Nordic and Benelux countries have the highest share of 'teleworkable' employment (Figure B2). At the other end of the spectrum, again in line with the current (low) extent of teleworking, are eastern European countries and some of the larger southern European Member States (e.g. Italy and Spain).

Figure B2: Share of employees in teleworkable occupations by Member State, EU-27, 2018

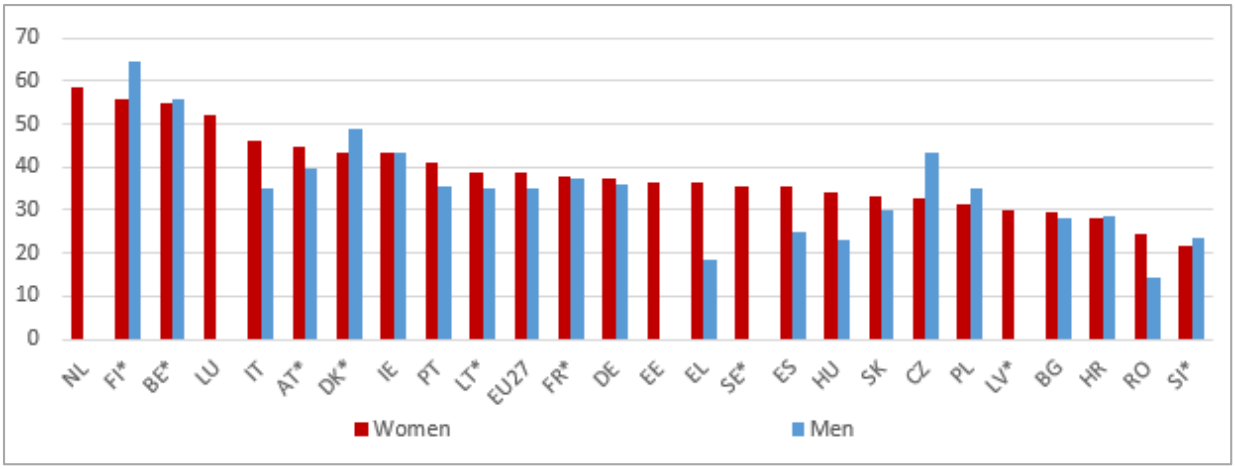


Source: estimates based on EU-LFS 2019 in Milasi, S., et al, (2020).

Source: The potential for teleworking in Europe and the risk of a new digital divide, VOX/CEPR, 14/8/2020. Available at: https://voxeu.org/article/potential-teleworking-europe-and-risk-new-digital-divide.

Women were more likely than men to report having started working from home as a result of the COVID-19 pandemic: 38.6% and 34.9%, respectively according to the Eurofound e-survey (Eurofound, 2020c). As shown in Figure 8, there is some variation across countries. For instance, high gender gaps in favour of women were recorded in Greece, Hungary, Italy, Romania and Spain, all showing gender gaps of + 10 p.p. On the contrary, a higher share of new teleworkers was recorded among men than among women in Czechia and in Finland.

Figure 8: Share of population (18+) who started working from home due to the COVID-19 pandemic**, by sex (%), (April 2020 wave)



Source: Eurofound (2020b).

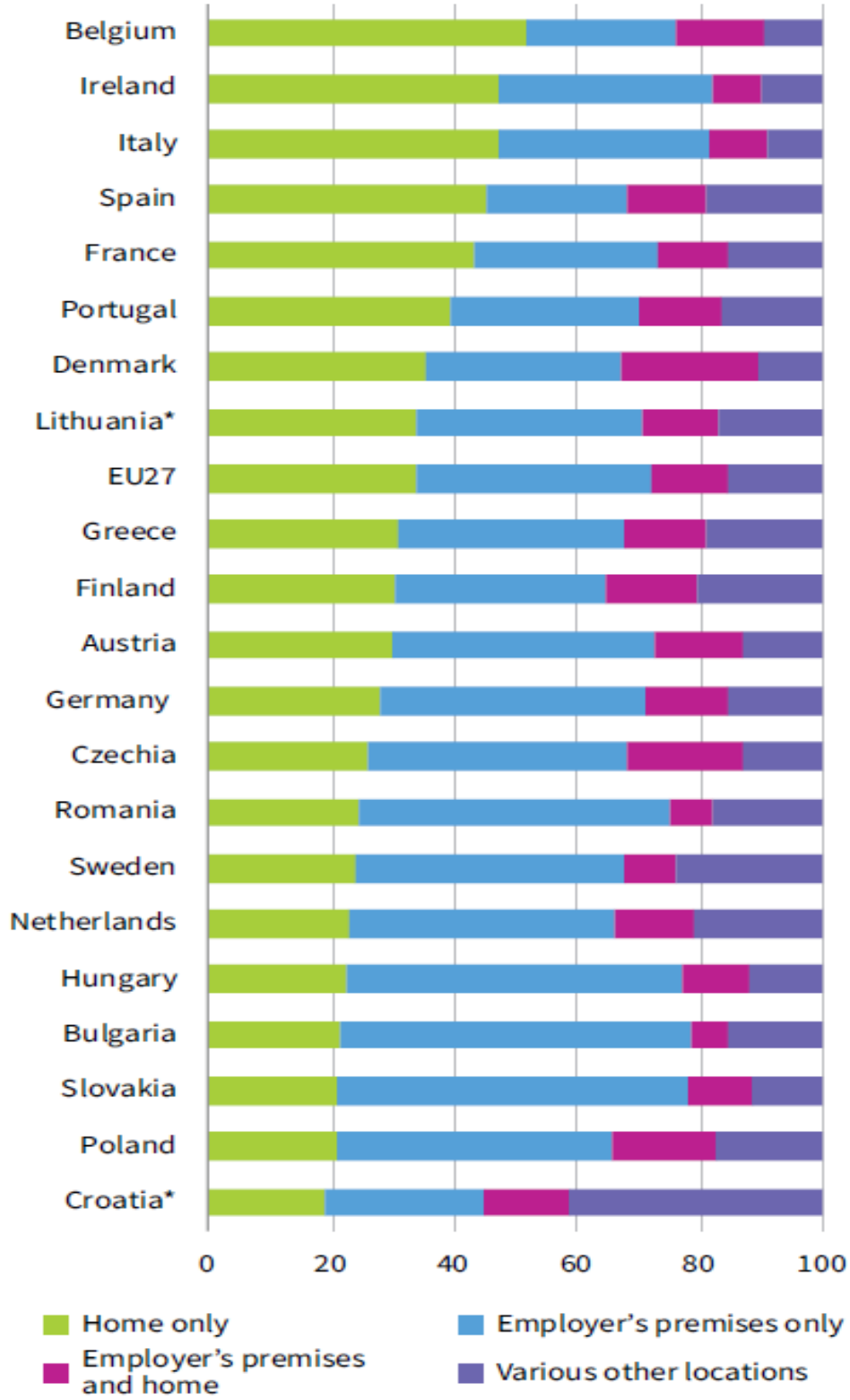
Note: * Low reliability. For some countries (NL, LU, EE, SE, LV) data for men are not available due to insufficient observations.
** Started to work from home as a result of the situation (Have you started to work from home as a result of the COVID-19 situation? Answers "Yes").

Concerning age, **the biggest rise in the incidence of such work during the COVID-19 outbreak was amongst younger employees**: nearly half of young teleworkers had never worked from home before (Eurofound, 2020c): 49% of younger and lower qualified employees (18–34) teleworked for the first time during the COVID-19 pandemic compared to 44% of prime-age (35–49) and 45% of older (50+) workers.

The July wave of the Eurofound online survey (Eurofound, 2020c) shows that **even with the lessening of the lockdown measures and the gradual re-opening of businesses in the summer of 2020, workers declared to continue to telework from home**. Overall, almost half (48%) of employees responding to the July survey worked at home at least sometimes during the COVID-19 pandemic, with 34% reporting to work exclusively from home (for an average of 39.6 hours a week) and 14.2% to work both at home and on the employer's premises or elsewhere (for an average of 41.2 hours a week).

Figure 9, taken from the Eurofound (2020c) report, shows a significant variation across Member States in the proportion of respondents reporting they were working exclusively from home, ranging from around 20% in Croatia, Poland, Slovakia, Bulgaria and Hungary to more than 40% in France, Spain, Italy, Ireland and more than 50% in Belgium.

Figure 9: Employees' place of work during the pandemic, by country, EU27 (%) (June/July 2020 wave)

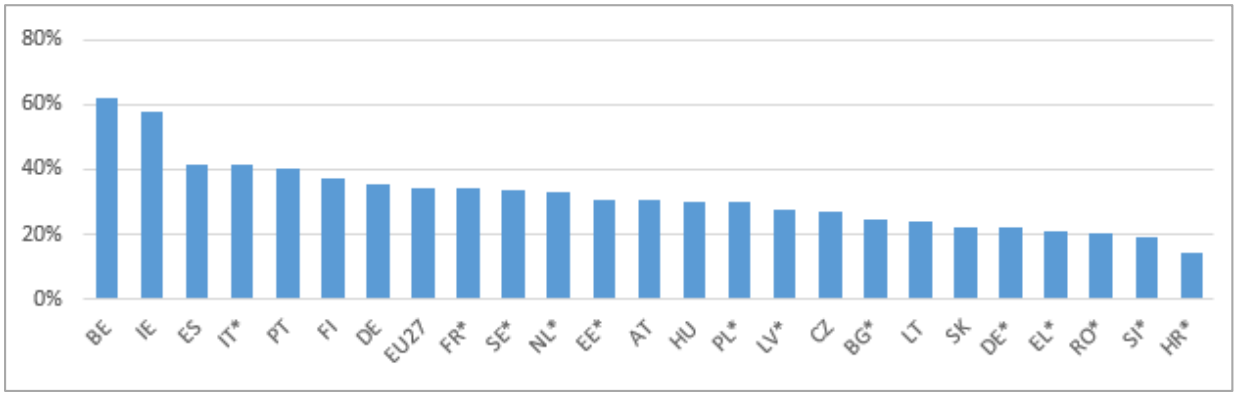


Source: Eurofound (2020c), cf. p. 33.

Note: *Low reliability; Cyprus, Estonia, Latvia, Luxembourg, Malta and Slovenia not included due to insufficient number of cases.

As shown in Figure 10 below, on average in the EU-27, the survey respondents declared to work from home one third of the total weekly hours worked during the month prior to the survey. The highest incidence was registered in Belgium and Ireland (close to 60% of total hours worked), as well as in Spain, Italy and Portugal (around 40%).

Figure 10: Hours worked from home as a percentage of total hours worked on average (pop. 18+) during the month previous to the interview (%), (July 2020 wave)



Source: Eurofound (2020), Living, working and COVID-19 dataset, Dublin, http://eurofound.link/COVID19data.

Note: * Low reliability; CY, LU, MT not available due to insufficient data. Average hours based on the following questions: "Last month, how many hours per week did you work on average?"; "Out of these, how many hours did you work from home?".

Box 3: Use of TICTM during the pandemic- Country focus

The July wave of the 2020 Eurofound survey on working conditions during the coronavirus emergency (Eurofound, 2020c), showed that in **Italy**[8] (53.5%), **Ireland** (53.4%) and **Finland** (47.4%) the share of workers who worked from home during the pandemic was **higher than the EU-27** average (44.6%).

Italian data show that during the national lockdown period (March-April 2020), 94% of workers in public administration, 97% of large companies' workers and 58% of SME workers envisaged the possibility of remote working, amounting to 6.58 million workers, roughly a third of total employees (data from the Smart Working Observatory of the Polytechnic of Milan).

Finland registered a higher share of teleworkers compared to the other EU countries due to several factors, such as the larger proportion of workers in knowledge- and ICT-intensive service sectors, the institutional setting, the level of digitalisation and the prevailing culture of trust (according to a recent Eurobarometer study, Finland is the most trusting country in Europe).

Irish data (Western Development Commission, 2020) shows that telework during the national lockdown was mostly implemented in Dublin and in its region. Moreover, the lockdown had a significant impact on Ireland, due to the relatively high proportion of forcefully closed sectors (over 12%, fifth in the EU).

On the other hand, **Germany** (41.4%) and **Romania** (30.1%) during the pandemic showed **lower** shares of teleworkers **than the EU-27 average**, according to the cited Eurofound survey.

A national survey[9] of 500 **German** large companies[10] during May 2020 reported that 70% of respondents stated that office workers completely or mostly worked from home during the COVID-19 pandemic, while 21% were involved in hybrid models (home working/office working). Two other on-line surveys conducted by the Institute for Employment Research (2021) between May and October 2020 on employees (except public servants) showed that in May 2020, 39% had the opportunity to work from home. Of these, 81% reported to work from home in May 2020, compared to only 44% before the pandemic. Also, the proportion of workers that only work from home increased enormously: from 4% to 46% of men and from 7% to 43% of women.

Romania, despite a sharp increase in the share of teleworkers during the pandemic, remained the country with the lowest share of teleworkers, after Bulgaria. Nevertheless, recent sector-specific surveys show that in certain sectors, during the pandemic the shares of teleworkers were a lot higher than the national average of 30.1%. For example, during the pandemic, 50% of companies surveyed in the business service sector used "full telework", while 45% used hybrid models; 74% of companies surveyed in the financial sector used telework (Price Waterhouse Cooper PWC, 2020); over 50% of the executive and management staff in the public sector used telework and around 30% used hybrid models (Institutul Naţional de Administraţie, 2020). On the other hand, telework in the logistics (26%) and pharmaceutical (24%) companies surveyed was below the national average (Price Waterhouse Cooper PWC, 2020).

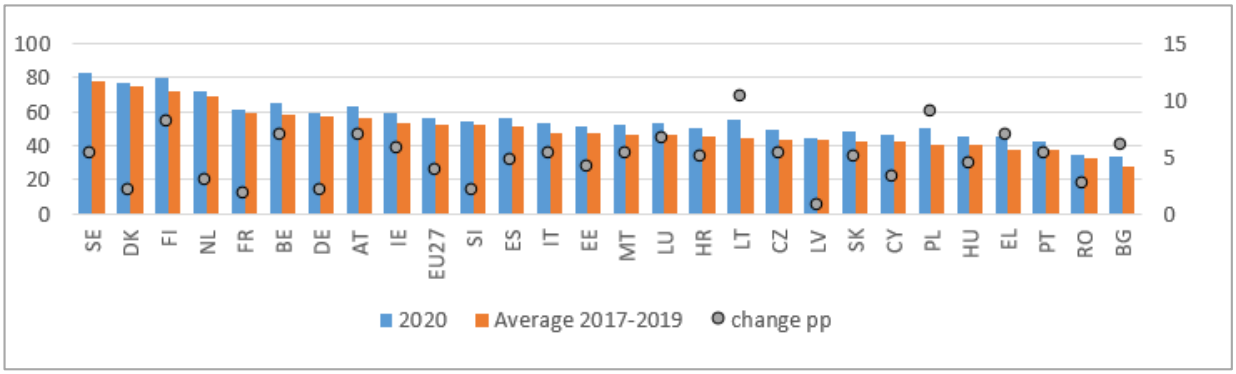
Source: Country case studies.

[8] Low reliability for Italian, Romanian and Bulgarian data.

[9] The survey was carried out by Fraunhofer Institut fuer Arbeitswirtschaft und Organisation IAO. The results are published in Hofmann, Josephine; Piele, Alexander; Piele, Christian (2020) Arbeiten in der Corona-Pandemie - Auf dem Weg zum New Normal. Available at: http://publica.fraunhofer.de/dokumente/N-593445.html.

Eurostat data on ICT usage among employees (Figure 11) confirms that in the EU-27 the share of employees using computers with access to the internet increased in 2020 by 4 p.p. compared to the average registered in the period 2017-2019. Significant increases were registered not only in countries where the share of employees using computers with access to the internet before the COVID-19 crisis was lower than average, such as Lithuania (+10 p.p.), Poland (+9 p.p.) or Greece (+7 p.p.), but also in countries registering high shares before the outbreak of the pandemic, such as Finland (+8 p.p.), Belgium or Austria (+7 p.p.).

Figure 11: Share of employees using computers with access to the World Wide Web in enterprises with 10 or more persons employed (%), EU-27. Year 2020 and average 2017-2019



Source: Eurostat, data set [ISOC_CI_CM_PN2].

EU-wide harmonised data on the use of telework during the COVID-19 pandemic broken down by **personal and job-related characteristics** for the EU-27 countries are still scarce. Eurostat LFS data for 2020 are yet not available and results from Eurofound's online survey on living and working during the COVID-19 pandemic are not always reliable due to small sample size, especially for a more granular analysis at country level. Therefore, the insights reported below additionally rely on emerging empirical findings from the literature and national data.

The massive expansion of teleworking during the COVID-19 pandemic has brought about major changes in the number, type and profile of employees who are engaged in such work, which is now encompassing a much wider range of **sectors and occupations** than before (Milasi et al., 2020). According to the Eurofound (2020c) online survey, more than 80% of the respondents employed in the education sector worked from home exclusively or partially, as did more than 70% of those working in financial services and close to 70% of those in public administration. Additionally, home-based telework during the COVID-19 pandemic became quite widespread among workers in industry and construction, despite having lower shares compared to the previously mentioned sectors: in each sector around 30% of workers worked exclusively or partially from home, compared to a share of about 10% in each sector who said they worked at least sometimes from home in 2018[11].

Unlike the pre-COVID period, during the COVID-19 pandemic and lockdowns the **incidence of teleworking also increased among mid and low-skilled white-collar occupations** (Sostero et al., 2020). For example, enforced workplace closure due to COVID-19 social distancing and lockdown measures resulted in a marked increase in teleworking amongst low and mid-level clerical and

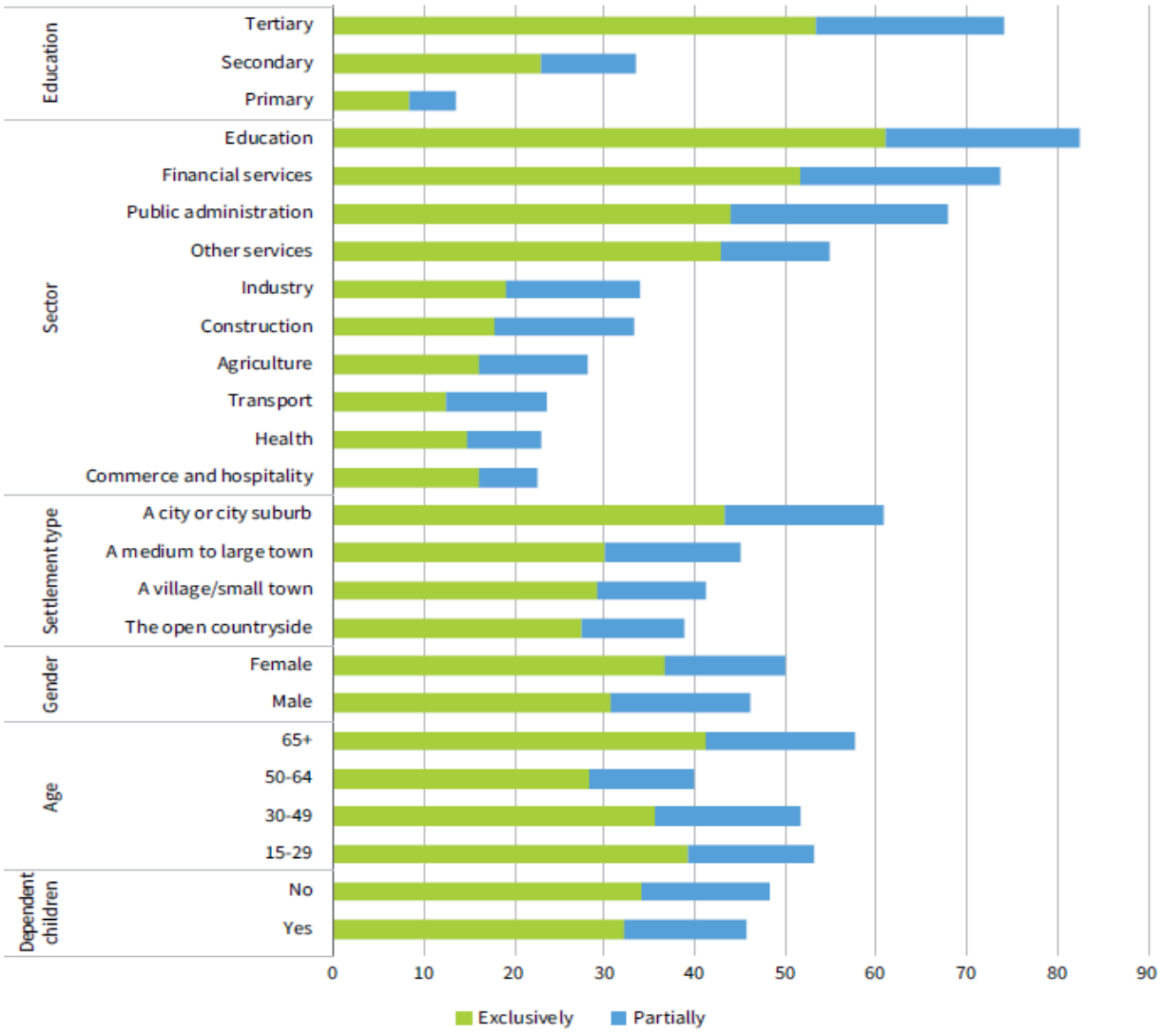
[10] Of these companies, 78% belong to the private sector and 22% to the public sector. Of these, almost 20% were exclusively manufacturing companies, 52% in the pure service sector and 28% were manufacturing companies with related services. Almost 50% were companies with more than 1000 employees, almost 30% had up to 250 employees, and the remaining had between 250 and 499 employees.

[11] EU-27 average of individuals who said they worked from home every day/almost every day, once a week or less than once a week. Eurostat [ISOC_IW_HEM], data extracted on 21/02/2021 (last updated 26/01/2021).

administrative workers who previously had very limited access to such working arrangements, despite the fact that, based on their job characteristics, almost all (84%) clerical support workers could telework (Milasi et al., 2020).

Even so, in line with the pre-COVID-19 reality, the findings of both waves of the Eurofound's online survey (Eurofound, 2020c) confirms the **disproportionate prevalence of TICTM among city-based, white-collar, well-educated, service sector employees with strong digital skills**. As shown in Figure 12, employees with tertiary education (74% worked from home) and those resident in cities or city suburbs (around 60% worked from home) were much more likely to work from home than those with lower educational levels (only 14% of those with primary education worked form home) or those living in less populated areas (less than 40% of those living in open countryside worked from home), confirming the trends registered before the outbreak of the COVID-19 pandemic. Furthermore, the Eurofound online survey shows that the share of those working from home was higher among those without dependent children than among those with dependent children. This would tend to confirm that **the main determinant of working from home was the nature of work and the extent to which telework was feasible rather than individual or household circumstances**.

Figure 12: Share of employees 18+ working from home during the COVID-19 pandemic, by personal and job-related characteristics (%), EU27



Source: Eurofound (2020c), cf. p. 32.

2.4. Expected future evolution of TICTM

The spreading of COVID-19 has led to a large increase in the number of people working from home, and it has raised questions about post-pandemic perspectives.

In the absence of global projections for TICTM in Europe, trends in the USA may provide a reference. Based on historical trends, and assuming that there will be an increase in teleworking both for new users and for those who were already working remotely before the pandemic, Global WorkPlace Analytics[12] estimates that around 25-30% of workers in the USA will be working from home on a multiple-days-a-week basis by the end of 2021. A survey on companies conducted by Enterprise Technology Research (ETR), shows that the percentage of workers in the USA permanently working from home is expected to double by the end of 2021 (34.4%), due to a registered increased in worker productivity (World Economic Forum, 2020).

There are no comparable estimates for the EU-27 countries. It is, however, possible to obtain some insights looking at the share of jobs which can be performed remotely (i.e. are tele-workable) or from national surveys as shown for the five country cases. As anticipated in Box 2 above, Sostero et al. (2020) estimate that the share of employees in "teleworkable" occupations ranges between 35% and 41% in two thirds of EU countries, according to the different composition of their workforce. ILO (2020) estimates are around 30% of workers in western Europe and 18% in eastern Europe are in tele-workable occupations, with the main difference stemming mainly from differences in internet availability, besides the sectoral composition of the economy.

It is, however, unlikely that the teleworkable occupations will continue to be performed with full-time teleworking. It is instead more likely that when the restrictions imposed by the pandemic will end, **hybrid forms of telework will predominate, as these arrangements would be preferred by workers** as shown by the results of the Eurofound online survey conducted in July 2020. Over three-quarters of EU employees want to continue working from home at least sometimes in the post-COVID-19 future, while few (13%) wish to work remotely all the time. Indeed, most (78%) prefer a hybrid model of working which mixes teleworking and onsite working (i.e. at the actual workplace). As Eurofound points out, based on the survey responses about EU workers' preferences, it is highly likely that teleworking – at least some of the time – will be much more widespread in the future than before the COVID-19 pandemic.

The country case studies confirm that teleworking (especially hybrid forms) is expected to increase in the medium term, as illustrated in Box 4 below.

[12] Global Workplace Analytics, *Work at home after Covid- our forecast*, available at: https://globalworkplaceanalytics.com/work-at-home-after-covid-19-our-forecast.

Box 4: TICTM expected trends after the pandemic – Country focus

Almost all the national stakeholders interviewed in the five countries believe that **teleworking will be a permanent feature of post-pandemic working life**, although with less intensity compared to the pandemic period.

In **Romania** different surveys (ABSL, 2020; Price Waterhouse Cooper, 2020; Institutul Naţional de Administraţie, 2020) conducted among private companies and the public sector show that between 5% and 13% of the respondents (companies and public managers) expect to implement telework full-time, while a hybrid mode will be implemented by 32% to 48% of respondents.

In **Germany**, a survey of companies (Federal Agency for Health and Safety at Work and Occupational Medicine BAUA, 2020) carried out in October 2020 found that 18% of responding companies were planning to expand working from home (especially large businesses); while the majority, 67%, planned to go back to the level prevailing before the pandemic; 9% were planning to reduce teleworking, and 5% were not yet sure what they were going to do. An online survey conducted by the Institute for Employment Research (IAB, 2021) in August 2020, showed that a third of people who can work from home (37%) would prefer to work from home flexibly. After working flexibly from home, the other most selected options were three days a week and two days a week (18% and 14%). Only 7% would like to work exclusively from home.

In **Ireland**, a survey among teleworkers (Western Development Commission, 2020) found that 93% of them want to continue working from home in the future.

In **Italy**, estimates of the Smart Working Observatory (2020), show that the number of workers involved in telework could reach up to 5,350,000 in the future, up from 570 000 in 2019, and the intensity of smart working activities is expected to increase compared to the pre-pandemic period, with the hybrid system preferred. Smart working is expected to increase in public administrations and in sectors with "teleworkable" activities or in teleworkable functional areas (e.g. administration and management).

In **Finland**, teleworking is expected to return to pre-pandemic levels, which were already relatively high compared to the EU average.

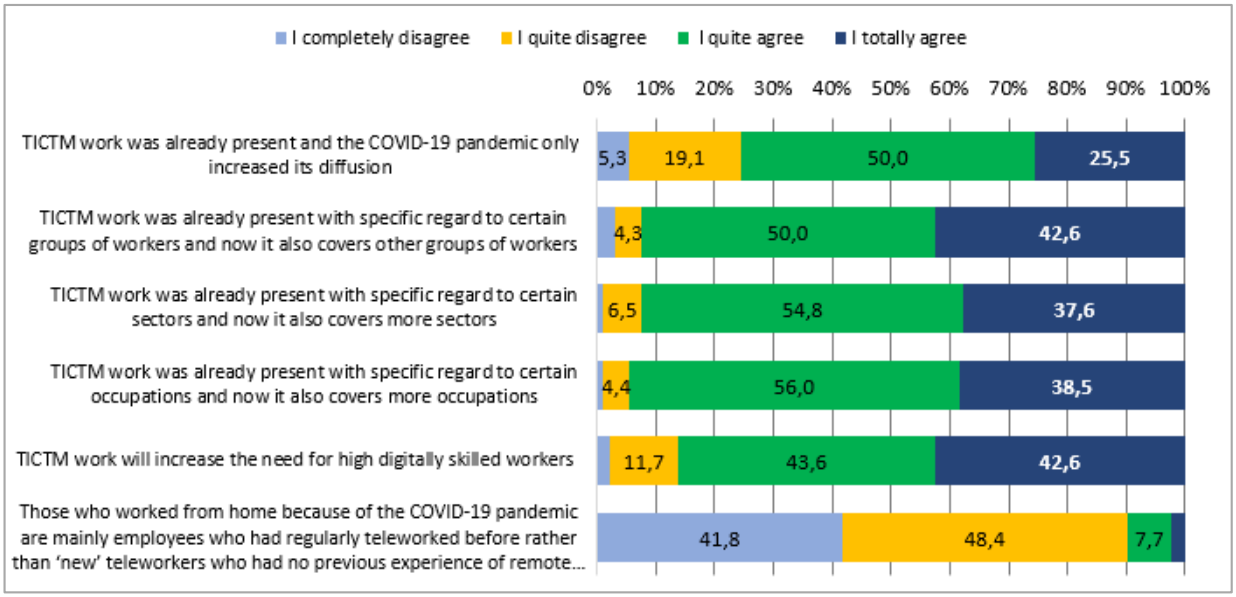
Source: Country case studies.

This perception is shared by the European and national stakeholders who responded to the web survey or were additionally interviewed for this study (Figure 13). Almost all the survey respondents and the interviewed stakeholders underline that TICTM arrangements were already adopted before the pandemic in some occupations, sectors, groups of workers, and that the COVID-19 pandemic accelerated its spread. The shared perception is that the COVID-19 pandemic has in particular enhanced the use of TICTM in new occupations, sectors and groups of workers that started to work from home during lockdowns.

With respect to future trends, the stakeholders interviewed underline that with a return to 'normality' the use of TICTM will continue, but not full time as during lockdowns. Hybrid forms will be more likely with some days a week at the workplace and some distance working either from home or from co-working spaces. This has manifold implications for the future. Employers, including international organisations, are rethinking their HR policies and the way work is organised, including the split between home and office.

The pervasive use of digital tools – both pre and post COVID-19 – has been a key driver and enabler in this, with differences in the use of TICTM depending on the companies' management culture. In addition, telework will also reduce business trips, and incentivise the creation of co-working spaces. For example, in Italy it is underlined that the trend will go towards hybrid forms of TICTM, although company premises are going to remain the main working places also in order to maintain a sense of identity and belonging among workers. The representatives of ETUC, however, underline that currently there are **two opposite behaviours among companies**: the first group wants to implement an even larger use of TICTM, while the second one wants to return to a pre-COVID situation.

Figure 13: What are the main trends related to TICTM work that the COVID-19 pandemic and associated restrictions brought about?



Source: IRS web survey.

3. POTENTIAL EFFECTS OF TICTM ON WORKERS, EMPLOYERS AND SOCIETY

3.1. Impacts and challenges of TICTM for workers

The effects of telework on workers mainly concern its implications on work flexibility and autonomy, work intensity and work-life balance, as well as health and safety conditions. These implications have different effects according to workers' personal characteristics and jobs, with different opportunities and risks in terms of inclusion or exclusion from work for different groups of workers, e.g. women, people with disabilities, the low-skilled.

TICTM work is associated with a number of both positive and negative effects for workers which are summarised in Table 2 below and explored in the next chapters, bearing in mind the complex, multi-faceted and multi-dimensional character of telework and digital work.

Table 2: Advantages and disadvantages of TICTM for workers

Advantages	Disadvantages
Better balance of home and work-life	Blurring of boundaries between work and home time and overwork
Increased flexibility and autonomy	(Virtual) Presenteeism
Reduction in commuting time	Social isolation
Increased productivity	Lack of support, inadequate equipment
Higher morale and job satisfaction	Career progression or promotion difficulties
Avoidance of office politics	Resentment from colleagues
Preservation of jobs	Inequalities between those who can telework and those who cannot

Source: Tavares, A. I., (2015); European Commission, (2020b).

The following analysis illustrates the main points emerging from the literature and debate, as well as the opinions of the EU and national stakeholders interviewed for the study and the in-depth analysis of five EU countries representative of the different TICTM-related situations of EU Member States.

3.1.1. Impacts on TICTM workers' flexibility, autonomy, and work-life balance

The increased **spatial (location) and temporal (time) flexibility** provided by TICTM is considered an important beneficial factor for workers. According to a wide range of research and company case studies, compared to their office-based counterparts, **teleworkers/ICT-based mobile workers usually report higher levels of job satisfaction and happiness**, **less stress** and **improved work-life balance, if they have a considerable degree of control over where and when they work** (Eurofound and ILO, 2017).

As Eurofound (2020a) indicates, a high proportion of those using ICTs for work purposes in 2015 also reported **higher levels of work autonomy** (e.g. in terms of deciding work-related methods, speed and tasks) and **working time flexibility**.

Eurofound and ILO (2017) show that there is a strong correlation between TICTM and **working time flexibility**. In addition to working time flexibility, TICTM grants workers **greater flexibility in terms of other key aspects of their work (e.g. type, order and/or speed of tasks, ways of performing the tasks)**. The same report underlines that non-office based workers generally have greater freedom over the way their work is organised and performed, since they are less subject to direct managerial control – as this is usually exercised at the workplace. Nevertheless, the fact that many workers engaged in TICTM are in professional jobs and at higher levels of seniority and/or occupational hierarchy may also account for their greater degree of task discretion and autonomy (Eurofound, 2020a).

Spatial flexibility allows workers to **avoid office distractions** which most of them appreciate. Another advantage related to the spatial flexibility of TICTM is that negative aspects of **commuting can be avoided** – TICTM either reduces travel altogether where the work is not place-dependent or creates opportunities for more convenient travel time, outside of busy and expensive travel times where the work is place-dependent but not time-dependent. As has been argued, by avoiding time-consuming and often frustrating daily commutes, workers may gain more leisure time and a better work-life balance (Ceurstemont S., 2020).

As a result, TICTM offers *potential* for **improving work-life balance**. It gives workers more freedom to better manage their care responsibilities or attend appointments which are difficult to make during normal working hours (Eurofound and ILO, 2017), and reduces commuting times. **Before the pandemic, in particular, TICTM has been reported to have many positive effects on work-life balance** including, for example, having more time to spend with family (79% of respondents to the 2015 EWCS survey), on personal activities (66%) and on activities in the local community (47%). It is also interesting to note, that women and men respond with similar positivity to the advantages of TICTM to work-life balance, although women are more likely than men to report that their working hours fitted well or very well with their home lives.

Nevertheless, Eurofound (2020a) underlines that the flexibility and greater autonomy associated to TICTM can also result in a range of **adverse effects for the mental and physical well-being of workers**, related to the so-called ***autonomy paradox***. This concept – the autonomy paradox – means that although higher levels of autonomy and flexibility for workers (which are, for example, a result of TICTM) have positive effects on workers, such as making work more rewarding, enhancing job satisfaction and other aspects mentioned above, they can also have negative effects, such as **increased work intensification, longer and more irregular working hours, higher stress levels and a disrupted work-life balance** (Eurofound and ILO, 2017**)**.

The autonomy paradox can be the result of either the worker him/herself (through his/her self-expectations and ambitions) or employer-related aspects such as the way work is organised and performance goals set and monitored, as well as the organisational culture and associated management styles. The autonomy paradox has attracted attention in research for almost a decade (Mazmanian et al, 2013; Sewell and Taskin, 2015; Biron and van Veldhoven, 2016; Huws et al., 2017). While it is observed not only in the context of TICTM, with TICTM it is particularly present. For example, as evidenced in Eurofound (2020a) based on the EWCS 2015 survey, a higher proportion of TICTM workers worked longer hours than their office-based counterparts, and high use of ICT seems to be associated with higher work intensity**,** especially for those who, to varying degrees, worked outside the employer's premises as opposed to those who were always office-based.

COVID-19 and the extended periods of lockdown associated with the pandemic period have created a context in which the risk of negative effects of a seemingly more autonomous work style due to TICTM has increased (ILO, 2020b; ILO, 2020c). This is also because TICTM has gone hand in hand with changes in organisational management and communication between employees that affect the way this newly gained 'autonomy' eventually plays out for the worker. The following have been identified as the sources of **higher work intensity** in TICTM (Eurofound 2020a):

- Work process monitoring through technology, can result in an increased workload and stress levels.
- Permanent connectivity, may result in increased work pressure and stress. As recently pointed out by Eurofound (2002a), almost 30% of those working from home as a result of the COVID-19 pandemic are significantly more likely to work every day or a few times a week in their spare time, compared to less than 5% of office workers. This, in turn, often means that the Working Time Directive's minimum period of daily rest of 11 hours is not respected (EESC, 2021).
- Interruptions - caused by being constantly connected, working in unfavourable workplaces with competing demands, like at home with care roles, put pressure on workers to compensate for lost time and work even harder.
- Social exchange between employers and employees - workers tend to reciprocate for being granted a flexible working arrangement and to prove their commitment and work ethics have not been adversely affected, they will work longer hours.
- Information and email overload – as people do not meet regularly and do not speak to each other face-to-face, the volume of emails sent has increased immensely. Workers, therefore, spend a lot of time on processing information and e-mails.

The above-mentioned factors also have negative effects on TICTM workers' **work-life balance**, especially when teleworking from home. The fact that **home-based teleworkers work longer hours and, consequently, have difficulty in separating paid work from their private life is well documented** and is considered one of the main negative effects of such work (ILO, 2020b; Tavares, 2015).

Another potential negative impact of TICTM relates to the **type of work and tasks themselves**. The way of organising work more flexibly through TICTM, which often relies less on regular work patterns usually adopted on the employer premises, is also associated with a more general trend towards **greater work fragmentation** and **on demand performance-paid project-based work** (Eurofound, 2020a). As underlined by Lederlin (2020a), this is also inextricably linked to the ongoing individualisation of the employment relationships, the weakening of collective bargaining and the dilution of worker collective identity. Since the 1980s, influenced by the advent of human resource management (HRM) and high-performance work systems (HPWS) philosophies, this greater individualisation of employment relationships has been growing and covering more and more sectors and workers – either in or outside employer premises (Lederlin, 2020a; Niforou, C., 2008). A pattern even more true for those engaged in TICTM, whose very fragmentation, dispersion and isolation makes them even more vulnerable in terms of negotiating power (e.g. on pay and employer's demands) (Lederlin, 2020a).

Impacts in the context of the COVID-19 pandemic

While the (positive and negative) impacts mentioned above may generally occur in TICTM situations, **the COVID-19 pandemic has created a context in which TICTM was observed to have further**

negatively affected teleworkers' conditions. This was due to the sudden and extensive use of TICTM for many workers in combination with the effects of the lockdown and social distancing measures taken by the governments to combat the pandemic. As underlined by Milasi et al. (2020), during the COVID-19 pandemic, working conditions may have been deteriorating for many workers due to, among other problems, lockdowns, lack of childcare, unsuitable working spaces and ICT tools. Some of these negative effects are not likely to persist with return to a less intensive use of teleworking arrangements and with the re-opening of care services.

The **COVID-19 pandemic broke out so suddenly that the massive expansion of teleworking occurred very quickly** with no time for employers or employees – especially those who had not teleworked before – to properly prepare for it (Bouziri et al., 2020). For example, as the Eurofound e-survey (Eurofound, 2020c) found, less than half (47%) of the respondents stated that their employer had provided them with the equipment needed to work from home following the sudden closure of workplaces.

The effects of COVID-19 restrictions on teleworkers depended on their occupation. With the generalised national lockdowns during the first wave of the pandemic – and partial ones ever since – workers whose work entails a **high degree of face-to-face social interaction and emotional labour**, such as teachers, social workers, home care assistants and psychologists, had to resort to teleworking. Yet, there is consensus among such workers that remote working has **reduced the quality of their work** as well as its effectiveness, efficiency and purposefulness (Fana et al., 2020a). Conversely, workers engaged in **sales activities**, where the degree of emotional engagement is rather limited, reported greater satisfaction with the new teleworking arrangements which entailed less direct customer contact. Without having to go to clients' premises or to face-to-face meetings, they felt that they could better concentrate on the task at hand.

In addition to different occupational characteristics, the degree to which changes related to working remotely (relying much more on online tools, for example, internal communications, team meetings and performance monitoring) were perceived as a major change, for example as regards one's job autonomy, strongly depends on the **workers' position within the occupational hierarchy**. Overall, during the COVID-19 pandemic **the net effect of teleworking on job autonomy as regards latitude in work procedures has been positive for medium-skilled workers and clerks, and neutral for high and low-skilled workers** (Fana et al., 2020a).

Specifically, for those already enjoying a high degree of autonomy in setting performance targets as well as organising carrying out their tasks such as managers and professionals, remote working and associated work organisations did not represent a significant change. These were already used to a degree of teleworking. However, **for medium and some groups of low-skilled workers (e.g. clerks)** who have traditionally enjoyed much less job autonomy, not least because of the standardised nature of their tasks, **the shift to mass telework represented quite a significant change**. Although this shift did not entail any major change in their autonomy as regards their work content and/or delivery schedule, such workers did enjoy greater flexibility and latitude concerning work procedures associated with the effective execution of their tasks. To this end, research across the EU has found that the need to adapt work procedures to the new teleworking reality, led to greater horizontal coordination between workers. As has been argued (Fana et al., 2020a):

'Not only did workers autonomously introduce online collaborative tools into the labour process, but in some case at least during the early stage of telework, the emergency situation has allowed some groups of workers to gain decision-making power over the definition of priorities, sometimes to the point of temporarily appropriating the prerogatives usually attributed to the management.'

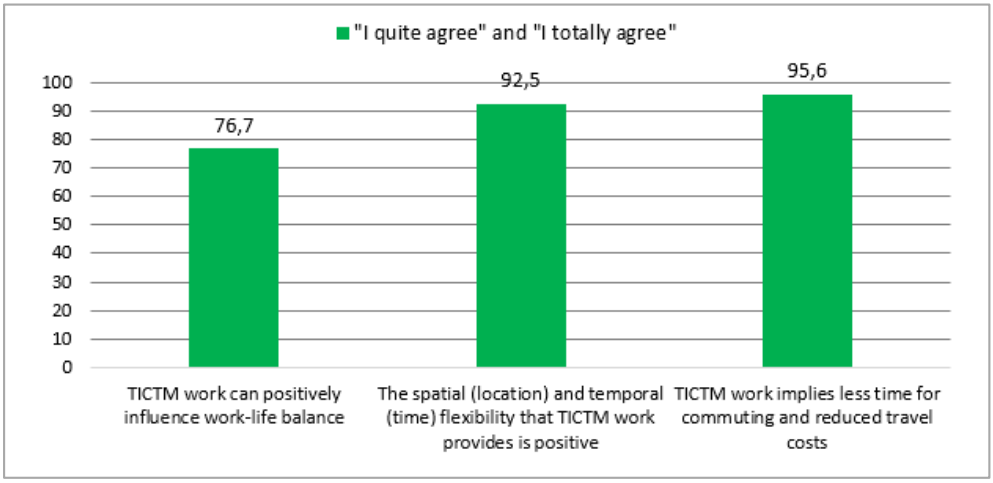
The increase in TICTM in the **context of the pandemic** has led to considerable changes in work organisation, also in **management culture, including management control**. Fana et al. (2020a) found that the widespread use of TICTM as a result of the pandemic, led to some **significant changes in work organisation in terms of *how* people did their work, but did not on its own considerably affect task content *per se*, i.e. *what* people did and the tasks they performed**. Such changes are naturally not homogeneous across sectors, occupations, groups of workers, companies, and tasks.

Moreover, **changes evolved from the early stages to the later stages of the pandemic**. During the first stages of the pandemic, workers experienced high degrees of autonomy (Fana et al. 2020a; Fana et al., 2020b). This was attributed to the high levels of initial uncertainty and even absence of guidance from management who were also caught unaware by the urgency, unexpectedness and extent of the transition to teleworking. As a result, workers across occupational groups and sectors had to quickly make this transition – often overnight – and adapt to both using new digital and collaboration tools and communicating with co-workers, supervisors and clients in new ways, notably through virtual meeting platforms such as Zoom, Teams and Skype. Over time, however, **managerial control and supervision appeared to be restored, albeit in new guises**, also using the surveillance opportunities offered by digital technologies, as described in section 3.2. below.

Stakeholders' opinions on the effects of TICTM on working conditions

The potential positive and negative effects of TICTM workers' increased flexibility and autonomy on work intensity, working time and work-life balance are well acknowledged by the EU and national stakeholders interviewed for the study. The large **majority of respondents to the web-survey agree** (quite or totally) **that TICTM work could lead to an easier organisation in workers' lives**. As shown in Figure 14, almost all respondents consider the spatial and temporal flexibility of TICTM work positive for teleworkers and agree that TICTM work implies less time for commuting and reduced travel costs. A lower share, although still high, of more than seven out of ten also think that TICTM work can **positively influence a worker's work-life balance**, although opinions on the effects of telework on work-life balance show **wide differences according to the role and sex of respondents**.

Figure 14: Agreement with the idea that the TICTM work could lead to an easier organisation of work and personal tasks/commitments (% of respondents answering I quite agree + % answering I totally agree)



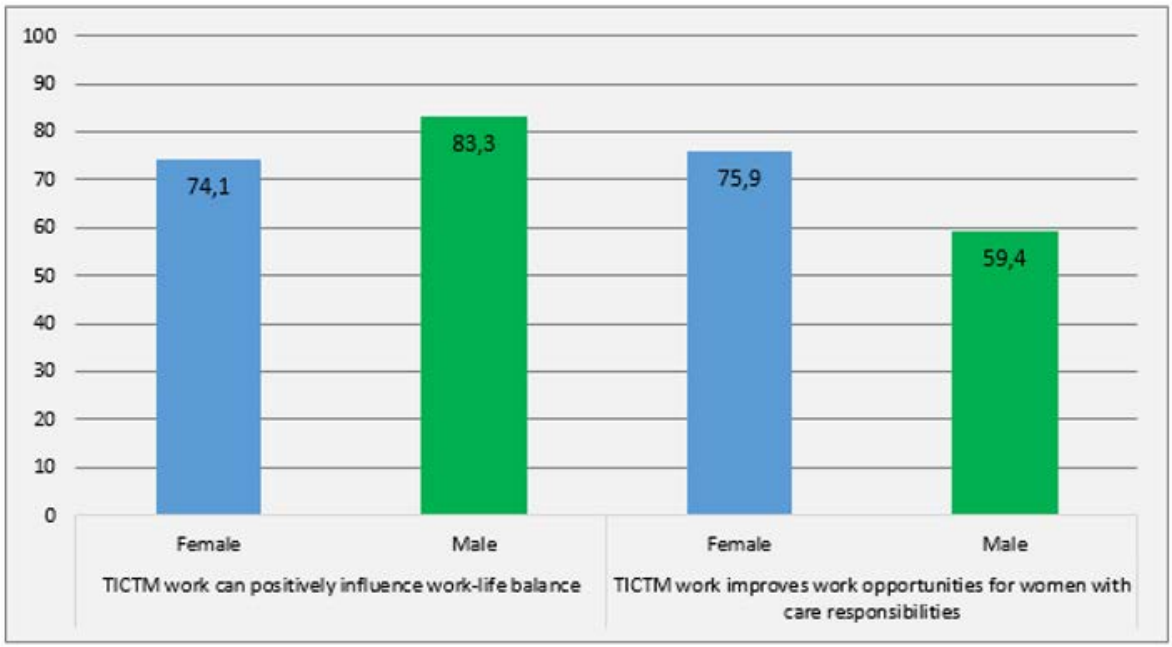
Source: IRS web-survey.

Note: The bars show the shares of respondents who answered 'quite agree' or 'totally agree' on the following scale: 1 - I do not know, 2 – I completely disagree, 3 – I quite disagree, 4 – I quite agree and 5 – I totally agree.

Lower shares than average agree with the positive effects of telework on workers' *work-life balance* among representatives of EU and national social partners and of umbrella organisations (respectively 58% and 50%). These same stakeholders also show lower shares than average agreeing on the positive effects of *spatial and time flexibility of TICTM work*, although agreement remains high (84% of social partners' representatives and 83% of representatives of umbrella organisations).

As Figure 15 below shows, there are also **wide gender differences in the opinions on the positive effects of TICTM work on work-life balance**. While 83.3% of male respondents agree with this statement, only 74.1% of women do. On the other hand, a much higher share of women compared to men thinks that TICTM increases work opportunities for women with care responsibilities (75.9% compared to 59.4% of men).

Figure 15: Agreement with the idea that TICTM positively influences work-life balance and improves work opportunities for women with care responsibilities by respondent's sex

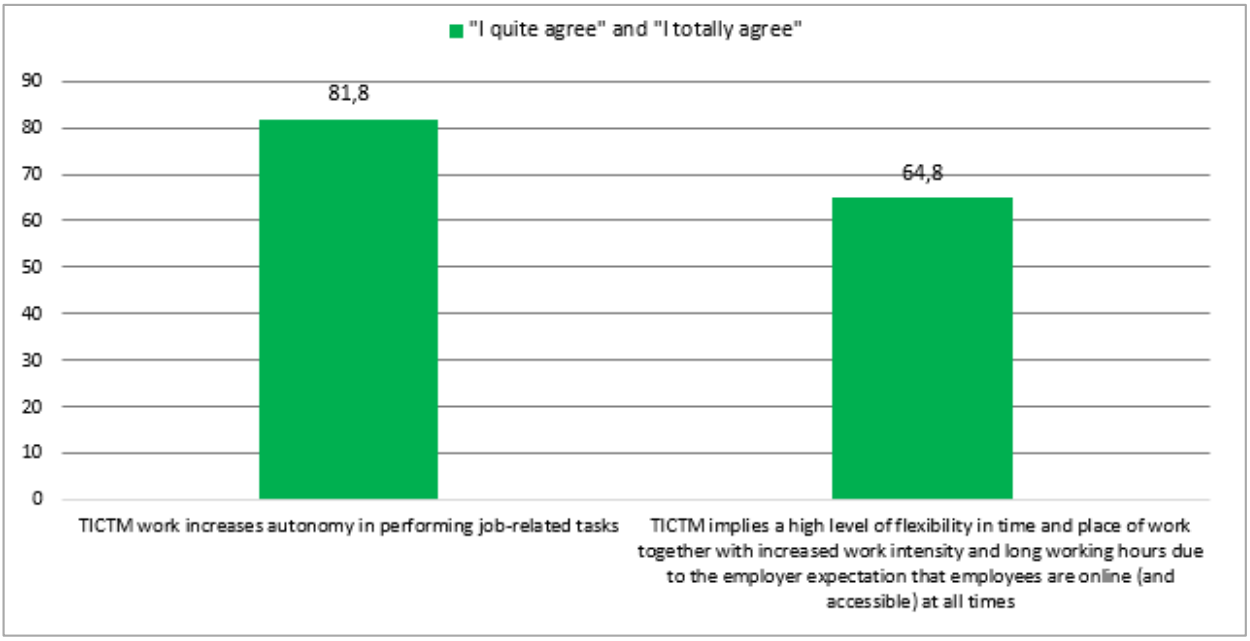


Source: IRS web-survey.

Note: The bars show the shares of respondents who answered 'quite agree' or 'totally agree' on the following scale: 1 - I do not know, 2 – I completely disagree, 3 – I quite disagree, 4 – I quite agree and 5 – I totally agree.

The respondents' opinion on the effects of TICTM on the **autonomy of work tasks and flexibility of work arrangements** is presented in Figure 16. Eight out of ten respondents (81.8%) agree that performing job-related tasks using TICTM increases workers' autonomy; however, there is a relatively high share of disagreement among representatives of the social partners (26% quite disagree) and the umbrella organisations (25% quite disagree). The share of respondents agreeing that the greater TICTM-related flexibility in time and place may result in "*increased work intensity*" and "*long working hours*" is lower, at 64.8%, particularly among representatives of the social partners (42.1%) and among experts (63%).

Figure 16: Agreement with the idea that TICTM increases autonomy and flexibility



Source: IRS web-survey.

Note: The bars show the shares of respondents who answered 'quite agree' or 'totally agree' on the following scale: 1 - I do not know, 2 – I completely disagree, 3 – I quite disagree, 4 – I quite agree and 5 – I totally agree.

The survey included also an open question allowing respondents to report any other effects of TICTM on workers. Answers to these open questions can be grouped around two main effects of TICTM work: (i) the conciliation between work, family and personal life/work-life balance and (ii) the management/coordination of work tasks.

In relation to the **work-life balance** aspect, respondents' underline that TICTM work *"(…) penalises working mothers as opposed to working fathers*", and that, although "*Telework increases flexibility and helps in reconciling work and family life*"**,** it cannot replace the need for "*necessary childcare arrangements*".

The second topic raised by the open answers mainly concerns the weakened **sense of belonging to an organisation of TICTM workers; the lower effectiveness of the teamwork resulting from TICTM work arrangements; the more difficult communication between colleagues and the organisation of job tasks**. Respondents also underline the need for ***adequate training and equipment for workers*** that were lacking when TICTM work measures were unexpectedly and quickly implemented at the beginning of the outbreak of the pandemic.

The representatives of European and international organisations individually interviewed also underline that the TICTM workers' greater (time and place) flexibility and autonomy in the organisation of work requires a change in mentality among some workers and employers/managers, and is often accompanied by **greater work intensity and longer working hours** (although compensated by less commuting time). Overall, this may have negative effects on the work-life balance and stress levels of teleworkers. Issues of **social isolation, digital divide and need for (digital) training** have also been underlined.

The **interviews with national stakeholders in the five countries** considered in the case studies confirm the positive and negative effects of TICTM discussed above; however, the picture emerging is more nuanced, reflecting national differences in the level of digitalisation of work and life before the

pandemic, and the presence of digital infrastructures and skills.

As shown in Table 3 below, in all the five country cases, among the positive effects of TICTM on workers are: the increase in digital skills, the greater working-time flexibility, and less commuting time. Among the negative ones are the longer working hours and so-called 'Zoom fatigue'[13], and the social isolation of workers. Other inimical effects include issues related to data protection and surveillance systems, living in overcrowded homes (as underlined in the Romanian case), lack of suitable equipment (underlined in the German case) and increase in (teleworking) costs (printing, internet connection, electricity) not covered by the employers (underlined in the Romanian case).

[13] 'Zoom fatigue' describes the tiredness, anxiety, or burn-out associated with overusing virtual platforms of communication. Like other experiences associated with the COVID-19 pandemic, 'Zoom fatigue' is widely prevalent, intense, and completely new. See Lee, J., (2020).

Table 3: TICTM Positive and negative expected effects on workers in the five country cases

Effects on:	Workers	
Country	**Positive**	**Negative**
Finland	Increased or equal productivity than before increase in digital skills Increase in working-time flexibility Less commuting time	Work-life balance (longer working hours, increased stress, unpaid care work, interference between personal life and work) Decrease in social interactions Data protection and surveillance issues
Germany	Improved ability to carry out tasks Time savings due to lack of commuting Better work-life balance due to higher work flexibility	Lack of suitable equipment Difficulty to entirely separate private and professional life (especially for mothers with young children) Inability to switch off and rest/recover from work Unpaid care work
Ireland	Reduction in commuting time Flexible work schedule	Greater difficulty in separating work and personal life and in collaborating with colleagues Data protection and monitoring issues
Italy	Reduction in travel time and costs Increase in wages due to an increase in the hours worked Increase in digital and soft skills Smaller use of the Redundancy Fund (CIG) Lesser perceived probability of losing their job	Decreased sense of belonging to the organisation The fact that teleworkers usually do not have greater managerial autonomy than before Lack of clear boundaries between working and personal life
Romania	Increase in digital competences and soft skills Reduction in commuting time Flexible work schedule During the pandemic, it helped save their jobs and reduce the risk of teleworkers becoming ill	Work-life balance issues, due to increased working hours Increase in costs (internet connection) Issues related to safety and data protection of the workers Issues related to living in overcrowded homes (45.8% of Romanians), which makes telework rather difficult

Source: Country case studies.

3.1.2. Impacts on TICTM workers' mental and physical health and safety

The health and safety implications for TICTM are not as clear cut as presumed. Based on multivariate analysis of staff responses, the association between such work and occupational health is ambiguous (Eurofound and ILO, 2017). This is due to the fact that TICTM may have both positive and negative effects, the negative ones depending on the intensity of TICTM work (Organisation for Economic Co-operation and Development OECD, 2020a). Whether negative or positive, TICTM seems to increase work-related impacts on health as experienced by workers. The said study does indeed show that a higher proportion of TICTM workers report both positive and negative consequences of work on health compared to employees working only at the employer's premises.

a. Impacts on TICTM workers' mental health

Psychoscial risks are a major cause of work-related illness which can lead to absenteeism, reduced productivity and performance (EU-OSHA, 2014). Research carried out in 2013 (Matrix, 2013) estimated the costs to Europe of work-related depression at €617 billion annually, including the costs to employers of absenteeism and presenteeism (€272 billion) and loss of productivity (€242 billion).

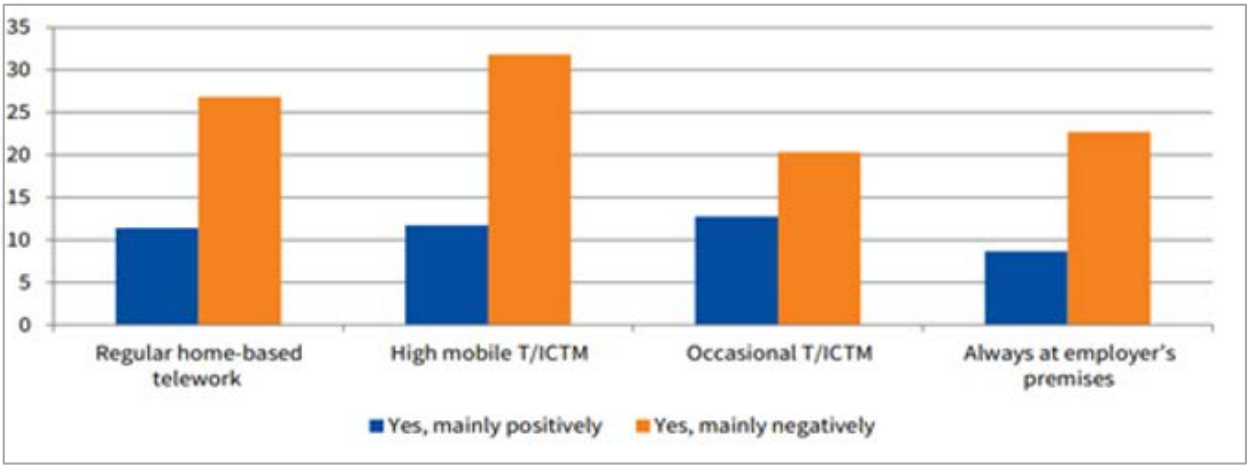
As discussed in the previous section, although, on the whole, TICTM workers positively value the flexibility and autonomy that such work provides them with, they can also experience increased work intensity, longer working hours and interference with home life. These are likely to **negatively affect workers' stress levels**. Additionally, TICTM workers may experience **feelings of social isolation and loneliness** which in return may reduce the capacity to handle the above-mentioned changes in work-load and working time. These are likely to adversely affect the stress levels and the mental and physical well-being of teleworkers (ILO, 2020b) - after headaches and eye strain, high stress levels have the second strongest negative association with ICT use, (Eurofound, 2020a; Eurofound and ILO, 2017). A 2017 Eurofound-ILO study finds that **41% of workers** carrying out **high levels of TICTM work reported high stress levels, compared to just 25% of office workers**, also as a result of the blurred boundaries between work and home that remote working entails together with the ensuing difficulty of teleworkers to separate paid work from their private life (Tavares, 2015; Eurofound and ILO, 2017; ILO, 2020b). Statistical evidence from the USA also points to higher levels of stress among teleworkers which is probably due to increased work-family conflict (Song and Gao, 2018).

Another source of negative effects related to teleworking arises from the so-called '*virtual presenteeism*', involving working when one is sick but can still work from home which, in turn, can delay their recovery and jeopardise their long-term health (Eurofound, 2020c). For example, studies point to a low(er) number of sick days among such workers compared to their office-based counterparts (Waltersbacher et al, 2019; Robelski and Sommer, 2020). As a recent Eurofound study points out: '*the largest difference in presenteeism is between those who never use ICT and those who use it all the time: 34% compared to 52%*' (Eurofound, 2020c).

Moreover, the type and magnitude of teleworking effects on health seem to depend on the actual type of remote worker (Eurofound and ILO, 2017). As Figure 17 below shows, the share of those experiencing **negative work-related health outcomes is higher among highly mobile TICTM workers** (32%)[14] and **regular home-based teleworkers** (27%). Conversely, a lower percentage of occasional teleworkers and/or ICT-based mobile workers (20%) report that work affects their health adversely than those who always work at the employer's premises (23%).

[14] Eurofound defines Highly Mobile TICTM workers, those workers who work in at least two locations, several times, a week. Eurofound (2020a), *Telework and ICT-based mobile work: Flexible working in the digital age*, New forms of employment series, Publications Office of the European Union, Luxembourg.

Figure 17: Percentage of employees reporting positive or negative effects on health by type of effect



Source: Eurofound and ILO, (2017). Working anytime, anywhere: The effects on the world of work, Publications Office of the European Union, Luxembourg, and the International Labour Office, Geneva. Available at: https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_544138.pdf.

A more recent (2020) Eurofound study confirms the above findings (Eurofound, 2020a). For example, **highly mobile TICTM workers report higher levels of anxiety, stress and fatigue than their office-based counterparts**. In addition, such workers as well as regular home-based TICTM workers are **more likely to report sleeping disorders**: 42% of home-based and highly mobile TICTM workers report such problems compared to 29% of workers based at their employer's premises. Apparently, high work intensity also contributes to the higher incidence of sleeping disorders among such workers. In general, highly mobile and regular home-based TICTM workers tend to suffer most adverse health effects, mainly due to greater work intensity.

The pervasive use of new forms of **online surveillance on teleworkers also results in increased stress levels and risks damaging employees' psychological and physical wellbeing** (Gifford, 2020). These effects result from the fact that technology when associated with intensified surveillance and monitoring of work can, *inter alia*, reduce autonomy and privacy, lead to greater work intensification, and blur the boundaries between work and personal/family life (ILO, 2016a).

As a 2019 European Parliament briefing highlights, *'the risks to worker health and safety are principally psychosocial insofar as absences from the employer's premises and social interactions with colleagues may generate a sense of isolation. Moreover, long-range managerial monitoring, demands for constant availability and blurred boundaries between private life and work may give rise to psychosocial health and safety concerns'* (Cabrelli and Graveling, 2019). A pervasive use of employee tracking and monitoring technologies can also generate **anxiety and stress due to the so-called 'anticipatory surveillance' fear** among staff, including teleworkers.

As underlined by a recent briefing on *The mental health of workers in the digital era* commissioned by the European Parliament (Graveling, 2020), the negative mental effects of the use of new technological devices: "*appear to stem from the manner in which the technology is used, with usage for prolonged periods being a major factor for provoking technostress and techno-addiction. Most of the devices used for work have not been designed primarily for working purposes, or for prolonged usage. It should be emphasised that working with technology per se is not a harmful activity, but that the way the technology is used, can create adverse or potentially harmful conditions*". Another reason behind the adverse mental effects of

working with modern technology, is in the blurred boundaries between work and private life resulting from the possibility to be connected anytime and anywhere. According to the study, based on an extensive literature review, "*older workers seem to be influenced more by technostress, while younger individuals are more vulnerable to overload. Males and females present some differences on their relation to technology with the latter more susceptible to technostress*".

The massive growth of teleworking as a result of the COVID-19 pandemic has exacerbated the inimical effects of this mode of working on employees' mental health. Confinement measures, including the closure of schools and workplaces, have disrupted daily routines, limited social, in-person interactions and increased loneliness and sense of social isolation, all of which have adversely affected the mental health of Europeans. For example, a French survey of 2,000 employees found that 18% of teleworkers showed symptoms of severe anxiety, depression and other mental disorders – with many more women reporting a deterioration in their mental health (UNRIC, 2020). According to the UK's Office for National Statistics (ONS), the proportion of adults likely to be experiencing some form of depression almost doubled in June 2020 (19.2%) as opposed to (9.7%) before the pandemic (July 2019 to March 2020) (Office for National Statistics ONS, 2020). In Belgium, the Sciensano public health institute which collected the experiences of 44,000 people also found a sharp increase in depressive disorders from 10% in 2018 to 16% in 2020 (following the outbreak of COVID-19). This survey also found that young people aged 16-24 are most affected, with the prevalence of depression tripling among young women (30%) and quadrupling among young men (29%) compared to 2018 (UNRIC, 2020).

Impacts on TICTM workers' physical health

TICTM does not affect only the mental health of workers, but also has an impact on their physical health.

The **lack of ergonomic furniture and insufficient space (for work) at home** are associated with higher levels of headaches and eyestrain, with half of such associations being indirect through job demands. Specifically, as has been pointed out by Eurofound (Eurofound, 2020a) *'those who use ICT all the time are more likely to have more cognitively demanding tasks and are interrupted more frequently, both of which are associated with higher reported levels of headache and eyestrain'*. Moreover, ICT use in itself may also be related to headaches and eyestrain which are reported by 44% of those with the highest level of use compared to 32% of those who never use ICT.

In addition, as has been shown by EU-OSHA reports (EU-OSHA, 2017 and 2018), in contrast to desktop devices, mobile ICT equipment (especially small devices such as mobile phones, tablets and laptops) used by TICTM workers are often not ergonomically sound and not particularly suitable for either carrying out office work and/or spending long hours working on them. Problems associated with such equipment include (i) small or reflective displays; (ii) small or virtual keyboards; and (iii) fixed screens and keyboards whose positions cannot be adjusted. These can, in turn, result in constrained or poor posture and the risk of developing **musculoskeletal disorders (MSDs)**, especially MSDs of the upper limbs, neck and back (Eurofound, 2020a). For example, half of mobile laptop users complain of impaired working conditions, while the same proportion feel that they underperform due to musculoskeletal complaints (IFA, 2016).

As multivariate analysis of the EWCS 2015 has also shown, regular home-based and highly mobile TICTM workers were more likely to report MSDs in their upper limbs, although no such association was found for occasional TICTM workers. Likewise, there was no association between other types of MSDs such as lower limb complaints and TICTM (IFA, 2016). In general, **intense TICTM work increases the risk of MSDs in the upper limbs, neck and back** (Eurofound, 2020a). Crucially, as the Eurofound's COVID-19 survey has highlighted, less than half (47%) of respondents stated that their employer had

provided them with the necessary equipment for home working – although this is also due to the unexpected switch to teleworking which, in many cases, occurred almost overnight (Eurofound, 2020c).

Finally, it is worth pointing out that not only is the equipment used by TICTM workers often not ergonomically sound, but also the 'work' environment within which they operate – e.g. homes or public places – is also often not suitable for work purposes.

The COVID-19 pandemic aggravated the negative health impacts of TICTM

Teleworking as a result of the COVID-19 pandemic, although providing flexibility and welcome protection to teleworkers, has also exacerbated some of the adverse health-related effects of such work, adding to the (well-documented) adverse effects of the COVID-19 pandemic itself on mental health [15]. For example, according to Round 1 of the Eurofound survey launched on 9 April 2020, 18% of EU respondents which included teleworkers, said they felt particularly tense most of the time over the past two weeks – this contrasts with just 11% in the 2016 survey (Eurofound, 2020b).

As pointed put by ILO (2020b): '*Working from home during the COVID-19 pandemic is unlike teleworking under normal conditions, as workers are working from home for a prolonged period, under difficult external circumstances. This situation itself is provoking higher levels of anxiety than usual in workers, which is linked with anxiety due to the health, social and economic implications of the crisis*".

For example, as the Eurofound COVID-19 related e-survey found, over one-fifth of teleworkers (24%) reported working during their free time, as opposed to 6% of those who worked only at the employer's premises or locations outside the home (Eurofound, 2020c). **Respondents with children were found to be the group most challenged by the new living and working arrangements**, also due to social distancing measures and school closures during lockdowns, with 34% of respondents with children under 12 reporting feeling that their job prevented them from giving time to the family, compared to 16% of respondents who have no children under 17 and 21% of respondents who have children aged 12–17. The COVID-19 pandemic and associated massive growth of (full-time) teleworking together with the requirement for physical distancing and lack of face-to-face interactions appears to have amplified some of the teleworking-related negative effects that are inimical to the health and well-being of teleworkers. These are shown in the Box below.

[15] As highlighted by a recent European Parliament ENVI Briefing (Ciucci 2020), these can be split into three main components: (i) direct effects of the COVID-19 pandemic outbreak (fear, anxiety); (ii) indirect effects of infection prevention and control (IPC) measures (lockdowns, curfews, social distancing and isolation); and (iii) indirect effects of the socioeconomic fall-out (debt, unemployment, impoverishment, exclusion). These adverse effects on mental health affect everyone – from children and adolescents (e.g. due to disruption to their schooling) to working age adults (e.g. due to increased risk of unemployment, poverty, debt, etc.) to the elderly (e.g. due to social isolation and loneliness). In particular, young people aged 18-28 are deemed to be at great(er) risk of poor mental health, due to higher likelihood of unemployment and income insecurity.

Box 5: Risks of full-time teleworking on workers' health in the context of the COVID-19 pandemic

- **Technostress and technology addiction and overload**, which increases fatigue, irritability and the inability to switch off from work and rest properly.
- **Increased consumption of alcohol and other recreational or performance-enhancing drugs**, which may increase negative emotions, lower performance and contribute to an increase in aggression and violence.
- **Prolonged sedentary behaviour**, working in one position over long periods without moving increases the risk of health problems, including musculoskeletal disorders (MSDs), visual fatigue, obesity, heart disease, etc.
- The **ergonomics of home furniture may not be optimal for prolonged teleworking**. Employers should therefore inform workers about key ergonomics issues, including via training. These preventive measures support workers to be able to adjust their working arrangements and change them if necessary. The responsibility for the right ergonomics in order to prevent MSD should be shared by employers and workers.
- **Due to the prolonged isolation, there is a risk of burnout and feeling left out**, which requires an additional effort from employers, HR professionals, direct supervisors, and colleagues to extend mutual support.
- **Slow or patchy internet and technology tools can also cause frustration and irritability**; therefore, proper, well-functioning tools for teleworkers should be ensured.
- **Work-life conflict** and the challenges related to managing the boundaries between working time and personal obligations are exacerbated, including an inability to switch off from work and recharge. This is especially the case for those with care responsibilities, such as parents with school-aged children at home.

Source: ILO, (2020b).

Against this backdrop, it is not surprising that, as shown in Table 4, there is a growing body of literature which not only **highlights the risks of extended and full-time teleworking - as has been the case during the current COVID-19 pandemic – but also provides pointers for employer action to mitigate these risks**.

Table 4: Health impacts of telework during the COVID-19 pandemic and key prevention measures for employers

Family of Risk	Effects of Telework	Amplification or reduction in the context of COVID-19-related containment	Key prevention measures for employers
Risks associated with transportation	Decreased	None	-
Risks associated with home working environment	Increased risks associated with housing (fire, and slip, trip and fall hazards, temperature conditions)	Amplified (due to lack of anticipation)	Dissemination of simple, pragmatic security messages
Psychosocial risks	Increased risks of social isolation in the professional sphere	Reduced (universalisation of telework)	Adoption of virtual collective working periods (teleconferences)
	Increased risk of blurring of boundaries between work and home time	Potentially amplified by the multiplication of nonwork-related tasks such as caring for children and facilitating home schooling	Adapt working time and schedule for workers ensuring home childcare
Behavioural risks (diet, sleep, addiction)	Ambiguous	Amplified (confinement, COVID-19-linked anxiety)	Allow and promote teleconsultations with occupational practitioners

Source: Bouziri, H. et al, (2020). Working from home in the time of COVID-19: How to best preserve occupational health?, Occupational & Environmental Medicine, July 2020, Vol 77, No 7.

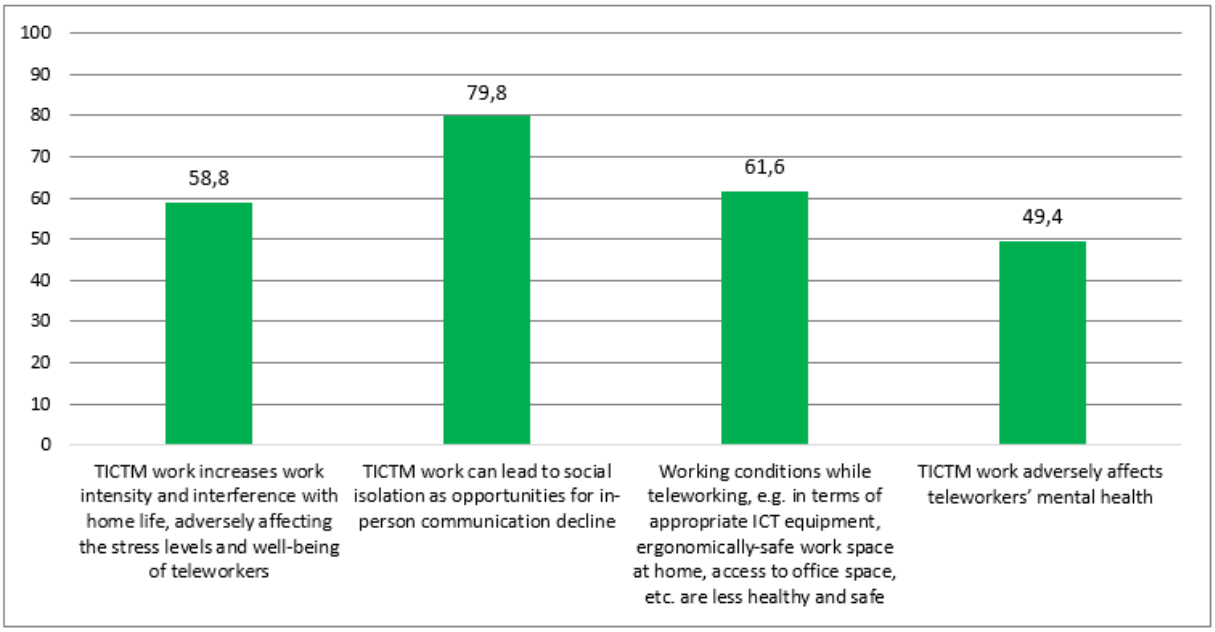
Stakeholders' opinions on the health risks of telework

The **potential negative effects of TICTM work on workers' psychological and physical well-being** are underlined by all the EU and national stakeholders interviewed for the study.

Respondents to the web-survey show a high agreement (almost 80% of respondents) on the **negative effects of TICTM in terms of *social isolation***, while agreement is lower on the other potential negative effects of TICTM on other aspects: 61.6% quite or completely agree that the TICTM work could lead to **less healthy and safe working conditions** in terms of appropriate equipment and work space; 58.8% agree that teleworking may have negative effects on the **home life and stress level** of workers; and almost half (49.4%) believe that TICTM work adversely affects workers' **mental health**. Representatives of umbrella associations show much higher than average (83%) levels of agreement on the negative effects of TICTM on workers' mental health, while female respondents show higher levels of agreement

on TICTM work intensity and interference with home life, adversely affecting the stress levels and well-being of teleworkers, compared to men (56.9% compared to 48.5%).

Figure 18: Agreement with the statement that TICTM has effects on workers' well-being



Source: IRS web-survey.

Note: The bars show the shares of respondents who answered 'quite agree' or 'totally agree' on the following scale: 1 - I do not know, 2 – I completely disagree, 3 – I quite disagree, 4 – I quite agree and 5 – I totally agree.

The **health risks of telework from home** have also been underlined by the EU-OSHA representatives interviewed and other representatives of EU and international organisations. They have pointed out that long working hours with not ergonomically fit equipment and furniture at home may lead to musculoskeletal disorders (MSDs) (e.g. back pain), vision-related problems from prolonged ICT use, such as headaches or eyestrain, obesity, heart disease, etc. In addition, long working hours, the sense of social isolation associated with TICTM, together with invasive surveillance may negatively affect the mental health of teleworkers. The increased use by employers of monitoring and surveillance add to the employees' anxiety and stress levels, besides not being transparent, as companies seldom explain to their staff why or how this information will be used.

Current EU-level OSH regulations make the employer responsible for mitigating the work-related risks of staff. Yet, it is questionable whether the necessary risk assessment that is typically conducted at the workplace for health and safety purposes is also taking place for remote workers. Other aspects with negative effects underlined in interviews relate to the workers' privacy and work-life balance issues.

The **evidence collected in the five country case studies and the interviewed national stakeholders** also points to the possible harmful consequences of TICTM work for the mental (burn out) and physical health of workers resulting from social isolation, high work intensity and difficulty to switch off, and the poor physical and ergonomic workspace at home.

3.2. Impacts and challenges of TICTM for employers

TICTM working arrangements affect in positive and negative ways employers, especially as regards their work organisation and management culture, including the surveillance and monitoring systems, but also labour productivity and production costs. As in the previous section, the following sections discuss the effects of these arrangements on employers on the basis of findings emerging from the

literature review, the opinions of interviewed stakeholders, and the selected country case studies.

3.2.1. Management culture and surveillance/monitoring systems

The pervasive/ubiquitous use of ICTs and increased digitalisation currently underpinning the EU's on-going and long-term structural transformation towards a knowledge based and digitised economy are already having significant repercussions for the organisation of production and work and associated knowledge, skills and competence requirements.

The pandemic and the massive switch to teleworking have considerably accelerated trends as regards work organisation that were already there. For example, although the number of workers engaged in TICTM has been increasing over time, the explosion of such work as a result of the pandemic definitely represents a **paradigm shift in the way work is organised, performed and monitored, irrespective of job or occupation** (ILO, 2020b; Ceurstemont, 2020).

The considerable – and arguably permanent – **changes in work organisation (and associated management culture, including management control)** are, however, not homogeneous across sectors, occupations/groups of workers, companies, and tasks. Moreover, these seem to have changed over time, i.e. from the early stages to the later stages of the pandemic.

As mentioned earlier, in the early stages of the COVID-19 pandemic, the sudden increase in teleworking and the mandatory physical absence from the workplace, often resulted in the **spontaneous creation of horizontal mechanisms of co-ordination**, organised by workers themselves, using ICT tools from their homes' (Fana, M. et al., 2020b). Although management often sought to use more traditional mechanisms of direct control through digital platforms, emails or phone calls, these did not prove very effective against a backdrop of generalised remote work.

However, after the first shock of the pandemic had passed, and teleworking or remote working had become much more the norm for a multitude of businesses and workers, **traditional managerial control and supervision appeared to be restored, albeit in new guises**. Specifically, there has been a shift from direct or face-to-face monitoring of work to bureaucratic or platform-based forms of control. For example, workers have to follow new procedures in order to self-certify their work (this can take the form of written reports detailing the activity carried out or the hours worked). In addition, as part of the transition to telework during the COVID-19 pandemic, the management has often introduced detailed guidelines on how to perform work and the communication tools to be used with customers and/or clients (Fana et al., 2020a). This, in turn, has often led to greater standardisation of procedures/processes and, by implication, to greater routinisation of work activities (Fana et al., 2020a). And indeed research shows that the **EU's remote workers are often engaged in tasks that can be standardised (**Pouliakas and Branka, 2020; European Network of Local and Labour Market Monitoring, 2021; Fana et al, 2020a).

Following the major shift to mass telework during the COVID-19 pandemic, the **content of tasks and associated work procedures were often redefined and adapted in line with the new remote working arrangements**. However, this was more often due to the repercussions of the confinement measures on specific sectors and types of economic activity as opposed to the transition to telework in particular occupations (Fana et al., 2020a). Whether such changes would have happened 'organically' if COVID-19 had not broken out, or whether many of these changes will remain afterwards, especially in less tele-workable sectors and occupations, remains an open question. Accordingly, workers in face-to-face contact with customers/public and/or in sectors most adversely affected by the pandemic, such as retail, hospitality and travel, were reassigned to other jobs (or, worse, lost their jobs).

Since the outbreak of the pandemic and the associated surge in teleworking, **employers have also increasingly turned to various forms of remote digital control**.

Even before the advent of teleworking and ICT-based mobile work, work intensification and increased managerial control have emerged as the dominant and recurring findings of existing research on technologies at work (Hodder, A., 2020). Within this context, **online workplace surveillance is not new**. For example, electronic performance management (ERM)[16] has been a key aspect of call centres for decades (ILO; 2016a). Even before COVID-19, as a 2018 Gartner survey of 239 large corporations found, more than 50% were using some type of non-traditional employee-tracking and/or monitoring techniques. This was up from 30% in 2015, and experts expected that by 2020, about 80% of companies would be monitoring employees, using a range of new tools and data sources (Gartner, 2019), with surveillance technologies that keep track of what workers are doing, such as monitoring emails and who is accessing and editing files (Ceurstemont, S., 2020).

There is a wide range of technologies used for employee surveillance and monitoring[17]. For example, ICT companies have, for a long time, been developing online workplace surveillance (software) tools and apps such as ActivTrak, InterGuard, Veriato 360, Teramind, WorkSmart, Work Examiner and Sneek. The scope and functionality of these tools range from basic monitoring of employees' online activities to business intelligence reporting and data analytics to process employees' data. In the pre-COVID-19 world, these technologies were developed to address the so-called 'cyberloafing', namely the propensity of employees to use email and the internet for personal purposes while at work – which research estimates amounts to 30% to 65% of internet usage at work (Burdin et al., 2020). These technologies often require the installation of remote control software such as TeamViewer or AnyDesk on employees' computers and the (monitored) connection to corporate virtual private networks (VPNs). Interestingly, **the type of remote digital control seems to be contingent on the size of the firm**: VPNs are much more often used by large firms, while remote control software which does not require any particular information technology infrastructure tends to be used more by small firms (Fana M. et al., 2020a; 2020b).

As a result of the dramatic rise in teleworking with the COVID-19 pandemic**, there has been a sharp increase in the demand for online workplace surveillance tools**. For example, in a matter of weeks of the COVID-19 outbreak and ensuing confinement measures, sales of the Sneek online surveillance software increased tenfold in the USA, while new business leads for Teramind, another employee monitoring software company, saw a triple-digit percentage rise (Gifford, C., 2020; Burdin C., et al., 2020). At the same time, Prodoscore, which also monitors employee productivity, saw interest from prospective customers rise by 600% (CNBC, 2020). The workplace monitoring software industry which has been growing over time, is predicted to reach $3.84 billion by 2023 (Panel for the Future of Science and Technology STOA, 2020). The increased interest by companies in employee surveillance and monitoring is also reflected in relevant internet searches. According to Google Trends, between March and May 2020, people in the USA spent a lot more time searching for 'employee monitoring' (CNBC,

[16] According to the ILO (2016a), ERM can be defined as including email monitoring, phone tapping, tracking computer content and usage times, video monitoring and GPS tracking.

[17] These range from *artificial intelligence (AI)* (e.g. automated and semi-automated systems, including algorithmic decision-making and management, machine learning and deep learning tools); *big data and data analytics* (e.g. use of digital tools for analysing data collected at the establishment or from other sources); *biometrics* (i.e. all processes used to recognise, authenticate and identify persons based on physical and/or behavioural characteristics); *Global positioning system (GPS)* (for localising and tracing goods and people); *Internet of things (IoT) and 'wearables'* (e.g. smartwatches, head-mounted displays, body cameras and smart clothing); and *Radio-frequency identification (RFID)* in the form of using microchips for electronic tagging (Eurofound (2020d) *Employee monitoring and surveillance: The challenges of digitalisation*, 9.12.2020), available at: https://www.eurofound.europa.eu/sites/default/files/ef_publication/field_ef_document/ef20008en.pdf.

2020).

The **massive explosion of teleworking in the face of the COVID-19 pandemic**, combined with the development of ever more sophisticated and elaborate digital tools enabling the close surveillance and monitoring of remote workers, **is likely to result in digitally enabled employee monitoring becoming more widespread and even accepted** (Eurofound, 2020e).

However, there is already **growing concern – especially amidst trade unions and the media – as regards the invasion of privacy of remote workers** following such increased surveillance and monitoring (Manokha, I., 2019; O'Connor, S., 2015; Delgado, A., 2018). For example, at EU level, the ETUC has repeatedly expressed concern about the privacy implications of digitalisation (and associated scope for employee surveillance (Eurofound, 2020e). In its 2016 Resolution on digitalisation, ETUC warned that the growing use of new technologies at work raises many questions as regards the risks associated with the new possibilities of monitoring and surveillance and workers' privacy (ETUC, 2016). To this end, **it called for an EU directive on privacy at work**, based on respect for human dignity, privacy and the protection of personal data.

More recently, on 22-23 March 2021, its Executive Committee adopted the **ETUC Position on the right to disconnect** where again the ETUC voices strong concern about the use of digital tools at the workplace and their implications for intrusion of employee privacy and increased surveillance and monitoring (ETUC, 2021). The ETUC calls for an EU directive on the application and enforcement of the right to disconnect which should also address its privacy concerns. Specifically, this EU directive should, *inter alia*, *'entrust a role of social partners as well as data protection supervisory authorities to ensure that any surveillance/monitoring tools are only used where necessary and in a proportionate manner in order to ensure the right to privacy and data protection of workers'*.

As has been argued, the advent of the COVID-19 pandemic and associated massive growth in teleworking, together with the ongoing (and increasing) use of algorithmic systems at work, has aggravated the power asymmetries that exist between management and labour as regards the collection and exploitation of employee data through a wide array of digital tools such as wearables and microchips for electronic tagging (Colclough, C., 2020). It is, therefore, argued that trade unions should immediately seek to address this power asymmetry and better safeguard workers' privacy and other fundamental rights.

Moreover, current concern regarding the **employee's right to disconnect** is also expected to grow as TICTM work expands, not least as a result of the pandemic (see section 4).

The adverse implications of close and/or constant surveillance and monitoring of teleworkers are described in section 3.1. Consistent evidence points to higher levels of stress and anxiety among TICTM workers, often due to them being more likely to work longer hours, have an excessive workload, experience greater work intensity and suffer from a poor work-life balance.

However, **the pervasive (and growing) use of ever more sophisticated surveillance and monitoring devices** has a number of other inimical effects for workers. For example, a growing body of academic literature on the increased use of new workplace surveillance technologies points to an enhanced employer capacity to monitor employees in a much more intrusive, systematic and comprehensive way, often **undermining various employment rights, particularly workers' rights to privacy and equal treatment** (Manokha, I., 2019). As has been argued, *'Earlier technologies can be co-opted into newer models of surveillance, with results that are under-anticipated by regulation and, via scope creep, have the potential to seriously impair the rights of workers'* (Edwards,. L., 2019).

Employee surveillance and monitoring – especially if it is excessive, intrusive or both and if it leads to punitive action – **can violate the psychological contract** (CIPD, 2021) that underpins the 'implicit' expectations and assumptions that employers and their workers have of each other (McParland and Connolly, 2020; Clarke, 2020). This can, in turn, adversely affect worker motivation and commitment and damage their sense of control and autonomy, **eventually leading to low(er) engagement and productivity, and high(er) absenteeism**. For example, as has been found, the psychological contract between employers and employees can be negatively affected if the latter think that their emails are monitored by management (Snyder, 2010; McParland and Connolly, 2020). Moreover, workplace surveillance can send a message to employees that management does not trust them, or they are under-performing and require closer monitoring, or that they lack commitment to their work and/or employer. This can, in turn, give rise to deviant or counterproductive behaviour as employees either react negatively to excessive surveillance or seek to circumvent such intrusive managerial oversight. As argued by McParland and Connolly (2020), digitally-enabled surveillance and monitoring *'can have a serious impact on employee's performance, productivity and motivation to work, reducing their trust in their employers and their commitment to the organisation'*. There are indeed already signs of employees' eroded trust as a result of this increased monitoring and surveillance. For example, Eurofound (2020e) reports that the Norway's Data Protection Authority has raised concerns about the erosion of trust in working life that is linked to increased monitoring and surveillance, and that a small-scale Maltese study found that electronic monitoring and surveillance among governmental employees adversely affected labour-management relations and contributed to a degree of mistrust towards their employer.

Moreover, the **new means of digitally-enabled workplace surveillance have the potential to promote discrimination**. Such discrimination may result for both the type and quality of (often sensitive) data collected and the way this data is analysed by employers, which often is neither transparent nor fully understood by the employees concerned (Colclough, 2020). For example, the practice of collecting data on worker health may result in discrimination as regards their career and pay progression. At the same time, the currently increased use of 'corporate wellness programmes' (and associated collection of employee physical health and fitness data through digital means) has also given rise to similar concerns (Manokha, 2020). Crucially, such a perception is widely held by employees. For example, in a 2018 survey of UK workers by the Trade Union Congress (TUC) – a peak-level trade union organisation representing the majority of trade unions in England and Wales – two-thirds of workers registered their concern that workplace surveillance could lead to discrimination, especially if left unregulated (Trade Union Congress-TUC, 2018).

The above discussion notwithstanding, it should also be noted that it is not only employees who may experience greater levels of stress and anxiety as well as a higher workload. **Managers themselves trying to co-ordinate and manage remote teams may also be subject to such teleworking-related effects**. For example, Microsoft in China has estimated that managing remote teams added an extra 90 minutes per week to the working time of managers due to more one-on-one calls and online meetings (ILO, 2020b).

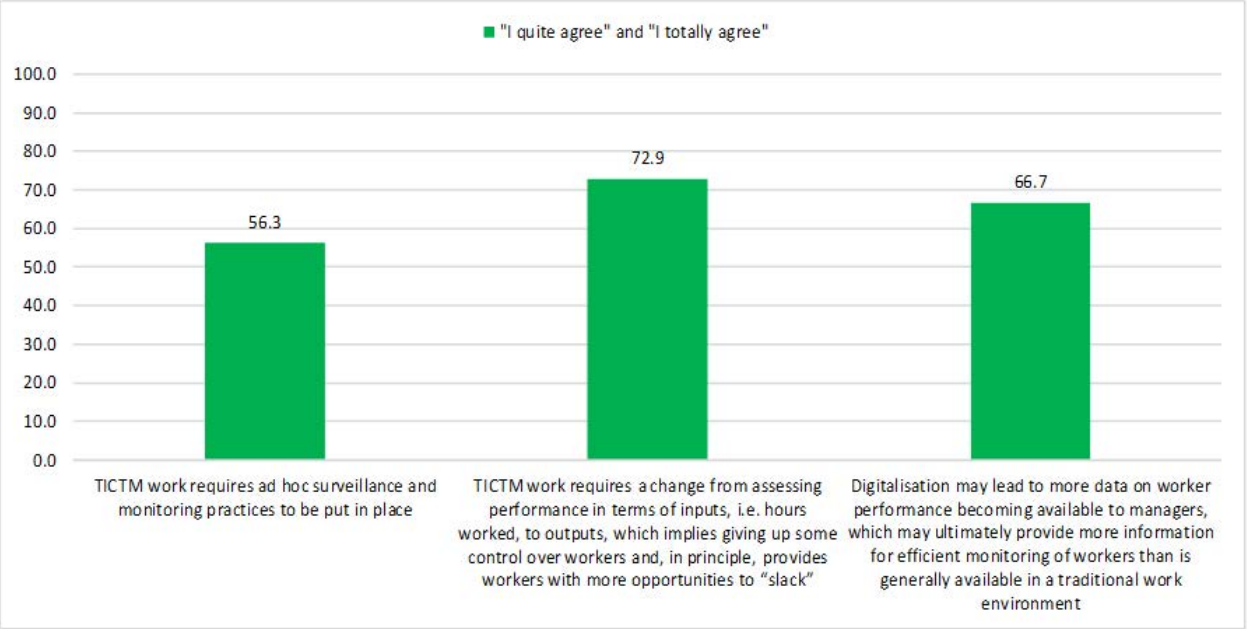
a. Stakeholders' opinions on changes in management culture and surveillance /monitoring systems

Figure 19 below shows how the **respondents to the web survey** answered the questions on the effects of TICTM on management culture and practices.

More than seven out ten respondents (72.9%) agree that TICTM requires a change in ways of assessing performance "*giving up some controls over workers*" and, potentially, creating more opportunities to "*slack*", while 66.7% confirms that digitalisation may lead to **innovative and more efficient strategies**

for monitoring workers. A lower share of respondents (56.6%) partially or totally agrees with the statement that TICTM work requires **ad hoc surveillance practices**.

Figure 19: Agreement with the main positive/negative issues related to the increased use of TICTM work that can affect employers

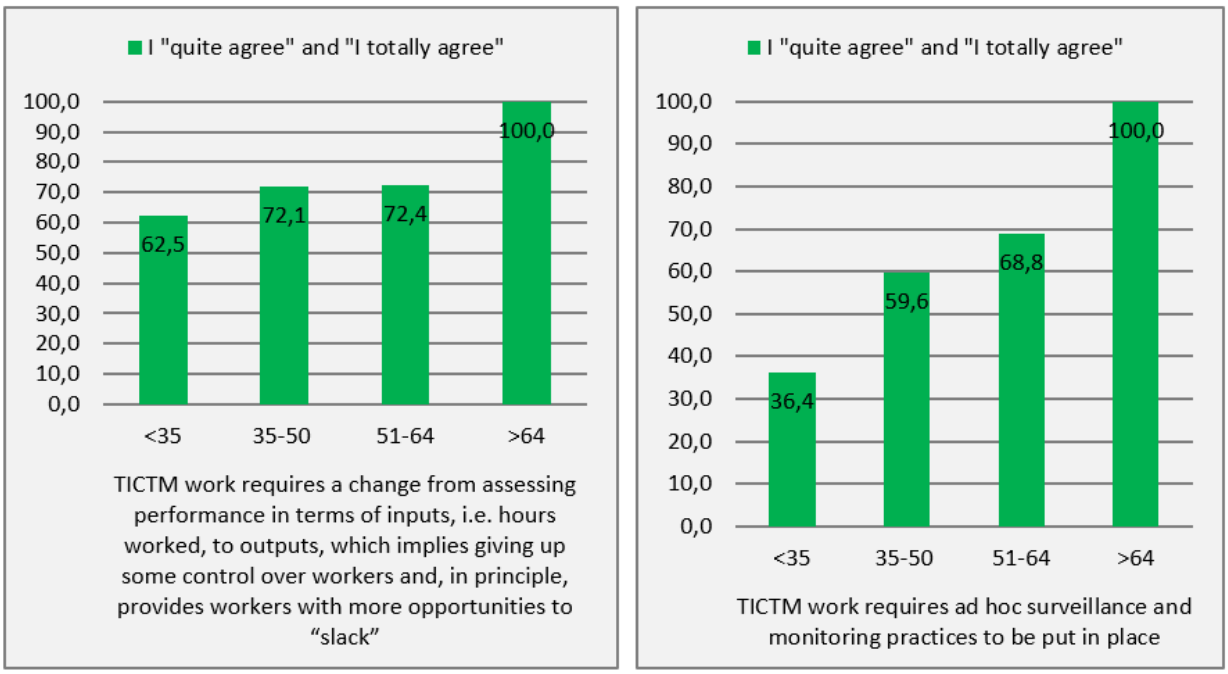


Source: IRS web-survey.

Note: The bars show the shares of respondents who answered 'quite agree' or 'totally agree' on the following scale: 1 - I do not know, 2 – I completely disagree, 3 – I quite disagree, 4 – I quite agree and 5 – I totally agree.

The answers to the notion that TICTM work requires more surveillance or ad hoc control strategies to avoid the potential "slack" of employers are different according to the age of respondents. In particular, while all aged over 64 agree with the statement "*TICTM work requires a change from assessing performance in terms of inputs to outputs, which implies giving up some control over workers and provide workers with more opportunities to "slack"*", agreement falls to 62.5% for respondents aged under 35. This difference is even more evident in the case of the second statement *on TICTM requiring ad hoc surveillance and monitoring practices to be put in place*, where only 36.4% of those aged under 35 agrees, against 100% of those over 64.

Figure 20: Agreement with the main positive/negative issues related to the increased use of TICTM work that can affect employers by age (% of respondents answering I quite agree + % answering I totally agree)



Source: IRS web-survey.

Note: The bars show the shares of respondents who answered 'quite agree' or 'totally agree' on the following scale: 1 - I do not know, 2 – I completely disagree, 3 – I quite disagree, 4 – I quite agree and 5 – I totally agree.

The answers to the final open question on additional effects of TICTM on employers, also focus on the notion that TICTM work requires ***new strategies to monitor workers' performance and productivity***. Moreover, the spread of TICTM work might require ***organisational and procedural changes***, and eventually an ***improvement in the social dialogue between employers and workers' representatives***.

The **representatives of EU and international organisations** interviewed confirm these perceptions, underlining the effects of TICTM arrangements on management styles and ways to assess performance; on incentivising a new organisation of working spaces, and new forms and content of training and technical support for teleworkers, as well as greater investment in ICT. The representatives of employers' associations point out to the need to improve the management culture and the digital skills of managers involved in the coordination and management of TICTM workers, while other stakeholders interviewed underline the risks associated with invasive surveillance which may affect the well-being of workers, e.g. (mental) health and safety considerations, and involve privacy issues.

3.2.2. Telework effects on productivity and cost reductions

a. Potential effects of telework on workers' productivity

Research about the impact of TICTM arrangements on productivity points to ambiguous results, with **the link between such working arrangements and individual work performance being less clear than often presumed** (Eurofound, 2020a). According to OECD (2020a), given the multiplicity, complexity and interactions between work-related factors at play, to date, there is no consensus in the literature about the impact of remote work on productivity. These factors encompass a wide range of work-related dimensions including (Batut and Tabet, 2020):

- the **conditions of the remote working set-up**, e.g. ICT/digital equipment, home-based ergonomics, speed and quality of broadband/connectivity, training for both teleworkers and their managers as regards working, communicating with and managing virtual teams remotely;
- **work organisation and management style**, e.g. degree of employee autonomy, flexibility, output- vs. input/attendance-based management expectations, management's ability to adapt to motivating, supporting and managing staff remotely;
- **the nature of the job/occupation**, e.g. degree of interdependence of teleworkers' tasks with other tasks, the extent to which teleworkers' tasks can be performed independently, scope for creativity.

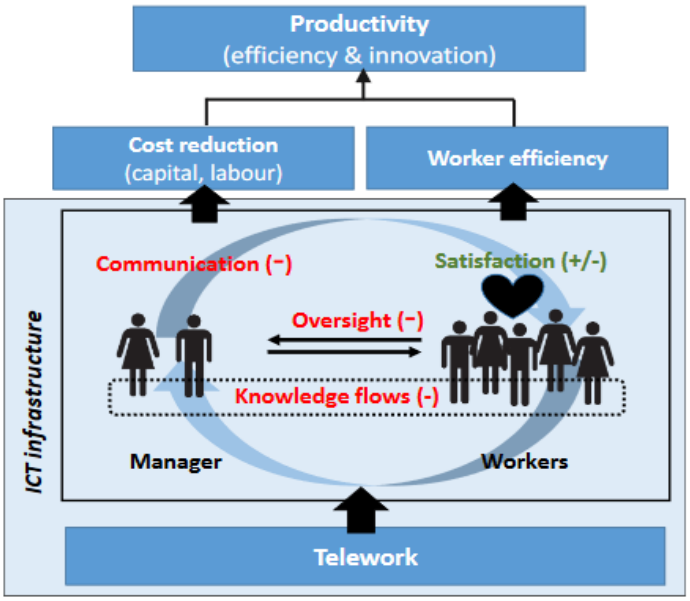
Figure 21 describes the OECD model (OECD, 2020) on how TICTM can influence productivity. According to this model, **telework can affect – positively or negatively – firm performance and productivity through two main channels**, both of which presuppose the use of appropriate ICT infrastructure:

- A *direct channel* whereby teleworking improves or hampers firm performance through changes in its efficiency, worker motivation/satisfaction and knowledge generation of its workforce;
- An *indirect channel* whereby teleworking can lead to cost reductions, e.g. through real estate and energy savings. These can, in turn, free up firm resources that can be used for productivity enhancing innovation and work re-organisation.

For example, **teleworking can enhance worker satisfaction and thus efficiency** by, for example, improving the worker's work-life balance, reducing commuting and distractions that, in turn, allowing for more focused work and/or less absenteeism.

However, it is also possible that worker satisfaction and/or performance decrease as a result of remote working. As seen in section 3.1, **increased social isolation and lack of personal, face-to-face interactions often have a detrimental effect on worker morale, satisfaction and performance**, not least by adversely affecting teleworkers' mental health and well-being.

Figure 21: Telework and productivity: what are the main channels?



Source: OECD, (2020a).

On a related note, **the quality of communication between co-workers and between workers and managers seems to suffer under teleworking arrangements**. To this end, there is wide recognition – supported by robust evidence – that **personal, face-to-face interactions are more effective forms of communication than more remote ones** (OECD, 2020a), as they are more likely to attract more attention, be more persuasive and yield positive responses (Battistion et al., 2017; Bonet and Salvadora, 2017). For example, experiments have shown that face-to-face requests were 34 times more likely to garner positive responses than emails (Roghanizad, M. and Bohns, V., 2017; Bohns, 2017). Personal, face-to-face communication also allows for quick, efficient and nuanced exchange of information, while its absence can decrease knowledge flows among employees, a key for creativity and innovation, and the decrease in knowledge flows may be detrimental to long-term productivity growth (OECD, 2020a). Crucially, personal, face-to-face interactions also allow workers and managers to pick up important non-verbal cues, e.g. associated with body language, that are missed in email or other text-based as well as phone-based communications[18]. Closely linked to this is also the fact that face-to-face communication is much more likely to help build trust.

Linked to this is also the fact that **teleworking and the associated decrease in personal interactions can also impair managerial oversight where control over workers** is based on workplace presence and face-to-face interactions (OECD, 2020a). This can, sometimes, result in 'shirking', poorer job performance and lower productivity, while managers may try to compensate for lack of direct in-person oversight with a proliferation of online meetings, emails, phone calls, etc. with adverse implications for productivity (Fana et al., 2020a).

In addition to the above, as mentioned in section 3.1, **other sources of worker dissatisfaction** with teleworking – resulting in poorer job performance and lower productivity – is the blurring of boundaries between personal and work-life; the inappropriate or inadequate working arrangements at home –often neither fit for purpose in the form of dedicated space or study nor ergonomically sound; the possibility of more distractions, e.g. due to the presence of children (OECD, 202oa).

Another important point is that the **frequency of teleworking** seems to be linked to workers' satisfaction and to productivity. It appears that too much teleworking with associated reduced opportunities for personal, face-to-face communication and exchange of information and ideas as well as greater sense of isolation, work intensity and blurring of home and work-life has a negative effect on worker satisfaction, performance and productivity.

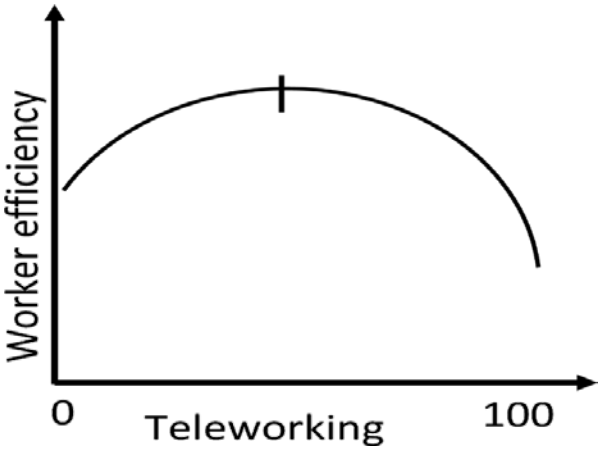
Conversely, **hybrid forms of teleworking**, providing the desired autonomy and flexibility as well as uninterrupted work focus, enhances worker satisfaction, performance and productivity. In general, **the more extensive and intense teleworking is, the more pronounced its negative effects on worker satisfaction, performance and productivity are. As has been argued**: '*Worker efficiency improves with low levels of telework but decreases with excessive telework. Worker efficiency – and thus productivity – is maximised at intermediate levels of telework, although it should be noted that the exact form of this relationship likely varies with the relative importance of these factors by sector and occupation*' (OECD, 2020a).

The inverted U-shaped relationship presented in Figure 22 below reflects the likely overall effect of extent/intensity of teleworking on worker efficiency (and productivity). In general, it is thought that the **optimum balance may be somewhere around two or three days of teleworking a week**, giving the worker the ability to organise her/his work to maximise the benefits of each mode of working (remote

[18] For example, even when people are in the same room, psychological experiments have shown that less than 30% of the information exchanged is conveyed verbally, with the rest being non-verbal. Baldwin, R., (2020). 'Covid, hysteresis, and the future of work', VoxEU/CEPR, 29/5/2020, available at: https://voxeu.org/article/covid-hysteresis-and-future-work.

and onsite). If teleworking is going to increase firm-level productivity, then it is vital that worker satisfaction is sufficiently enhanced so as to compensate for likely negative effects on communication, sharing of ideas and information and managerial oversight (OECD, 2020a).

Figure 22: Telework and worker efficiency: An inverted U-shaped relationship



Source: OECD, (2020a).

Moving from theory to the empirical evidence, **existing evidence points to a positive link between teleworking, increased worker efficiency and thus productivity**. For example, evidence from **German companies** points to a positive impact of teleworking on productivity and product innovation – although also increased work intensification on the part of teleworkers (Eurofound, 2020a; Batut and Tabet, 2020; OECD, 2020a). Likewise, similar positive effects on teleworkers' productivity have been found in **France**, where 84% of teleworkers reported increased productivity and 81% enhanced work quality – both as a result of teleworking (Eurofound, 2020a, Eurofound and ILO, 2017). Moreover, according to another study conducted by France's Direction Générale des Entreprises (DGE), the teleworking-related productivity gains in **large French companies** are estimated to range between 5% to 30%. (Batut and Tabet, 2020). Along similar lines, nearly 80% of **Swedish employers** stated that allowing employees to sometimes work outside the workplace generally results in higher productivity (Eurofound and ILO, 2017).

The positive correlation between teleworking and productivity has also been highlighted by research undertaken beyond the EU. For example, a widely cited two-year Stanford study found that, compared to their office-based counterparts, **US teleworkers** are 13% more productive (Bloom et al., 2015; Inc., 2018); Silvermann, 2020). Moreover, attrition fell by 50% among the TICTM workers who also had fewer sick days and took less time off. Overall, total factor productivity improved by 20% to 30%, while the firm saved about $2,000 a year per teleworker. About two thirds of this improvement came from the reduction in office space and the rest from improved employee performance and reduced turnover (Bloom et al., 2015). However, the same study also raised a number of concerns in relation to teleworking, as, for example, teleworkers were 50% less likely to be promoted. More recently, a **US survey** of hiring managers – i.e. executives, VPs, and managers –also found that for a third (32.2%) remote working as a result of the COVID-19 pandemic has led to increased productivity, as opposed to 22.5% who held the opposite view (Ozimek, 2020). Drawing from their positive experience of teleworking during the pandemic, 61.9% of hiring managers stated that their workforce will telework more in the future (Ozimek, 2020).

However, there are also other studies pointing to the opposite direction as regards the impact of teleworking on productivity. **Crucially, a number of studies show that when selection bias is**

controlled[19]**, teleworking appears to have no impact on productivity** (Batut and Tabet, 2020; Brueggen et al., 2019). Moreover, the totally unexpected shift to teleworking in the face of the global pandemic which took both workers and managers by surprise may also have had adverse effects on productivity, especially during the early stages of the COVID-19 outbreak (Gorlick, 2020), when organisations had very little experience or time to provide appropriate equipment/infrastructure and create a suitable environment for their staff to work from home. For example, during the first lockdown, a study of workers in a **Japanese research centre** conducted on the basis of a self-reporting survey and a subjective measure of productivity estimated a 63% drop in self-reported productivity (OECD; 2020). In addition, the closing of schools and childcare facilities during national lockdowns, meant that teleworkers from home also had to cope with the additional (and considerable) distraction of home schooling, leading to a drop in productivity (Gorlick, 2020).

Cost saving effects

There has been an extensive discussion in literature about the cost savings that teleworking (and TICTM more generally) can yield to employers. For example, even before the advent of COVID-19, surveys indicate that for nearly six out of ten **US employers** cost savings due to remote working were deemed a significant benefit (Global Workplace Analytics, 2015). Likewise, the 2020 Eurofound report on TICTM points out that employers can resort to such work arrangements in an effort to reduce costs and improve firm performance (Eurofound, 2020a).

A significant and direct cost saving in relation to teleworking/TICTM is **lower capital costs in the form of less office space and equipment required by the company** (OECD, 2020; Bloom et al., 2015) **and all the associated costs** (e.g. office rental and maintenance, electricity, communication/connectivity, heating and/or air conditioning), as often **the costs for telework equipment is only partially reimbursed by the company and falls on the workers, especially in the case of SMEs' employees and freelance workers**. According to the predictions of Sostero et al. (2020), for companies that will emerge from the pandemic cash-strapped or in a much worse financial state, such cost savings may weigh heavily in their calculations, meaning that they are more likely to embrace teleworking on a much grander and even full-time basis.

Capital, energy and maintenance costs aside, teleworking can also help **reduce labour costs** since it considerably **enlarges the pool of available workers**, increasing skills supply and improving job match, e.g. by attracting workers that best fit the job specification irrespective of their location (OECD, 2020). As has been argued (Baldwin and Forslid, 2019):

'A complete shift to remote working implies a substantial reduction in trade costs for services faced by firms, broadening their ability to draw on the global talent base, e.g. from call-centre workers to specialist engineers and managers.'

The so-called '**tele-migration' whereby firms can employ remote workers from all over the world ('telemigrants')**[20] – spanning all skills and qualification levels, for low to high skills – at much reduced payroll costs, may have a growing appeal for some employers. As has been pointed out, although foreign talent teleworking may not be as ideal as domestic talent working in the office, the much-reduced payroll costs of the former may outweigh such drawbacks in the eyes of employers (Baldwin, 2020). According to some scholars, in a globalised economy, **teleworking could accelerate the off-shoring and relocation of services to low-wage countries** as has already happened to significant

[19] The selection bias may be due to the fact that more productive workers are more likely to telework.

[20] This is a term first coined by Richard Baldwin in: Baldwin, R., (2019).

parts of industrial production (Lederlin, 2020).

However, using 'telemigrants' in the way described above may not be as straightforward as initially presumed. Such workers also entail costs for the employer in terms of administration, recruitment and coordination in view of their different time zones, languages and cultures. As a result, it is more likely that employers will increasingly subcontract specific tasks to 'telemigrants' as opposed to treating them as part of their (virtual) employees (Batut and Tabet, 2020).

Moreover, even without resorting to the global labour market, employers which offer **teleworking opportunities may be able to attract workers at lower wages**. This is especially true if teleworking is combined with other working arrangements such as flexible hours that improve work-life balance. In such cases, workers enjoying such arrangements (as in the case of women with care responsibilities) may be willing to give up a higher salary (compensating differentials) (OECD, 2020).

On a related note, workers who are satisfied with the teleworking arrangements and associated flexibility benefits, are more likely to stay with the company, thus **reducing the labour turnover and recruitment costs** (OECD, 2020). For example, some research evidence suggests that the **retention rate is higher among teleworkers** (Linos, 2019). Other studies show that 46% of companies report reduced labour turnover, while 95% of employers believe that allowing their staff to telework has a major impact on employee retention (Global Workplace Analytics, 2015).

Table 5 below, shows the company savings that can accrue from **(US) remote workers**, according to the 2017 State of Telecommuting in the US Workforce Report. According to this report, any employee that works remotely for 50% of his/her worktime saves the company on average USD 11,000 per year – an amount that doubles for a worker who teleworks full-time (Flexjobs, 2017).

Table 5: US Company savings due to teleworking (2017)

Savings factor (based on half-time telecommuting)	Assumed decrease with half-time telecommuting	Savings estimate for 3.9 million existing half-time telecommuters	Savings estimate for 62 million potential telecommuters
Productivity	15%	$27.5 billion	$436 billion
Real estate	25%	$7.6 billion	$121 billion
Absenteeism	31%	$5.1 billion	$81 billion
Voluntary turnover	10%	$1.5 billion	$24 billion
Continuity of operations	1 day/year	$1.7 billion	$27 billion
Total employer savings		**$43.6 billion**	**$689 billion**

Source: Flexjobs, (2017); Ehgoetz, S., (2020).

Stakeholders' opinions on the effects of telework on productivity and cost reductions

A large majority of the respondents to the web-survey agree regarding the positive effects of TICTM for employers in terms of both higher worker productivity (80.2%), and cost reductions (79.5%). However, experts tend to have lower shares of agreement (63.5%) than average on the positive effects on cost reductions; while representatives of umbrella organisations show lower than average agreement on the positive effects on workers' satisfaction and productivity (66.7%).

Also, in **all the country case studies, cost reduction and increased worker productivity** are underlined among positive aspects of TICTM for employers (see Table 6)**.** The **Romanian** case

underlines the reduced absenteeism associated with telework, and the **Italian** case the improved hierarchical relations, less linked to formal management structures. Among the negative and/or challenging aspects for companies, the most cited are issues mentioned in section 3.2.1, related to the **management and surveillance** of staff working remotely and the **need to train both managers and employees in the new working environment** created by TICTM arrangements. **Data protection, health and safety and financial issues** are also mentioned in all the case studies. The **German** case also points out to the difficulties in creating effective virtual collaboration opportunities with the Works Council and the **divisive effects of more home working in a context where many employees are not able to do so**.

Table 6: TICTM Positive and negative expected effect on employers in the five country cases

Effects on:	Employers	
Country	Positive	Negative
Finland	The main challenges for employers are related to: • digital training of workers; • data protection and monitoring issues.	
Germany	The main challenges are: • managing staff remotely without adequate skills; • creating effective virtual collaboration with the Works Council; • designing appropriate organisational systems; • need for strong communication skills, empathy and clear rules.	
Ireland	Higher productivity levels of the employees	Health and safety issue (longer working hours) Data protection Costs of keeping the office open Difficulties in team management and control TICTM does not easily support creativity, group dynamics and collegiality among the team
Italy	Greater rationalisation in the use of resources Optimisation of spaces Reduction of costs (staff transfers, energy...) Improvement in hierarchical relationships	Workers' data protection Health and safety issues
Romania	Reduction in utilities and cleaning costs Increased digitalisation Maintenance of productivity levels Reduction in staff absences due to COVID-19 Companies can continue their activity during lockdowns (business continuity)	Increased cost from the digitalisation transformation Issues related to team management Issues in employees' collaboration and professional development Health and Safety issues Data protection issues Financial related issues

Source: Country case studies.

3.3. Impacts and challenges for society overall

TICTM work arrangements may impact on the overall socio-economic conditions, affecting in new ways inclusion/exclusion patterns linked to the digital divide and jobs' tele-workability, and to the opportunities and risks of teleworking from home for women with care responsibilities and persons with disabilities. TICTM may also have environmental effects, reducing commuting patterns and CO_2 emissions; and effects on spatial planning associated with changes in the balance between urban and rural areas. As in the previous sections, the wider effects of these arrangements on society are discussed below on the basis of the findings from the literature review and the opinions expressed by the European and national stakeholders interviewed and the selected country case studies.

3.3.1. Telework effects on labour market inclusion/exclusion patterns and the digital divide

The acceleration in the use of TICTM and telework with the COVID-19 pandemic has created new forms of inclusion/exclusion in the labour market, improving working opportunities for some, while increasing the risk of exclusion for others. In the following sections the focus is on the opportunities and risks created by TICTM work arrangements for women, persons with disabilities, and on the digital divide.

a. Telework implications for women

The growth in **flexible working from home can improve work opportunities for women with care responsibilities**, and there is evidence that even before the COVID-19 pandemic, mothers who could telework were less likely to reduce their working hours after childbirth (Chung, H. and Van der Horst, M., 2018). The 2015 EWCS provides evidence that women with caring responsibilities were more likely to be teleworking or engaged in digital work than the rest of the workforce (Eurofond, 2020a) to better combine work and domestic demands (Eurofound and ILO, 2017). However, these arrangements may also strengthen traditional gender roles in households, increasing women's unpaid care and housework if care services are not enhanced, and reducing their visibility and career perspectives in the labour market. As pointed out by Rubery and Tavora (2020): '*New forms of gender segregation could emerge if women are not only expected to telework but in fact remain home-based workers while men return to the office*'.

As shown in the previous sections, women's employment **opportunities have expanded during the COVID-19 pandemic, particularly for women with children**, who, without the flexibility in time and place provided by telework, could have dropped out of the labour force. However, with the closure of schools and care services, many teleworking mothers during the COVID-19 lockdowns are juggling work, home schooling and care, all in the same pocket of time and space. As underlined by many interviewees and evidenced by the Eurofound e-surveys (Eurofound, 2020b), **teleworking women with children reported more difficulties in combining work and private life** than men during the lockdowns associated with the first pandemic wave. They reported being interrupted more often than fathers when teleworking, and being burdened with increased household and care work, with 24% of women feeling too tired after work to do household chores, compared to 20% of men. With the re-opening of businesses in July 2020, these proportions increased to 31% for women and 26% for men. Furthermore, even though in general there was a decrease in the proportion of respondents reporting that their family prevented them from devoting sufficient time to their job, it seems that for women this reduction did not happen (Eurofound, 2020b).

In addition, as underlined by the representatives of the ILO and the Women's Lobby, girls and women are much more likely to be **victims of cyberbullying and harassment** than boys and men, and women working from home tend to be more isolated and at **risk of domestic violence** than women working

outside, with the COVID-19 related lockdowns leading to spikes in domestic violence across the EU (EIGE, 2020).

Therefore, while the digital transformation is affecting the well-being of women and men in broadly similar ways, **significant gender gaps are emerging in some specific dimensions of work-life balance, health, social connections, digital harassment, and digital security** that need to be addressed by policy makers.

Although teleworking and working from home have been a challenge for women because of their multiplicity of roles, **women demonstrate good adaptability to the digital world**, outperforming men in 8 out of the 18 indicators. Compared to men, women make greater use of the internet for health purposes and when searching for a job or for social networking. Women also obtain much larger labour market returns for their digital skills (as measured by ICT task-intensity of jobs) and are also much less likely to experience cybersecurity incidents, abuse of personal information and digital addiction during childhood (Murtin, 2019).

Telework implications for persons with disabilities

TICTM has the potential to help persons with disabilities access the labour market by removing the need to be physically present at the workplace (Linden, 2014, Eurofound, 2020a). Moreover, teleworking provides them with greater autonomy, flexibility, and control over their own work schedule, thereby addressing fatigue, stamina, and pain-related barriers that may hinder persons with certain disabilities from working on more standardised schedules. Importantly, teleworking also allows disabled people to receive at home, where necessary, the required personal care services during the workday. Finally, it has also been argued that teleworking may benefit disabled employees by reducing disability-related bias and discrimination (Linden, 2014).

Significantly, as has been pointed out, the surge of teleworking in the face of the COVID-19 pandemic, may represent a '**silver lining' for workers with disabilities, as it makes working from home not only easier but also much more widespread and acceptable** (Schur et al., 2020). As has been argued (Policy Connect, 2020): '*COVID-19 is to some extent levelling the playing field between disabled and non-disabled employees, as workers must find a way of accessing content remotely, attending meetings and having their voice heard virtually. Again, digital solutions come to the fore and provide a way of keeping business going*'.

In addition, the pandemic is bringing about a paradigm shift in the way traditional workplaces are structured, work is performed and managerial oversight and control is exercised. This, in turn, is driving employers to rethink how essential tasks can be done, which may, in turn, broaden their views of what constitutes reasonable workplace accommodation.

As has been pointed out in a recent Eurofound blog (Ahrendt, D. and Patrini, V., 2020): '*The COVID-19 pandemic has proven telework to be a viable alternative mode of working, and this might provide the momentum for long-term change for people with disabilities, as it compels the reshaping of work……As companies revisit their work practices and embrace telework, the potential it offers for change could prove a useful angle in making society in general and work specifically disability-inclusive*.'

However, as underlined by the same Eurofound blog, '*the increase of telework observed overall has not been mirrored among people with disabilities and […].there has not been a substantial 'increase in employment for people with disabilities attributed to telework' – something surprising, considering its potential to reduce employment barriers*.'

A number of other factors may mitigate the benefits that the massive expansion of teleworking may bring to persons with disabilities, who already suffer from considerable discrimination, prejudice and stereotyping both economically and socially. For example, as evidence shows, **long (physical) absence from the workplace can negatively affect one's career prospects** (Eurofound 2020a).

Moreover, **the types of jobs currently held by workers with disabilities may greatly constrain their ability to benefit from the surge in teleworking**. For example, according to estimates for the USA only 34% of disabled workers are in highly teleworkable occupations, compared to 40% of workers without disabilities (Schur et al., 2020). Although there are no similar estimates for the EU, the USA estimates are likely to be valid also for Europe.

Another major risk factor faced by persons with disabilities is their **lower access to internet connection** compared to persons without disabilities. As reported in the Commission's new Strategy for the Rights of persons with disabilities 2021-2030 (COM(2021) 101 final), only 64.3% of persons with disabilities aged 16+ have an internet connection compared to 87.9% of persons without disabilities.

Furthermore, the massive job losses resulting from the COVID-19 pandemic, have in turn squeezed out jobs held by disabled workers, who may then face greater difficulties and increased competition to re-enter the labour market (Ahrendt and Patrini, 2020).

Telework and the skills divide

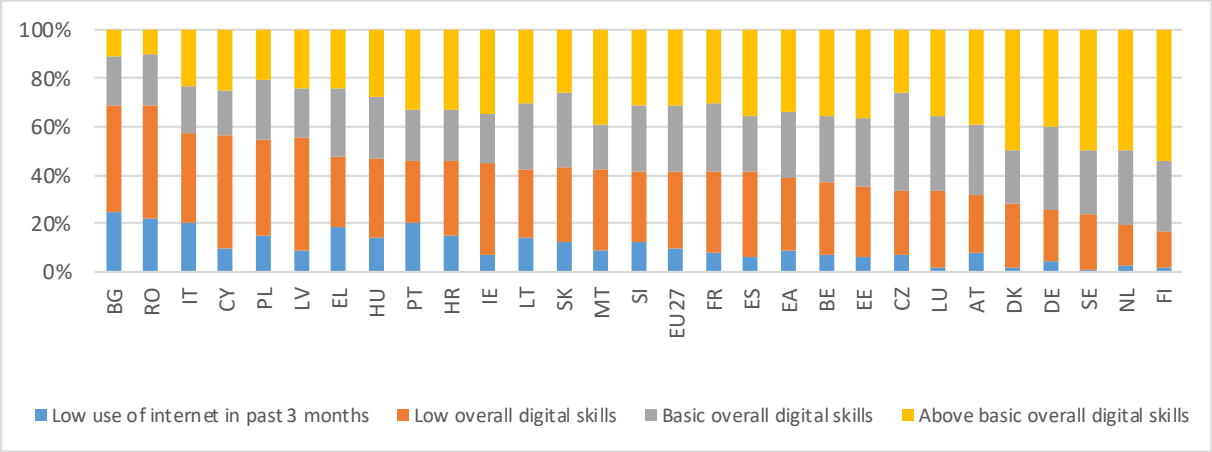
While in the case of women and persons with disabilities, TICTM arrangements may produce both opportunities and risks, the **labour market risks related to the digital divide are likely to be aggravated**. These risks may derive not only from different degrees of teleworkability across sectors and occupations, but also from firms' and/or workers' lack of affinities with digital tools (digital divide) and prior experience with remote working arrangements, which may limit its uptake and effectiveness.

Box 6: Telework and digital skills

The increased use of home-based telework during the COVID-19 pandemic has aggravated the pre-existing digital divides across EU-countries and across population groups within countries.

In 2017, the **share of adults aged 25 to 64 who had never used a computer** ranged from 28% in Italy and around 25% in Bulgaria and Romania to 2% or less in Nordic countries (i.e. FI, SE, DK), in Luxembourg and the Netherlands. Higher rates were registered among older people (55-64 years) and among adults with low formal education (Figure B4.1), as well as among those living in rural areas, the unemployed and manual blue-collar workers (Table 17 in Annex). According to more recent data, in 2019 in the EU-27, **more than 40% of adults aged 25-64 reported low digital skills or low use of the internet**, with great variations across countries (see Figure below). In Romania and Bulgaria, this share reached almost 70%, also because of limited access to the internet. Low digital skills among the adult population were also widespread in Cyprus and Latvia (46% of the adult population did not have any or had low digital skills), in Poland (40%) and Italy (37%).

Figure B4.1: Population aged 25-64 by use of internet and level of digital skills (%), 2019 EU-27



Source: Eurostat [ISOC_SK_DSKL_I].

Note: Low reliability for SE.

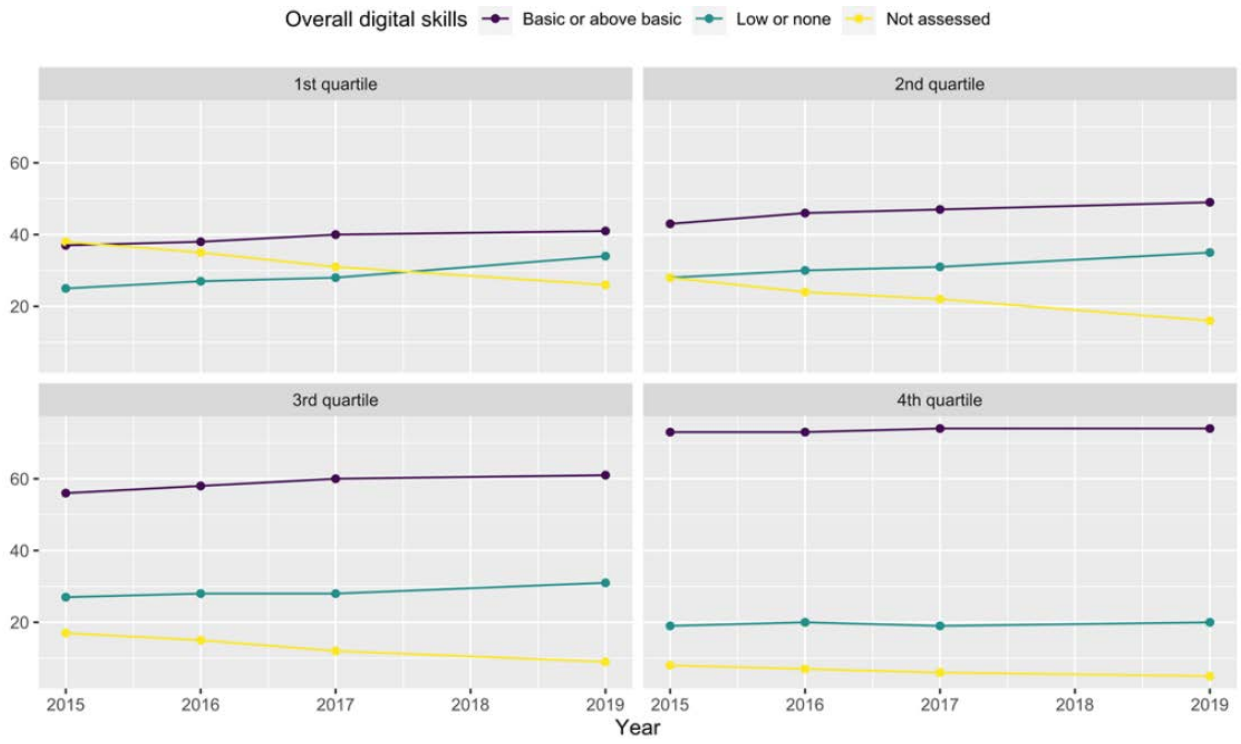
Low use of internet in past three months: last use was more than three months prior to survey interview or never used (hence digital skills are not tested). Among those people with last use of the internet less than three months prior to the survey interview: No digital skills or low overall digital skills identify those individuals who have carried out activities in, at most, one of the four digital competence dimensions surveyed: information, communication, content-creation and problem-solving and those individuals who have not carried out activities in all four domains, despite declaring having used the internet at least once during last three months. Basic overall digital skills identify those individuals who have carried out activities in more than one but not in all the four domains surveyed. Above basic overall digital skills identify those individuals who have carried out activities in in all the four domains.

It is important to frame the digital divide through the dimensions of infrastructure access, digital skills and knowledge, and economic capacity and participation. This highlights the **close relationship between digital inclusion and socio-economic inclusion**, as well as the risks posed by digital exclusion to participation and democracy (Ballestero, 2020). The majority of the digitally excluded, face dual exclusion since digital exclusion exacerbates the barriers to wider social resources that they already experience (Elliot, 2018), not least since employees in teleworkable occupations are more likely to be highly skilled and paid, being employed in white-collar/professional jobs and on permanent contracts. They are also more likely to work in knowledge-intensive and ICT sectors and in medium and large-sized enterprises (JRC, 2020c). This means that the most vulnerable in society are also the least

likely to be able to avail themselves of TICTM.

Disadvantaged groups such as those from low-income or migrant backgrounds tend to have less access to computers at home (OECD, 2020b) and start using digital devices later in life and with a lower frequency compared to their more advantaged peers (Biagi and Rodrigues, 2017). Overall, education and income of parents tend to be positively correlated with young people's access to digital technologies and associated level of digital skills (European Commission, 2020c), perpetuating digital and income inequalities across generations (European Commission, 2018; European Commission, 2020d). As Figure 23 shows, the level of one's digital skills is strongly linked to being a member of a higher income household, i.e. those belonging in the two upper quartiles.

Figure 23: Level of digital skills in the EU by household income (%)(2015-2019)



Source: Eurostat (2019) – Individual level of digital skills by household income cited in European Commission, (2020c).

Note: Chart based on aggregate data for EU-27. Data is available for all Member States, except for Denmark and Sweden in 2015.
Purple line: Level of digital skills: basic or above basic; Green line: Level of digital skills: low or none; Yellow line: not assessed.

The **COVID-19 pandemic has further aggravated the 'teleworkability' and income divide** between those who can easily switch to teleworking and maintain their job and those who cannot, with implications on employment and income perspectives. '*The median monthly earnings of managers and professionals – people who are now mostly working from home – are on average more than twice those of workers, such as assemblers, plant and machine operators, who mostly have to work on-site.*' (JRC, 2020a) The most adversely affected by the COVID-19 pandemic and associated restrictions of economic activities in the EU have been workers in non-teleworkable and non-essential jobs, largely blue collar, low skilled, low paid workers with precarious employment conditions, such as young people and women, despite the latter being more involved in teleworking than men (Torrejon Perez et al. (2020). As underlined by Sostero et al. (2020): '*White-collar work is much more teleworkable than blue-collar work, where the physical requirements of the jobs and associated place-dependence render most occupational categories non-teleworkable*'. During the COVID-19 crisis, there was a 60-percentage point gap in access

to teleworking between those two categories of workers (European Commission, 2020).

Using a **COVID-19 social distancing risk index (COV19R)**[21], Pouliakas and Branka (2020) have estimated that **about 45 million jobs in the EU-27 labour market (23% of total EU-27 employment) are at very high risk of COVID-19 disruption**, while another 22% of the EU workforce – most involved in medium to lower skilled service provision – is exposed to some significant risk (Pouliakas and Branka, 2020; European Network of Local and Labour Market Monitoring, 2021). Even worse, according to their empirical estimates, the impact of social distancing rules falls disproportionately on **vulnerable groups of workers** – who tend to occupy low or medium skilled jobs in service sectors – such as **women, older workers, migrants and the low(er)-educated**. The COV19R is also higher for those whose working conditions are more challenging, such as those working longer hours or from multiple sites, or those employed in micro-sized workplaces (i.e. those with 1-9 staff). Interestingly, their analysis which also looked at other job-related factors, such as the duration or precariousness of the employment contract, found no statistically significant association as regards a higher COV19R.

The massive expansion of TICTM teleworking across the EU following the COVID-19 pandemic and related confinement measures, have therefore exacerbated the digital skills gap that already existed (European Commission, 2020), and the uneven access to digital technologies**,** giving rise to new inequalities and leaving behind those who are already at a disadvantage, not only for working and learning, but also for personal life, e.g. social interaction, leisure activities, access to services such as e-health (European Parliament, 2020). In addition, the pandemic has made digital skills' training even more difficult as online learning is not available for those who are digitally excluded, aggravating the training challenges associated with the upskilling of those with low digital skills[22].

Besides digital skills and knowledge, other important aspects of the digital divide brought about by the spreading of telework relate to issues of **infrastructure access, and availability of adequate working space and equipment for teleworkers, especially those working from home**. These are all dimensions that may increase the risks faced by low-income workers and those living in areas with inadequate broadband access.

Broadband access and coverage – a key factor for telework – **is positively related to household income**. Eurostat data shows that in 2019 the average EU proportion of households with a broadband internet connection was about 97% in the highest income quartile as opposed to around 74% for those in the lowest income quartile (European Commission, 2020c). Broadband access and coverage also **vary considerably between urban and rural areas**, the latter being less likely to enjoy high quality, fast and affordable access. Conversely, in the presence of adequate broadband coverage, remote working may improve the employment opportunities for those living in rural and peripheral areas. The substantial gap between urban and rural broadband penetration rates has remained almost the same between 2010 (16%) and 2019 (14.6%) as detailed below in the section on spatial developments (European Commission, 2020e).

Stakeholders' opinions on opportunities and risks for different groups of workers

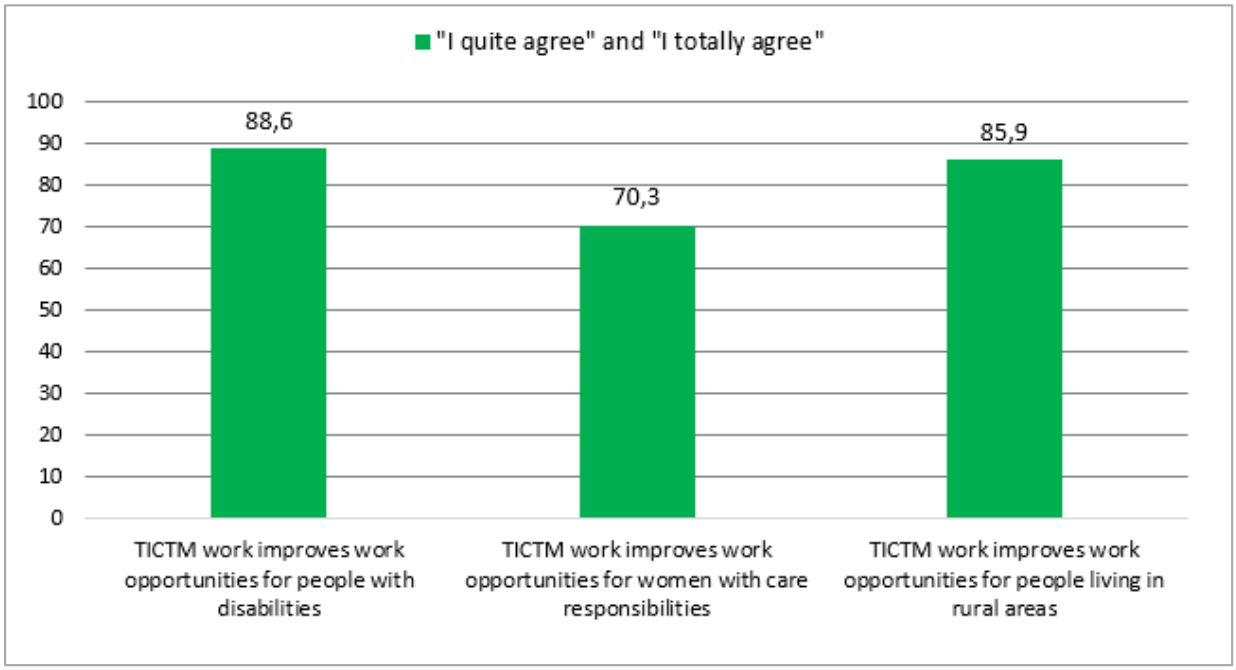
The different potential effects of TICTM work arrangements on work opportunities for different groups of workers have been acknowledged by the survey respondents. As illustrated in Figure 24 there is substantial agreement among the respondents with the idea that TICTM work improves work

[21] The index is based on skills descriptors resulting from Cedefop's European skills and jobs survey (ESJS), distinguishing jobs according to, on the one hand, whether they involve physical proximity or contact with others and thus cannot be performed remotely, and on the other whether they are of low digital intensity.

[22] For example, whilst training for people interested in increasing their skills is available in many forms, it is not often tailored to users and their motivation, as in the case of training for PC usage when many trainees only own smart phones.

opportunities, particularly for **people with disabilities** (88.6% partially or totally agree), **people living in rural areas** (85.9%), and, to a lesser extent, **women with care responsibilities** (70.3%). Although some respondents to the open questions underline concerns that TICTM work could increase gender gaps in the labour market and women's isolation. Again, there are differences among respondents according to their role, with representatives of umbrella organisations less likely than average to agree with the increasing work opportunities for people with disabilities (only 58.3% agree) and with the increased employment opportunities for rural areas (only 41.7% agree).

Figure 24: Agreement with the idea that the TICTM improves work opportunities (% of respondents answering I quite agree + % answering I totally agree)



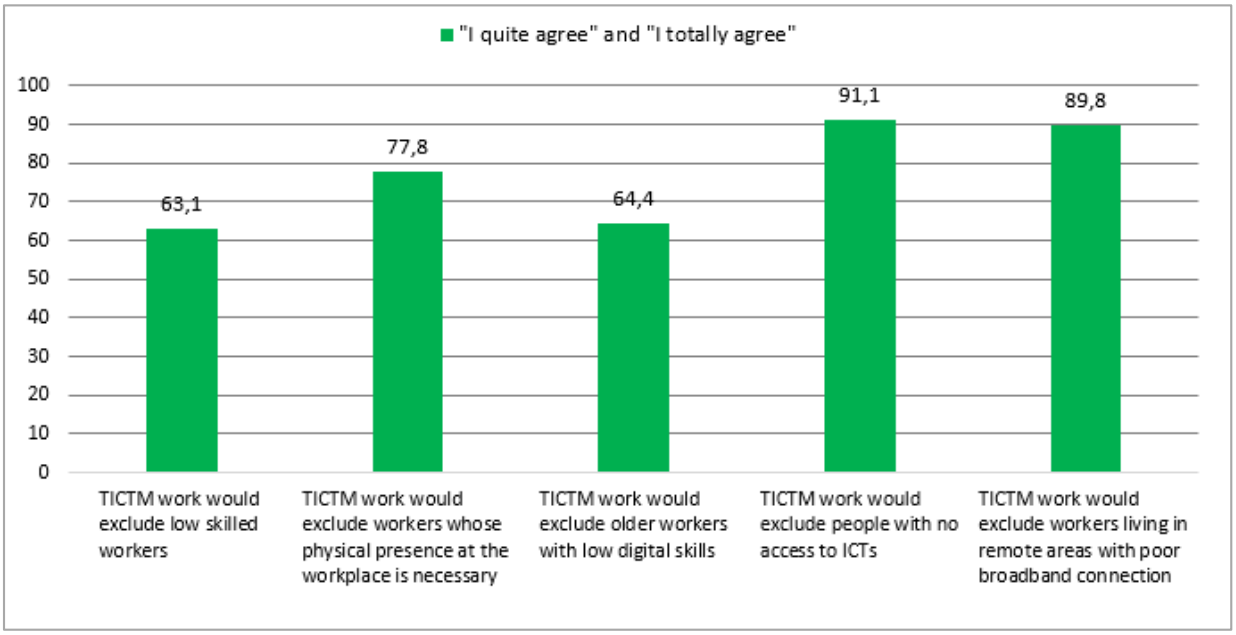
Source: IRS web survey.

Note: The bars show the shares of respondents who answered 'quite agree' or 'totally agree' on the following scale: 1 - I do not know, 2 – I completely disagree, 3 – I quite disagree, 4 – I quite agree and 5 – I totally agree.

A large majority of respondents (80.9%) also underline the **risk of an increased digital divide** among workers of different ages, sex, territorial areas or socio-economic background.

As shown in Figure 25, most survey respondents also think that **TICTM work is likely to exclude** those with **no access to ICT** (91.1%) and those **living in remote areas with poor access to internet connection** (89.9%). Shared agreement is also expressed as regards the potential exclusion of workers who cannot telework because their physical presence at the workplace is necessary (77.8%), and, to a lesser extent, the exclusion of **older workers with low digital skills** (64.4%), and more generally **low skilled workers** (63.1%). In addition, respondents register concern that ***TICTM work could increase gender gaps in the labour market and women's isolation***.

Figure 25: Agreement with the statement that TICTM will result in the exclusion of some groups of workers



Source: IRS web survey.

Note: The bars show the shares of respondents who answered 'quite agree' or 'totally agree' on the following scale: 1 - I do not know, 2 – I completely disagree, 3 – I quite disagree, 4 – I quite agree and 5 – I totally agree.

Interestingly, a high share of respondents (87.5%) also agrees with the fact that TICTM work will promote **new employment regulations**, and the issue is underlined also in some of the open answers, referring to the necessity to ***develop*** a more protective regulatory framework for teleworkers' working conditions. Another interesting emerging issue is the idea that the ***concept of 'working for an organisation' will cede ground to 'selling skills and competences'***.

The views of the representatives of EU and international organisations interviewed go in the same direction. They all underline among the positive effects of TICTM arrangements the increased employment opportunities for people with disabilities or mobility problems. Among the negative societal effects, representatives of the Women's Lobby and ILO underline the risks for women of isolation, increased unpaid work when working from home, and the concomitant risks of domestic violence, as well as digital harassment and cyberbullying. Connectivity issues and the digital divide are also cited, as well as increased inequalities in working conditions between teleworkers and other workers.

3.3.2. Environmental and spatial implications of telework

By reducing work commuting and allowing work from anywhere teleworking has significant effects on carbon emissions and spatial development. The evidence emerging from literature, however, shows that these effects are not as conclusive as expected at this stage.

a. Environmental implications of TICTM

Teleworking from home or in co-working spaces close to home reduces the frequency/length/duration of commuting, dependency on (private/public) transportation and use of centralised office space (O'Brien, and Yazdani Aliabadi, 2020). For example, in 2018, on a daily basis more than 20% of Europeans commuted for at least 90 minutes, equivalent to about 29 km (Gimenez-Nadal et al., 2020;

SD worx, 2018), with great variation in commuting times between urban and rural areas and between EU Member States (Sabbati and Tkalec, 2020).

The commuting of the EU working age population is inextricably linked with the most frequently used mode of transport, private cars: 50% use private vehicles daily, while only 16% use public transport and 12% use bicycles. The upshot of such heavy reliance on private transport is that **daily commuting generates around 25% of carbon dioxide** (CO_2) emissions in Europe (Gimenez-Nadal et al., 2020).

The extent of and frequency of commuting can be – often significantly – reduced by embracing flexible forms of working such as teleworking and ICT-based mobile work (O'Brien and Yazdani Aliabadu, 2020; Hook et al., 2020; Crow ad Millot, 2020). This can, in turn, both save energy, alleviate traffic congestion and reduce emissions while at the same time also improve the mental well-being of workers who are spared the stress of long journeys to and from work, often in busy public transport vehicles (Chatterjee, et al., 2020).A substantial body of evidence points to many positive features of teleworking (and associated flexibility) for society, **ranging from stress reduction, positive environmental impacts due to a decrease in traffic congestion and carbon emissions, and savings in terms of workers' commuting time and travel costs**.

A study commissioned by Greenpeace Germany (Büttner, L. et al., 2020) estimated the **savings in CO_2 emissions' potential of teleworking based on two scenarios**:

- *a conservative scenario* envisaging teleworking for one or two days a week, assuming a 25% share of teleworkers among the working population);
- *an advanced scenario* envisaging teleworking for one or two days a week, assuming a 40% share of teleworkers among the working population).

As Table 7 shows, **both scenarios would lead to significant savings in terms of commuting and associated CO_2 emissions**. For example, under the advanced scenario, if employees could work from home two days a week, annual savings would amount to 35.9 billion passenger kilometres and 5.4 million tonnes CO_2 equivalent, which corresponds to 18% of emissions from commuting and 4% of total passenger transport emissions.

Table 7: Savings potential for 1 and 2 additional days a week working from home (Germany)

	Conservative scenario		Advanced scenario	
Extra teleworking days per week	**+1**	**+2**	**+1**	**+2**
Saving potential: Passenger Kilometres (in billion Pkm)	10.9	20.9	18.4	35.9
Saving potential: Emissions (in million tonnes CO_{2e})	1.6	3.2	2.8	5.4

Source: Büttner, L. et al, (2020).

A study in **France** found that an average of 2.9 days of remote work per week would reduce the environmental impacts of commuting by about 30% – accounting for 3.7% of greenhouse gas (GHG) emissions. This would, in turn, mean a 0.5% reduction in overall GHG emissions which is equivalent to the annual emissions of 366,000 French citizens (Agence de la transition écologique-ADEME, 2015; Batut and Tabet, 2020).

In a similar vein, a **US** study estimated that teleworking for 50% of working time could reduce carbon emissions by over 51 million metric tonnes a year – 'the equivalent of taking all of New York's commuters off the road' (Global Workplace Analytics, 2015b). On a **global scale**, a recent study estimated that if all those who can work from home worldwide were to do so for just one day a week, this would save around 1% of global oil consumption for road passenger transport per year. As the study points out, notwithstanding the increase in residential energy use (by teleworkers), the overall impact of such remote working on global CO_2 emissions would be an annual decline of 24 million tonnes (Mt) (Crow and Millot, 2020).

Additional carbon footprint savings in relation to teleworking can also result from **reduced office energy consumption, traffic congestion, road repairs, urban heating, office construction, business travel, paper usage** (as electronic documents replace paper), etc. For example, office equipment energy consumption rate is twice that of home office equipment energy consumption (Global Workplace Analytics, 2015a and 2015b)[23]. On a different but related note, it has been estimated that traffic jams consume almost three billion gallons of petrol and account for 26 million extra tonnes of greenhouse gases (Global Workplace Analytics, 2015b). As the OECD recently noted: '*more widespread adoption of telework may also generate important spill-over effects for worker satisfaction by reducing traffic congestion, carbon and particulate matter emissions and lowering housing prices especially in high density urban areas*.' (OECD, 2020a).

However, **the environmental impact of teleworking is far more complex** than it first appears, especially when including commuting distance, home office energy use, the internet, long-term consumer choices, and other so-called rebound effects, such as increased frequency and/or distance of non-work trips (as part of running errands from home). For example, a study has found that about 20% of teleworking survey respondents ran shopping errands that would have otherwise been part of their commuting, while about 10% were driving children around, e.g. to and from school. In general, the number of non-work trips increased by the equivalent of about 25% of the distance saved from teleworking (O'Brien and Yazdani Aliabadi, 2020).

Research has also shown that for those who commute by car, teleworking is likely to reduce their carbon dioxide (CO_2) footprint if their journey to work is longer than about six kilometres. Conversely, for short car commutes or those involving public transport, teleworking could increase CO_2 emissions due to **extra residential energy consumption** (Crow and Millot, 2020).

In addition, **home energy consumption patterns may offset the benefits of teleworking**. For example, teleworking and associated home energy consumption (e.g. for heating, cooking and lighting) may not reduce the energy used in the office (e.g. offices may continue to be heated and lit as much as before) (Hook et al., 2020; O'Brien and Yazdani Aliabadi, 2020). Finally, teleworking may also result in **greater (or more intense) use of digital technologies, which can, in turn, increase GHG emissions** – at present, the use of data centres and network infrastructure account for 2% of global GHG emissions (Batut and Tabet, 2020).

[23] Other sources point to similar conclusions. Dominguez, F., (2020), points out that: 'While teleworking may eliminate or reduce energy consumption and associated emissions generated from the office commute, it may also lead to increased energy use due to homeworking, a so-called 'rebound' effect. This may be as a result of greater use of home appliances, heating, cooling, and lighting. Teleworking may also generate higher 'non-work' travel, as workers use their new 'time savings' to take more regular holidays or breaks.' Moreover, according to Murtagh, N. et al, (2013): 'The wider variety of electrical appliances in the home may make energy behaviours more complex in this domain, embedded in a wide variety of practices, including cooking, cleaning and entertainment […] The few studies on energy behaviour in the workplace have found evidence of energy reduction'.

In conclusion, as Table 8 below shows, **the impact of teleworking on energy use and carbon emissions is not straightforward and involves direct and indirect positive and negative effects**. In general, to date the available evidence is that **teleworking results in rather modest economy-wide energy savings** (Hook et al., 2020).

Table 8: Summary of direct and indirect impacts of teleworking on energy use and emissions

Type of effect	Nature of impact on energy use and emissions	
Direct		Energy consumed in manufacturing, using and disposing of ICT equipment
Higher order	Reduction in commuting travel and energy use Reduction in office energy use	Increase in weekly travel due to longer commute on non-teleworking days Increase in non-work travel by teleworker Increase in energy consumption at home for heating, cooling, lighting and other uses Increase in travel by teleworking household due to increased availability of car

Source: Hook, A. et al. (2020).

b. Spatial implications of TICTM

As mentioned in section 2.3, currently **teleworkable** jobs tend to be **more concentrated in cities and urban centres** than in smaller towns, suburbs and rural areas. Cities have more teleworkable employment (44%) than towns or suburbs (35%), or rural areas (29%) (Milasi at al., 2020; Sostero et al., 2020). Moreover, during the COVID-19 crisis, 61% of those living in cities had access to telework, as opposed to 41% of those living in small towns (European Commission, 2020a). The concentration of telework in urban areas may also be due to the fact that, despite some progress, **broadband coverage in rural areas continues to be lower** than urban coverage (European Commission,2020f), as 10% of households in rural areas are still not covered by any fixed network and 41% by any fast broadband technology (European Commission, 2020e). Likewise, **internet access** also varies between urban and rural areas, with cities (92%), towns and suburbs (89% for both) having comparatively higher access rates in 2019 as opposed to a somewhat lower rate in rural areas (86%) (Eurostat, 2020b). These disparities are likely to be further challenged in the next few years, as people living in Europe's main cities will have the opportunity to switch to 5G internet services (the 5th generation of cellular network technology) (Eurostat (2021).

However, by providing spatial flexibility, TICTM could facilitate **remote and distributed work**, contributing to a more balanced spatial distribution of employment and population.

There is indeed wide recognition that the **explosion of teleworking following the COVID-19 pandemic outbreak** is likely to have a **long-lasting impact on the spatial distribution of work**, also in peripheral geographical locations (including across borders) (ILO, 2016b). Since TICTM provides workers with much greater spatial flexibility, these may opt to work remotely from home (e.g. in the suburbs) as opposed to regularly commuting to the urban/city centres where most offices and business activity are usually based and which are often major economic hubs (Lopez-Igual and Rodriguez-Modroño,2020). '*It [COVID-19 related mass teleworking] may also lead to a significant transfer of ancillary economic activity from business centres to residential and possibly rural areas and possibly some reversal of the trend to concentrate higher-value added economic activity in larger metropolitan centres*' (Eurofound,

2020b).

Such a development could eventually see a re-distribution of employment from urban centres and metropolitan areas – where both office and residential costs are high – towards the suburbs and more remote, including rural areas (Batut and Tabet, 2020). There is already evidence pointing to **more telework leading to city dwellers leaving dense and expensive urban centres** for less dense suburbs and rural areas. For example, **evidence from the US** already shows that, following the COVID-19 pandemic, there has already been a significant reallocation of residents from the most densely to the least densely populated US counties (Delventhal, et al., 2021). Unsurprisingly, there has been a commensurate (massive) decrease in office use in city centres – to below 25% of what it was previous to the COVID-19 pandemic in most large office markets at the end of 2020, with New York City at around 10% (Gupta et al., 2021).

In the **EU,** leasing demand for office space was down 40% during the first three quarters of 2020 (compared to the same period in 2019) (CBRE, 2020). Following the (positive) experience of teleworking during the COVID-19 pandemic, **companies may decide to scale down their office space on a permanent basis**. Estimates show that, following the first rounds of lockdowns, office capacity has, in some cases, been reduced by 30% to 50%, as employers are reconfiguring (downwards) the number of staff who permanently work on their premises as opposed to remotely (Ceurstemont, 2020).

One upshot of this trend is likely to be the **cooling of commercial and residential real estate market prices in urban centres**, accompanied by a **relative rise in property values in suburbs and rural areas (**Delventhal et al., 2021; Gupta et al., 2021; OECD, 2020a), as is happening in the USA (Hunt, 2020). Evidence from the **UK** also points to similar results. For example, private rents in London have started to fall as a result of residents fleeing to live and work in less urban and/or more rural areas (Hunt, 2020), while house prices in Wales rose by 8.2% in 2020, the highest rate of increase in 15 years (BBC, 2021). Similarly, across the EU, retailers have, on average, been seeking a 20-40% reduction in rent across their estate portfolio (Savills Research, 2020).

Teleworking could not only increase the appeal of non-urban living, but also lead to demand-driven development of **co-working spaces or improvements to telecommunication infrastructure**. Moreover, the well-documented local spillover effects may also come into play in suburban and rural areas as a result of increased TICTM workers leaving large metropolitan areas (Delventhal, et al, 2021). For example, as the seminal work of Moretti (Moretti, E., 2010) has indicated, there can be significant local multiplier effects with one skilled job generating 2.5 more jobs in goods and services in a local area. The effect can be even greater for workers in the technological sector, meaning that increased use of teleworking may indeed yield such positive externalities, e.g. through increased local consumption and use of local amenities.

It should, however, be noted that the decision about where to live relies on a nexus of interacting factors and not only on employment opportunities – although the latter play a significant role. Other factors influencing such a decision include proximity of family, friends and other support networks; availability and cost of housing; accessibility, affordability, and quality of services such as education and health services; ease and cost of transport; traffic and pollution levels; crime rate; arts, cultural and other recreation and leisure activities; etc. Such factors would tend to mitigate the effect of teleworking on the spatial distribution of work, including the considerable pull that large metropolitan areas and cities exert (Batut and Tabet, 2020). In other words, the 'demise' of the latter as a result of COVID-19 related changes in working patterns, including the massive growth of teleworking, may have been exaggerated.

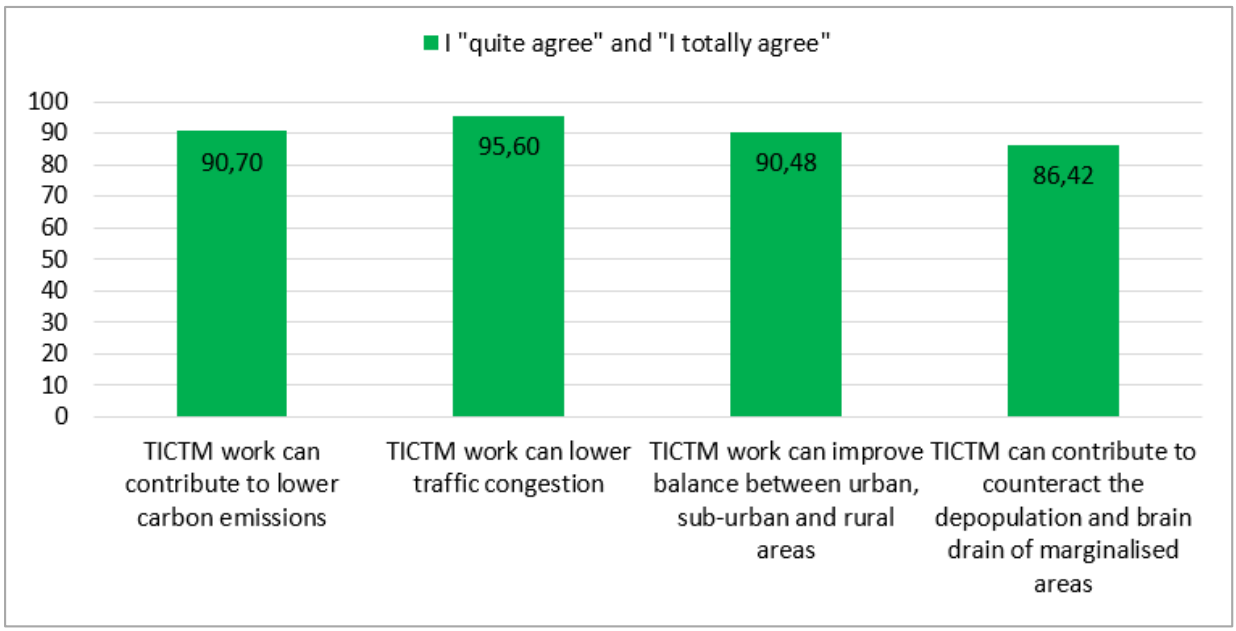
Even so, **emerging evidence**, including that of a plethora of management and workforce surveys, **points to the fact that some of the COVID-19 related surge in teleworking will become permanent, with potential effects on work location choices of employees** (Delventhal, et al, 2021). Interestingly, the impact of COVID-19 related teleworking may have more far-reaching repercussions as regards the spatial distribution of work. For example, some countries such as Barbados, Bermuda, Estonia and Georgia, have special visas to attract the so-called 'digital nomads' rendered rootless by the pandemic (Hunt, 2020).

Stakeholders' opinions on the environmental and spatial effects of TICTM

Respondents to the web-survey tend to show high confidence that **TICTM work can contribute to positive effects on** the environment and territorial balance.

As shown in Figure 26, almost all respondents to the web-survey (90.7%) agree that TICTM work can contribute to lower carbon emissions and 95.6% that it can lower traffic congestion. In relation to territorial cohesion, nine out of ten agree that TICTM work can improve the balance between urban, sub-urban and rural areas and 86.4% that TICTM can contribute to counteract the depopulation of marginal territorial areas and associated brain drain.

Figure 26: Agreement with the main positive/negative issues related to the increased use of TICTM work that can affect society



Source: IRS web survey.

Note: The bars show the shares of respondents who answered 'quite agree' or 'totally agree' on the following scale: 1 - I do not know, 2 – I completely disagree, 3 – I quite disagree, 4 – I quite agree and 5 – I totally agree.

The views of the interviewed representatives of EU and international organisations also mention among the positive effects of TICTM arrangements the reduction in CO_2 emissions thanks to less commuting time. However, some underline the uncertain net effects on the environment and on spatial development, as some areas decline while others improve.

Similarly, in the **five country cases** (Table 9) expected positive effects relate mainly to lower commuting and carbon emissions, as well as a greater balance in terms of spatial development. Interestingly, in Romania, stakeholders also mentioned the possibility of a reduction of emigration and brain drain thanks to remote working. Among negative effects, the most cited are the increase in

inequalities due to the digital divide and lower protection of remote workers, while the German case focusses on the inequalities between teleworkers and those who cannot telework. Another issue underlined in the Finnish case is the increase in heating and electricity use at home, which may undo the positive effect of reduced commuting on the environment.

Table 9: TICTM Positive and negative expected effects on society in the five country cases

Effects on:	Society	
Country	Positive	Negative
Finland	Reduction of carbon emissions due to less commuting	Digital divide issues Increase in carbon emissions due to increase in heating and electricity use at home
Germany	Reduction in business travel, positive impact on the environment Less polarisation of urban centres (widening the pool of potential employees for those businesses located in more remote areas)	Divisive effects of more home working in a context where a lot of employees are not able to do so Negative impact on some sectors of the economy relying on business travel
Ireland	Less traffic and carbon emissions Possibility to regenerate the suburbs via more volunteering and civil society behaviour due to less commuting time	Increased carbon emissions due to increase in heating and electricity use at home
Italy	Preservation of wages and employment, during the pandemic Less polarisation of urban centres (with great growth potential for suburbs) Less pollution Work may, in some cases, even be more effective for the community if carried out remotely	Distortions in sectors strongly associated with commuting, such as transport, petrol stations, restaurants, and shops (e.g. in train stations and city centres where business tends to be concentrated) Inadequate infrastructures and technological equipment Gender divide: gender roles and stereotypes negatively affect female employment in STEM sectors
Romania	Increase in the digitalisation of services Reduction in internal and external emigration and associated brain drain Increase in the attractiveness of medium-sized cities for business	Increase in social and economic inequalities between white and blue collar workers, digital divide and unequal access to broadband, digital disparities between urban-rural areas Weakening in the protection of workers' social rights Possible reduction in the employees' income level Weakening of the real estate market in urban areas Shortage of qualified workforce

Source: Country case studies.

4. MAIN EU AND NATIONAL LEGISLATION, POLICIES, AND COLLECTIVE AGREEMENTS

As discussed in the previous chapters, the sudden and massive recourse to full-time telework during the COVID-19 pandemic has highlighted some of the risks and challenges associated with such work. In order to improve the working conditions and productivity of teleworkers in the hybrid model that is expected to prevail after the COVID-19 pandemic, it is necessary to address these challenges.

The way work is performed, co-ordinated and controlled needs rethinking with crucial implications for workers, companies and society. On the one hand, it means that workers need to learn how to work autonomously, be resilient and self-organising, working and collaborating virtually. At the same time, companies should learn how to effectively engage, motivate and oversee teleworkers, with a major shift in organisational cultures, from managing inputs such as attendance (e.g. hours in the office) towards managing by results. Trust-based relationships between workers and management must also be established which may be quite challenging for some sectors and companies.

At societal level, it is necessary to address the new forms of inequalities associated with TICTM, enhancing the opportunities that these new forms of work offer to workers previously marginalised in the labour market. It is necessary to ensure the right to disconnect and address the risks for workers' privacy and mental health associated with invasive forms of surveillance and monitoring, to provide adequate child-care services and support the work-life balance of teleworkers, to address the digital divide and provide the necessary equipment and broadband access to all workers.

The implications of TICTM for workers, employers and society, therefore, pose a number of challenges for regulation and policy making both at EU and national level. Some of these can be addressed by legislative and policy instruments already in place, while others require new approaches and instruments aiming to enhance the potential positive effects of TICTM, while limiting the negative ones.

As shown in the following sections, there is a growing debate on how to tackle these challenges both at EU and national level, and on the role that EU and national Institutions as well as social partners can play in relation to TICTM. Many interesting experiences are emerging both at national, sectoral and company level that provide valuable inputs for institutional learning and policy making.

4.1. Policy responses at EU level

At European level, there are no specific legislative measures targeting teleworking and ICT-based mobile working (TICTM). That said, there are several pieces of **EU legislation regarding employment and working conditions, such as working times and work-life balance**, which are fully applicable both to teleworkers and other TICTM workers ('digital nomads') (European Economic and Social Committee- EESC, 2021).

In addition, there is a **large set of EU initiatives and policies addressing the development of digital skills in the population and the availability of broadband infrastructure**. Such initiatives and support seek to ensure two key pre-conditions for increasing the share of TICTM, namely a good level of digital skills in the working population and widespread availability of digital tools and infrastructure.

4.1.1. EU level regulation relevant to TICTM work arrangements

As mentioned earlier – and confirmed by stakeholder interviews – at European level, the main regulatory instruments that cover matters of work are also relevant for TICTM (see Box 7 for a summary overview).

Box 7: Summary of EU level regulations relating to TICTM

Working Time Directive

Considering the time limits related to rest and maximum weekly working hours, evidence shows that they are more difficult to enforce in the context of TICTM arrangements. This may also have implications for workers reporting unpaid overtime.

It is difficult to distinguish between working time and rest periods with TICTM. This aspect has implications for determining how and when working time should be recorded.

The distinction between on-call and stand-by work is more blurred in TICTM situations.

Work–Life Balance Directive

Although the right to request flexible arrangements has been incorporated into legislation, it might not be sufficient to address the potentially negative effects of TICTM on work–life balance and well-being of workers.

Transparent and Predictable Working Conditions Directive

The Directive has the potential to contribute to a better work–life balance for employees in TICTM arrangements by making working time and work arrangements more predictable.

Framework Agreement on Telework

The agreement does not consider situations in which employees do telework informally or on an occasional basis (which are typical situations in TICTM).

It establishes that telework should be done on a voluntary basis. However, evidence suggests that some employees do telework because of employer-driven job demands, putting its voluntary dimension into question.

In some occupations, teleworking and being mobile is part of the conditions included in the contract (or job specifications) and workers in this situation do not have the legal means to change to another work arrangement.

Source: Eurofound (2020f), p. 9.

As the discussion in section 3.1 has shown, TICTM can make it harder for workers to separate working time from personal time ('downtime'). In this context, the **European Working Time Directive** (2003/88/EEC) is the main instrument **regulating working hours, rest times, and leave periods, also for TICTM workers**[24]. The Directive sets maximum standards for working hours, daily and weekly rest periods, annual leave, and night and shift work. For example, it establishes a working week of 48 hours maximum, a minimum period of daily rest of 11 hours and weekly rest of 35 hours. As Eurofound points out: '*This is relevant for workers that do TICTM, as they tend to have insufficient rest periods. The EWCS 2015 found that 58% of employees that do highly mobile TICTM, 41% of those that do regular home-based telework and 24% that do occasional TICTM report that they rested fewer than 11 hours at least once during the last month. In contrast, the EU average for all employees is 21%.*'(Eurofound, 2020f).

One of the specific and outstanding challenges for the application of the Working Time Directive to TICTM workers, however, is the **recording of working time** for which only a minority of Member States

[24] Directive 2003/88/EC of the European Parliament and of the Council of 4 November 2003 concerning certain aspects of the organisation of working time, OJ L 299, 18.11.2003, pp. 9–19, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32003L0088&from=EN; Eurofound (2020g).

have specific provisions (Eurofound, 2020f). This relative dearth of relevant provisions can potentially make those working remotely more vulnerable to health and safety issues relating to over-working and disrupted work-life balance, given the well-documented blurred boundaries between working life and family life associated with TICTM.

Interestingly, **recent case law from the Court of Justice of the European Union** (CJEU) is likely to influence relevant national provisions and place stricter requirements on the monitoring and recording of working hours. Specifically, in *Federacion de Servicios de Comisiones Obreras (CCOO) v Deutsche Bank SAE (C-55/18)*, the CJEU decided that, in order to comply with the provisions of the EU Working Time Directive on maximum weekly working time and daily and weekly rest allowance: '*EU Member States must require employers to set up an objective, reliable and accessible system for measuring actual daily working time for individual workers*'[25].

As part of the implementation of the **European Pillar of Social Rights**, which emphasises the need for fair working conditions and equal opportunities for workers in atypical working conditions, such as teleworkers, two recent directives also directly seek to address the work–life balance issues of TICTM workers. The **Work–Life Balance Directive**, due to be fully implemented by all Member States by 2022, extends the right to request flexible working arrangements to all working parents of children up to eight years of age and all carers. Such arrangements encompass TICTM work – something not included in the Parental Leave Directive 2010/18/EU[26]. However, if they provide a clear rationale for doing so, employers can reject the employee's flexible working request[27]. According to Eurofound, '*If the Directive is implemented, parents and carers will have the right to request TICTM arrangements that could help to improve their work–life balance (particularly regular home-based telework)*'. (Eurofound, 2020a).

Linked to this, the **Transparent and Predictable Working Conditions Directive**[28] requires employment contracts to specify work patterns and places of work and, in doing so, ensure greater transparency and predictability of working conditions for all workers. The increased predictability of working time patterns, including those of TICTM workers, ushered in by the Directive, is expected to have a positive impact on their work–life balance[29]. However, whilst these provisions are relevant for providing TICTM workers with '*more complete information on the essential aspects of the work: place of work, leave and working time arrangements including overtime*', it is also the case that such written agreements are not necessarily sufficient to prevent working beyond contractual hours (Eurofound, 2020g).

In addition to the challenge of managing working hours, the discussion in sections 3.1 and 3.2 above has shown that TICTM can also be associated with a range of adverse effects on the mental and physical well-being of workers. Significantly, the provisions of the **European Framework Directive on Safety and Health at Work**[30] apply to workers independently of their place of work and, as such, also cover

[25] Judgment of the Court of Justice of 14 May 2019, Federación de Servicios de Comisiones Obreras (CCOO), C-55/18, available at: http://curia.europa.eu/juris/liste.jsf?num=C-55/18; Callegari, P. et al (2019).

[26] Council Directive 2010/118/EU implementing the revised Framework Agreement on parental leave concluded by Business Europe, UEAPME, CEEP and ETUC and repealing Directive 96/34/EC.

[27] Directive (EU) 2019/1158 of the European Parliament and of the Council of 20 June 2019 on work-life balance for parents and carers and repealing Council Directive 2010/18/EU, PE/20/2019/REV/1, OJ L 188, 12.7.2019, pp. 79–93, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L1158&from=EN.

[28] Directive (EU) 2019/1152 of the European Parliament and of the Council of 20 June 2019 on transparent and predictable working conditions in the European Union, OJ L 186, 11.7.2019.

[29] Directive (EU) 2019/1152 of the European Parliament and of the Council of 20 June 2019 on transparent and predictable working conditions in the European Union, PE/43/2019/REV/1, OJ L 186, 11.7.2019, pp. 105–121, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L1152&from=EN.

[30] Council Directive 89/391/EEC on the introduction of measures to encourage improvements in the safety and health of workers at work, OJ L 183, 29.6.1989.

health-related aspects of TICTM work[31]. This Directive '*lays down general principles concerning the prevention and protection of workers against occupational accidents and diseases*' and, among others, requires employers to carry out risk assessments, including on psycho-social risks, and implement preventive and protective measures (Eurofound, 2020g).

A number of **linked Directives covering use of work equipment** (Directive 2009/104/EC) and **display screens** (Directive 90/270/EEC) are also relevant for TICTM. However, **Directive 89/654/EEC concerning the minimum safety and health requirements for the workplace** does not cover work outside employers' premises, and work is currently ongoing on a possible update of this Directive (Eurofound, 2020g).

In March 2021, **the European Pillar of Social Rights Action Plan** (European Commission, 2021b) recognised the need to improve occupational health and safety standards to adapt to new technological and societal changes. The Action Plan mentions **psychosocial risks and work-related stress as issues that need to be better addressed to protect the health and well-being of workers**, ensure labour productivity and allow for a sustainable economic recovery**.** To this end, it commits the European Commission to present in the second quarter of 2021 a **new EU Occupational Safety and Health Strategic Framework for 2021-2027** whose aim will be to update protection standards for workers and address traditional and emerging work-related risks such as those associated with accelerated digitalisation.

4.1.2. EU level policies relevant to TICTM work arrangements

As shown in sections 3.1 and 3.2 above, TICTM has many advantages both for the employee and for the employer. However, there are perhaps two key and fundamental conditions that need to be in place in order to fully realise its potential: **the availability of digital skills in the population and broadband infrastructure**. In both cases, a digital divide remains in the EU-27 based on geography, age, educational attainment, socio-economic status and income.

Over the last decade, successive EU policies have sought to address this divide. Current relevant initiatives have significantly developed in light of the COVID-19 pandemic and the linked necessity for the use of digital tools. Enhancing digital skills is also an objective in the context of the green recovery of the European economy, as well as the EU's target of being climate neutral by 2050. At present, a number of policies related to the **development/enhancement of digital skills and the improvement of connectivity and broadband coverage** are closely linked to the goal of making this decade **Europe's 'Digital Decade'** by making Europe fit for the digital age – one of the six headline ambitions for Europe over the next five years (von der Leyen, U., 2019). Recent examples of such EU policies include:

- **The European Skills Agenda (ESA)[32]** - which recognises that a step change as regards digital skills is required. To this end, the Agenda, which comprises 12 actions, sets a specific objective: by 2025, 230 million adults (i.e. 70% of the EU's adult population as opposed to 56% in 2019) should have at least basic digital skills (European Commission, 2020g). In the pursuit of this target, the provision of digital skills – both basic and advanced – is a cross-cutting theme of a number of the Agenda's actions such as Action 1 (*Pact for Skills*), Action 3 (*EU support for strategic national upskilling action*) and, notably, Action 6 (*Skills to support the twin green and*

[31] Council Directive of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work (89/391/EEC), OJEC No L 183/ 1, 29/6/1989. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31989L0391&from=EN.

[32] European Commission, European Skills Agenda webpage. Available at: https://ec.europa.eu/social/main.jsp?catId=1223&langId=en.

digital transitions). In addition to, for example, suggesting incorporating digital skills into vocational education and training (VET) and employee training, the Agenda calls for 'an investment in high social impact infrastructure' – including digital infrastructure – via the European Regional Development Fund and InvestEU. This builds on initiatives of the past decade promoting digital skills, broadband connectivity and the digital single market (e.g. Digital Agenda for Europe, Agenda for New Skills and Jobs, Digital Single Market).

- **Digital Education Action Plan 2021-2027** (European Commission, 2020c) – which builds on the previous 2018-2020 one (European Commission, 2018) and which has also been informed by lessons drawn from (and challenges thrown up by) the unprecedented use of ICTs for work and educational purposes during the COVID-19 pandemic. The Action Plan aspires to develop a high-performing digital education ecosystem. This, *inter alia*, includes addressing issues relating to digital infrastructure and equipment as well as accessibility and connectivity (Solidar Foundation, 2020). At the same time, one of its key strategic priorities is to enhance the digital skills and competences of the EU's population in line with the EU's ongoing (and even accelerating) digital transformation.
- **Digital Skills and Jobs Coalition**[33], set up by the European Commission in December 2016, also seeks to help all Europeans acquire the necessary digital skills to thrive both personally and professionally and fully participate in today's digital society and economy (European Commission, 2016). To this end, operating at both EU and national levels, it brings together Member States, companies, social partners, non-profit organisations and education providers who work together to address the lack of digital skills, including among the workforce, in Europe.
- **Digital Europe programme**[34], following a political agreement between the European Parliament and EU Member States reached on 14 December 2020, the programme – part of the long-term EU budget 2021-2027 – is worth €7.5 billion (in current prices) and will become operational in 2021. It is the first EU programme which seeks to accelerate the EU's post-COVID-19 recovery and drive its digital transformation. To this end, it will provide funding for projects in five key areas: (i) supercomputing; (ii) artificial intelligence; (iii) cybersecurity; (iv) advanced digital skills; and (v) ensuring the wide use of digital technologies across the economy and society. For example, it will support the digital upskilling of the workforce as well as the uptake of advanced digital and related technologies by companies, notably SMEs[35]. The Digital Europe programme complements other EU programmes, such as **Horizon Europe**, the EU programme for research and innovation and the **Connecting Europe Facility** for digital infrastructure (see below).
- The **Connecting Europe Facility (CEF)**[36] provides dedicated funding in support of trans-European networks and infrastructures in the sectors of transport, telecommunications and energy (European Commission, 2019). CEF Telecom, in particular, which is highly relevant for TICTM, invests in digitalisation and connectivity through its two pillars: CEF Digital (supporting

[33] European Commission, web portal 'Digital skills and jobs coalition'. Available at: https://ec.europa.eu/digital-single-market/en/digital-skills-and-jobs-coalition.

[34] European Commission, web portal 'The Digital Europe Programme'. Available at: https://ec.europa.eu/digital-single-market/en/europe-investing-digital-digital-europe-programme.

[35] European Commission, Factsheet/Infographic 04/06/2020 'Digital Europe Programme: A proposed €7.5 billion of funding for 2021-2027'. See: https://ec.europa.eu/digital-single-market/en/news/digital-europe-programme-proposed-eu75-billion-funding-2021-2027.

[36] European Commission, web portal 'Connecting Europe Facility in Telecom'. Available at: https://ec.europa.eu/digital-single-market/en/connecting-europe-facility-telecom.

Digital Service infrastructures -DSIs) and CEF Connectivity (Broadband and WiFi4EU)[37]. For example, through CEF Broadband, CEF Connectivity stimulates investment for deploying and modernising broadband networks, while through its WiFi4EU initiative it provides high-quality local wireless connectivity in local communities.

- Linked to the above and also relevant for TICTM, are two of the Flagship Areas proposed as priorities for investment by the European Commission in its **2021 Annual Sustainable Growth Strategy (ASGS)** (European Commission, 2020h): (i) *Connect* – The fast rollout of rapid broadband services to all regions and households, including fibre and 5G networks; and (ii) *Reskill and upskill* – the adaptation of education systems to support digital skills and educational and vocational training for all ages. Interestingly, these flagship areas for investment were also highlighted in former ASGS such as the 2020 ASGS (European Commission, 2019b and 2019c).
- The **EU's Digital Strategy** (as outlined in the '**Shaping Europe's digital future**' **Communication**), recognises that digital technologies are profoundly changing the world of work and the way work is organised, performed and co-ordinated, it places a strong emphasis on enhancing the level of digital skills and improving connectivity in terms of the speed, reach/availability, reliability and security (European Commission, 2020i). Both sufficient digital skills and fast, reliable and secure connectivity are obvious pre-requisites for TICTM. Moreover, as the strategy underlines, 'European companies need digitally savvy employees to thrive in the global technology-driven marketplace'. Significantly, the Strategy explicitly recognises the vulnerability of platform workers on the labour market and the need for greater protection, e.g. as regards access to social protection. To this end, the Commission is expected to launch a legislative initiative on improving the working conditions of platform workers by the end of 2021[38]. On 24 February 2021, the Commission launched the first-stage consultation of European social partners on how to improve the working conditions for people working through digital labour platforms[39].

In addition to these initiatives on digitalisation, the EU has promoted recommendations and strategies to reduce labour market and social inequalities. Among these:

- **The Council Recommendation of 8 November 2019 on access to social protection for workers and the self-employed**[40], urges Member States to provide access to adequate social protection to all workers, including on-demand workers and others on non-standard contracts, as well as the self-employed. This may also be relevant for TICTM workers, since they may also face non-standard and irregular working hours – a feature of on-demand work (Eurofound, 2020a).
- The objectives of the **EU Gender Equality Strategy 2020-2025** (European Commission, 2020j) to close gender gaps in the labour market and achieve equal participation across different sectors of the economy are relevant to the issue of TICTM considering the opportunities it creates, as discussed above, to combine both family and working life. As stated in the Strategy,

[37] European Commission, web portal 'Connecting Europe Facility in Telecom'. Available at: https://ec.europa.eu/digital-single-market/en/connecting-europe-facility-telecom.

[38] European Commission, 'Questions and Answers: First stage social partners consultation on improving the working conditions in platform work'. Available at: https://ec.europa.eu/commission/presscorner/detail/en/qanda_21_656.

[39] European Commission, Press release 'Protecting people working through platforms: Commission launches a first-stage consultation of the social partners'. Available at: https://ec.europa.eu/commission/presscorner/detail/en/ip_21_686.

[40] Council Recommendation of 8 November 2019 on access to social protection for workers and self-employed, 2019/C 387/01, ST/12753/2019/INIT, *OJ C 387*, 15.11.2019, pp. 1–8, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019H1115(01)&from=EN.

one way of tackling the gender gaps in the labour market is through the improvement of workers' work-life balance.

- The **European Disability Strategy** 2010-2020 aimed to empower persons with disabilities to enjoy their full rights and benefit from participating in society on an equal basis with others. The 10-year evaluation shows that, while there is room for improvement, the Strategy had a positive impact on EU rules and policies, leading to the adoption of the **European Accessibility Act**[41], the **Web Accessibility Directive**[42] and legislation on the rights of passengers with disabilities. The new **Strategy for the Rights of Persons with Disabilities 2021-2030** (European Commission, 2021a)[43] launched on 3 March 2021, builds and expands on the previous one, recognising among emerging issues the limited accessibility of persons with disabilities to the ICT tools necessary for teleconferencing, telework arrangements, distance learning, online shopping, and access to COVID-19 related information. To address these issues an **Action Plan on Web Accessibility** is going to be adopted in 2021 to ensure compliance of EU websites and published documents with European accessibility standards. The Strategy also underlines how the digital transformation and the green transition offer opportunities to design on-site and remote services tailored to the needs of persons with disabilities, removing accessibility barriers and investing in their digital skills.
- The **EU cohesion policy** is currently being deployed to address the consequences of the COVID-19 pandemic, with funds for the current programming period being increased, with the aim, among others, to make Member State economies more resilient by opening up to green, digital and growth-enhancing investments (European Commission, 2020k), with clear implications for TICTM. Significantly, Cohesion Policy has historically channelled funds – e.g. in the form of the European Regional Development Fund (ERDF) and the European Social Fund (ESF) – to address the digital divide, both socially and geographically[44]. To this end, the policy has supported the digitalisation of firms, especially SMEs, the development of digital skills, and the roll-out of broadband in remote and rural regions.

The new **Next Generation EU recovery instrument**[45] and revamped **Multiannual Financial Framework** proposed by the Commission, also highlight the need for the EU's recovery to urgently address the disparities and inequalities exacerbated by the crisis (European Council, 2020). For example, in line with the EU's 2025 5G and Gigabit connectivity objectives, these will prioritise investment aimed at supporting the widespread deployment of very high-capacity networks, including 5G and Gigabit connectivity in both urban and rural areas in an attempt to bridge the current digital divide (European Commission, 2020h).

The potential negative effects of TICTM work on the **(mental) health and work-life balance** of individuals (and families) have increasingly been the focus of policy attention at EU level.

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41 Directive (EU) 2019/882 of the European Parliament and of the Council of 17 April 2019 on the accessibility requirements for products and services, OJ L 151, 7.6.2019.

42 Directive (EU) 2016/2102 of the European Parliament and of the Council of 26 October 2016 on the accessibility of the websites and mobile applications of public sector bodies.

43 The Strategy also underlines the actions taken in the last decade to improve accessibility for persons with disabilities: the European Accessibility Act covering products and services, the Web Accessibility Directive, the Electronic Communications Code, the Audiovisual Media Services Directive and copyright legislation19. European accessibility standards have been put in place to support implementation in the built environment and ICT and for organisations to adopt a Design for All approach.

44 European Commission, web portal on European Structural and Investment Funds 'Cohesion policy: helping Europe get fit for the digital age'. Available at: Cohesion Policy helps making Europe fit for the digital age | Data | European Structural and Investment Funds (europa.eu).

45 European Commission, web portal 'Recovery plan for Europe'. Available at: https://ec.europa.eu/info/strategy/recovery-plan-europe_en.

Besides the above-mentioned Work-Life Directive, a number of EU-level non-regulatory instruments and policies have explicitly sought to mitigate these negative effects. For example, as far back as 1996 the European Commission supported and funded an initiative to establish a **European Network for Workplace Health Promotion (ENWHP)**, whose 1997 Luxembourg Declaration (ENWHP, 1997) explicitly mentions the use of ICTs as having serious repercussions on workers' health, while its 2010 Edinburgh Declaration (ENWHP, 2010) focuses on promoting mental health and wellbeing at the workplace. The ENWHP – with national representation in the EU-27 – is currently involved in H-Work[46] – a Horizon 2020 42-month integrated project exploring multi-level interventions to address psychosocial risks and promote mental health and wellbeing in SMEs and public sector organisations. As part of this work, the project is currently exploring the impact of COVID-19 related increased incidence of homeworking and use of digital technologies on the mental health of workers.

In 2005, the European Commission's **Green Paper 'Improving the mental health of the population: Towards a strategy on mental health for the European Union'** (European Commission, 2005) also highlighted the importance of promoting mental health and wellbeing at work by reducing stressors in the work environment, adopting a participative workplace culture and management style, introducing working arrangements in line with staff needs (e.g. flexible working), and improving individual capacity and resilience.

As an outcome of the consultation process initiated after the adoption of the Green Paper, in June 2008, the European Commission signed the **European Pact for Mental Health and Well-Being (2008-2011)**, in collaboration with relevant social partners and stakeholders (European Commission, 2008). As part of its fourth thematic priority area 'Mental Health in Workplace Settings', the Pact draws attention to the need to address the adverse effects on mental health and wellbeing linked to changes in the pace and nature of work, as well as highly pressurised workplaces. As the first outcomes of the Pact's implementation highlighted, even as far back as 2011, factors such as new technologies which facilitate constant availability, increasingly frequent workflow interruptions and the dissolution of boundaries between work and private life were all contributing to increased levels of stress and anxiety and to a deterioration of mental health and wellbeing among workers (IMPACT Consortium for the European Commission, 2011).

Building on the European Pact for Mental Health and Well-Being, the Council invited Member States and the Commission to set up a joint action on mental health and wellbeing under the 3rd EU Health programme. Funded by the European Agency for Health and Consumers, between 2013 and 2018, the EU's **Joint Action on Mental Health and Well-Being**[47] – involving 51 partners from 25 Member States as well as Iceland and Norway – sought to create an EU-wide framework for action in mental health policy. The promotion of mental health at the workplace was one of its five key areas of action. This Joint Action resulted in the **European Framework for Action on Mental Health and Well-being**[48].

At the same time, between 2015 and 2018, the **EU-Compass for Action on Mental Health and Well-being**[49] – a web-based mechanism used to collect, exchange and analyse information on policy and stakeholder activities as regards mental health – also disseminated information on the European Framework for Action on Mental Health and Well-being. This included the identification and dissemination of European good practices in mental health; the collection of data on stakeholders' and

[46] H-work, web portal 'Multilevel Interventions to promote mental health in SMEs and public workplaces'. Available at: https://h-work.eu/.

[47] Joint Action Mental Health and Wellbeing, available at: https://www.mentalhealthandwellbeing.eu/the-joint-action/.

[48] Joint Action Mental Health and Wellbeing, available at: https://www.mentalhealthandwellbeing.eu/.

[49] European Commission, web portal 'Non-communicable diseases'. Available at: https://ec.europa.eu/health/non_communicable_diseases/mental_health/eu_compass_en.

national activities in mental health through three annual surveys; the production of annual reports; and the organisation of annual forums and mental health workshops. The EU-Compass focused on seven priority areas, with mental health at work being a priority for 2017.

In 2014, the European Commission adopted the **EU Strategic Framework on Health and Safety at Work 2014-2020** (European Commission, 2014a)**,** which emphasises the need to address existing and emerging risks for the physical and mental health of workers, including those associated with the use of new technologies and changes in work organisation such as those brought about by ICTs which allow for constant connectivity. Crucially, the Framework also calls for the better anticipation of future risks as regards occupational health and safety in view of the rapid and on-going technological developments (and their application at the workplace). In the same year, DG Employment published **guidelines on the identification and management of mental health issues at the workplace**, so as to mitigate psychosocial risks and promote employee mental health and wellbeing (European Commission, 2014b). Again, this guidance recognises the important role that technology, work organisation and working conditions play in affecting the mental health and wellbeing of workers. Significantly, it aims to be of practical value to all relevant stakeholders – employers, trade unions, policy makers and occupational health professionals, providing practical tools and examples of good practice.

In January 2017, the Commission adopted its Communication on '**Safer and Healthier Work for All - Modernisation of the EU Occupational Safety and Health Legislation and Policy**' (European Commission, 2017a), where it already highlighted the need to revisit the notion of 'the workplace' and move towards a more dynamic conceptualisation of what can be regarded as a place or work. This is deemed all the more important given the growing number of workers occasionally or regularly working outside of the employers' premises – as a result of enabling technologies and new forms of work such as platform work.

A little later, in November 2017, the **European Pillar of Social Rights (EPSR)** (European Commission, 2017b) highlights the importance of fair working conditions, flexible working arrangements, healthy work-life balance and a healthy, safe and well-adapted work environment. Regarding the latter, the EPSR reaffirms the right of workers to a high level of protection of their health and safety at work (Guillén, and Petmesidou, 2020). More recently, as mentioned earlier, the **EPSR's Action Plan**, published in March 2021 (European Commission, 2021b and 2021c), indicates the Commission's intention to produce within the year a new EU Strategic Framework for **Occupational Safety and Health (OSH)** for the period 2021-2027. This will seek to both update the existing EU legislative OSH framework and address new risks related to the growing use of digital technologies, robotics, artificial Intelligence, etc. at the workplace as well as the current massive expansion of teleworking.

As part of its 2021 work programme **'A Union of vitality in a world of fragility'** (European Commission, 2020l) and building on its 2014-2020 predecessor, the European Commission is expected to bring forward a new **EU Strategic Framework on Health and Safety at Work (2021-2027)** in the second quarter of 2021[50]. This will be presented in the form of a Commission Communication as part of the **Fair Economy Package**. The Communication will define the EU policy strategic orientations for the period 2021-2027 regarding health and safety at work, promoting a complementary approach between company, national and EU levels. According to the relevant **Roadmap** (European Commission, 2020m), this framework could build on the following elements:

[50] EU-OSHA, highlights 21/01/2021 'Public consultation open on the EU Strategic Framework on Health and Safety at Work (2021-2027)'. Available at: https://osha.europa.eu/en/highlights/eu-strategic-framework-health-and-safety-work-2021-2027.

- anticipating and managing change for better and longer working lives;
- preventing work-related diseases and accidents;
- improving the application of EU rules;
- ensuring evidence-based policy; and
- promoting higher safety and health standards in the world.

Significantly, the **new EU Strategic Framework on OSH (2021-2027)** will address occupational health risks emanating from the increasingly fast pace of societal, technological or scientific changes currently under way and exacerbated by the COVID-19 pandemic. These include risks resulting from the ongoing digital transformation of the economy, greater use of automation, robots and artificial intelligence (AI) at the workplace, application of algorithmic management and/or online surveillance techniques, etc. It will also seek to better identify and address the risks and associated occupational health and safety implications of the current rise of teleworking and, more generally, working from home.

In addition to these, a relatively recent development is the lively debate around the **European Parliament's Resolution on the Right to Disconnect** described in Box 8 below.

Box 8: The European Parliament Resolution on the right to disconnect

In 2019, the European Parliament, concerned both about the negative impact of excessive TICTM work on the mental health and work-life balance of workers and the current absence of a relevant European legal framework, indicated in its work programme its intention to prepare an own initiative report on the right to disconnect (Eurofound, 2020g).

On 1 December 2020, the Committee on Employment and Social Affairs adopted a report calling on the European Commission to adopt a legislative proposal for a directive on the right to disconnect (European Parliament, 2020a; 2020b; European Parliament, 2021).

More recently, on 21 January 2021, the European Parliament passed a Resolution (European Parliament Resolution 2019/2181 (INL)) [51] calling on the Commission to draft a directive on the right to disconnect which is deemed a fundamental right and an inseparable part of the new digitally-enabled working patterns. Such a right refers to: '*worker's right to be able to disengage from work and refrain from engaging in work-related electronic communications, such as emails or other messages, during non-work hours*'.

According to the Resolution, employers should not expect workers to be available outside their working time, while co-workers should refrain from contacting colleagues for work purposes. EU Member States should ensure that workers who use their right to disconnect are protected from victimisation and other negative repercussions from employers. They should also ensure there are mechanisms in place to address complaints or breaches of the right to disconnect (European Parliament, 2021). The draft directive called for by the Resolution should also establish minimum requirements for remote working and clarify working conditions, working hours and rest periods.

Source: European Parliament resolution of 21 January 2021 with recommendations to the Commission on the right to disconnect (2019/2181(INL)), available at: https://www.europarl.europa.eu/doceo/document/TA-9-2021-0021_EN.pdf.

[51] European Parliament Resolution of 21 January 2021 with recommendations to the Commission on the right to disconnect (2019/2181(INL)), available at: https://www.europarl.europa.eu/doceo/document/TA-9-2021-0021_EN.pdf.

Finally, at EU level there is a growing awareness of and concern for the increased scope for **employee surveillance and monitoring** associated with the use of new technological devices, digital tools and remote control software. Concern is not only about the increased use of employee surveillance and monitoring either at the workplace or remotely but also about the inimical effects that such intensive and intrusive managerial oversight and control can have on employee mental health and wellbeing. However, despite the burgeoning market and use of employee surveillance and monitoring devices both in the EU and beyond, **EU legislation has not, to date, explicitly addressed their implications for workers** (Eurofound, 2020e). However, compared to the US legislation, EU law already attributes much less surveillance power to employers (Panel for the Future of Science and Technology (STOA), 2020).

To the extent that employee monitoring may encroach on **privacy and data protection rights**, EU legislation can play a role, most notably through its ground-breaking **General Data Protection Regulation** (GDPR)[52]. This entered into force in May 2018 and is applicable in all EU Member States and all countries in the European Economic Area (EEA). The GDPR regulates the collection, use and transfer of personal data and lays out provisions applicable to all forms of data-processing, including employee monitoring – since the latter involves employee personal data processing (Eurofound, 2020e). According to the GDPR, personal data collected for employee monitoring must be demonstrably (Lister, 2020; Woods, 2019, Panel for the Future of Science and Technology (STOA), 2020):

- processed lawfully, fairly and transparently;
- collected for specified, explicit and legitimate purposes and not further processed in a way incompatible with those purposes; and
- adequate, relevant and limited to what is necessary for those purposes.

Member States may introduce – either by law or collective agreements – specific rules for the processing of employee data in the employment context covering a wide range of work-related aspects from recruitment to health and safety to management, planning and organisation of work (Eurofound, 2020e). Moreover, GDPR's reach is quite extensive in that non-EU established organisations are also subject to its provisions for processing personal data for employee monitoring within the EU (Taylor Wessing, 2017).

Significantly, as stressed by the European Fundamental Rights Agency (FRA): '*the GDPR has modernised the pre-existing EU data protection legislation so that it meets the new privacy challenges posed by the development of digital technologies*' (reported in Eurofound, 2020e).

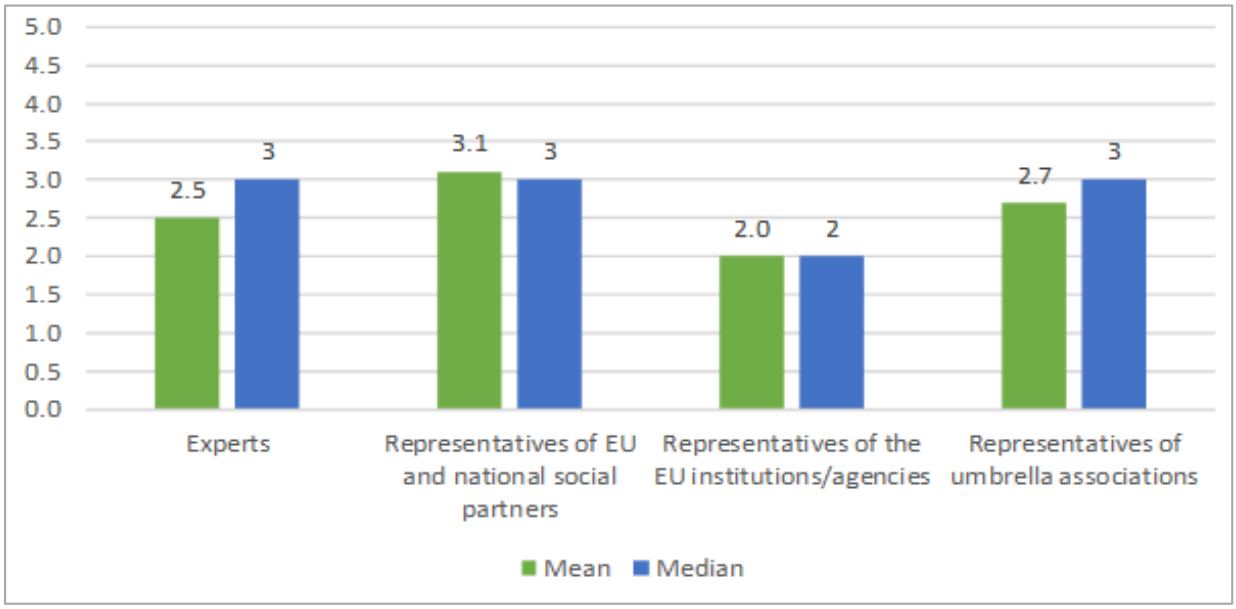
Data Protection Authorities (DPAs) in the EU have also adopted guidelines on employee monitoring and have been adapting these in line with ongoing technological developments. Interestingly, in the face of the teleworking explosion as a result of the COVID-19 pandemic, the **European Data Protection Board (EDPB)** announced in April 2020 its intention to produce guidelines on (i) the use of geolocation and other contact tracing tools and apps; (ii) the processing of health data for scientific research; and (iii) teleworking EDPB, 2020). Crucially, before employee monitoring is introduced, the prior informed consent of the employee is required (Eurofound, 2020e). However, given the economic power asymmetries that exist between employers and workers, FRA also has questioned whether employee consent is valid as a legal basis for employee processing, including for monitoring purposes (Eurofound, 2020e; Taylor and Wessing, 2017). Such reservations were also reflected in the **guidelines of the EDPB** – the successor to Article 29 Working Party (WP29) – on data subject consent adopted in May 2020 (European Data Protection Board, 2020b).

4.1.3. Stakeholders' assessment of EU legislative and policy measures

The **survey** respondents expressed their opinion on the level of adequacy of the strategies already in place, at EU level[53]. The figures below report the average answers according to the role of respondents, on a scale of 1 (=not adequate) to 5 (=very adequate).

Regarding the **strategies already in place at EU level**, none of the respondents believe that they are 'very adequate' (corresponding to rating 5). The average rating is 2.7. The fact that the mean is lower than the median means that the respondents' assessments on adequacy are distributed according to a left-skewed frequency curve, with more low assessments than high ones. As shown in Figure 27 below, representatives of EU and national social partners are more likely to consider the EU strategies already in place adequate, while representatives of EU institutions/agencies are more critical.

Figure 27: On a 1-5 scale, do you think that the strategies covering work related arrangements already in place at EU level are also adequate to face the challenges associated with TICTM work?



Source: IRS web-survey.

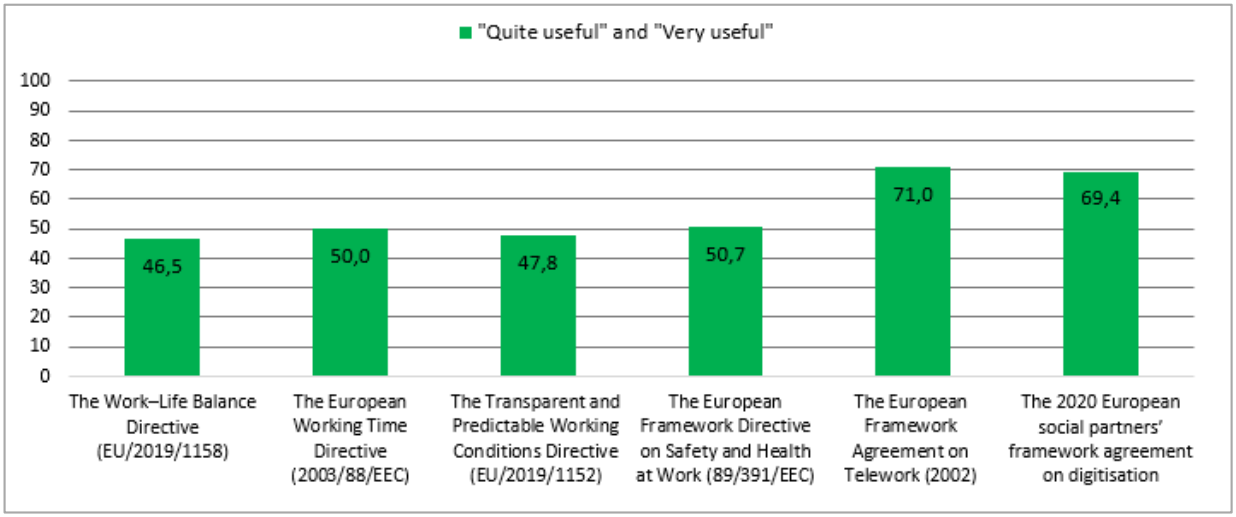
Note: Average index on a scale of 1 =not adequate, to 5 =very adequate according to respondents' role.

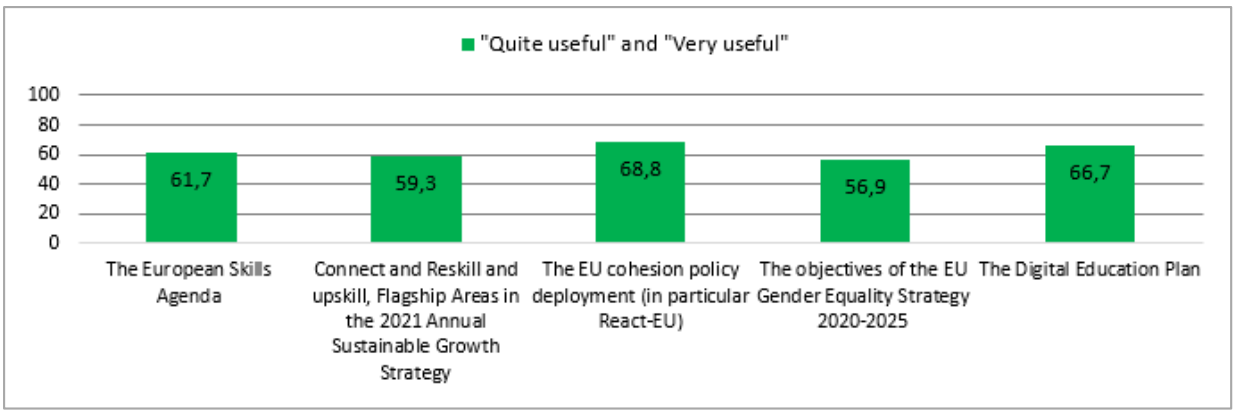
The survey also asked respondents to indicate the **strategies/initiatives already in place at EU level considered more useful for addressing the challenges associated with TICTM work** (Figure 28). The answers show that higher shares of respondents consider the current EU soft tools useful, such as collective agreements and supporting strategies, compared to those who consider the mainstream legislative tools applied to ordinary work environments and work-related issues as useful.

[52] Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation - GDPR), *OJ L 119*, 4.5.2016, pp. 1–88, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R0679&from=EN.

[53] The opinion was expressed on the basis of a 1-5 Likert scale, with 1 indicating "not at all adequate" and 5 "very adequate".

Figure 28: How useful do you think are the following strategies/initiatives already in place at EU level to also face the challenges associated with TICTM work?





Source: IRS web-survey.

Note: For each strategy/initiative respondents had to use the following scale: I do not know it, Not at all useful, Somewhat useful, Quite useful, Very useful. The bars show the shares of respondents who replied 'quite useful' or 'very useful' for each of the strategies/initiatives.

Among the current **European directives, framework agreements and strategies** listed in the questionnaire, those considered 'quite useful' or 'very useful' by the majority of respondents are the framework agreements promoted by the EU social partners, i.e. the *2002 European Framework Agreement on Telework* (71% of respondents) and the *2020 European Social Partners' framework agreement on digitisation* (69.4% of respondents). These were followed by EU programmes promoting investment in broadband and digital infrastructures and social/territorial cohesion, like Cohesion Policy (with 68.8% of respondents considering it quite or very useful), and programmes promoting digital upskilling like the Digital Education Plan (considered quite or very useful by 66.7% of respondents) and the EU Skills Agenda (61.7%).

Conversely, the EU directives regulating working conditions were considered quite or very useful by a lower share of respondents. Interestingly, among these the *Framework Directive on Safety and Health at Work and the Working Time Directive* registered a higher share of respondents who considered them quite or very useful compared to the Work-Life Balance Directive and the Transparent and Predictable Working Conditions Directive. While these results may reflect the composition of respondents and the recent enacting of the Work-Life Balance Directive (making it difficult to properly assess the impact), nonetheless they provide interesting insights into the perceptions of a wide group of EU and national

stakeholders.

The large majority of respondents (81%) agrees that there is a **need for specific strategies/initiatives at EU level** to meet the challenges associated with TICTM work, with experts (92%) registering the highest percentage in that regard.

Among those believing that there is a need for EU intervention, **the majority of respondents (61.4%) consider legislation and directives** to be most needed, although among representatives of the social partners the majority, as expected, opt for soft regulations (40%) and the social dialogue (20%) (Table 10).

Table 10: EU level strategies/initiatives considered most needed by % of respondents

	Legislation/Directives	Soft Regulation*	EU social dialogue	Other	Total
All respondents	61.4	20.0	14.3	4.3	100.0
Experts	62.2	20.0	13.3	4.4	100.0
Representatives of EU and national social partners	30.0	40.0	20.0	10.0	100.0
Representatives of the EU institutions/agencies	100.0	0.0	0.0	0.0	100.0
Representatives of umbrella associations	62.5	12.5	25.0	0.0	100.0

Source: IRS web-survey.

* e.g. Open Method Coordination, peer learning, etc.

The survey also collected a list of **challenges and mitigation measures** suggested by respondents to a specific open question. Table 21 in Annex 7.2 groups them into three main challenges and mitigation measures.

The first group deals with challenges related **to working conditions**: working time, right to disconnect, health and safety issues, including stress levels and mental health, costs of equipment, digital skills, management culture, surveillance and privacy issues. Among the proposed mitigation measures are: the adoption of hybrid arrangements combining remote telework with workplace presence, the right to choose to telework, the right to disconnect, support for improving healthy and safe working conditions (ergonomics and provision of adequate equipment, psychological support, etc.), training for both workers and managers, and setting minimum requirements (*but not too restrictive so as not to make SMEs unlikely to opt for TICTM*).

The second group of challenges deals with the effects of TICTM on **work-life balance**, with a focus on its effects on women's roles in households and the risk of increasing their care burden in the absence of adequate care services. The proposed mitigation measures involve: improving working time flexibility and providing advice on work planning, but also measures to support the gender balance in households and a greater involvement of men in childcare, *without being discriminated against by*

employers and colleagues.

The third group of challenges relates to the **social effects** of TICTM, with a focus on rising inequalities among those who can telework and those who cannot either because of lack of skills, or equipment and space, or type of job. The risks faced by young labour market entrants were also highlighted, as by working remotely, they do not acquire the necessary social skills that are developed from working with colleagues and superiors in a workplace. Another issue raised is the risk of social dumping associated with the use of teleworkers in other (low wage) countries. In this case, the mitigation measures indicated by respondents focus on the need for support measures both for teleworkers and those who cannot telework in terms of hours worked, working conditions, social protection, etc. The need for international rules to avoid social dumping was also raised, as was the need to pay attention to the quality of services provided from remote workers.

Turning to the opinion of the representatives of EU organisations interviewed, most of them consider the current EU legislative framework (e.g. Working Time Directive, Work-life Balance Directive, Directive on Transparent and Predictable Working Conditions) robust and sufficient also for regulating telework, although the debate remains open.

For example, it is generally felt that the Working Time Directive, the Work-life Balance Directive, and the Workplace Directive on minimum requirements for safety and health at the workplace need only some revisions to be adapted to the new context created by digitalisation and TICTM. For example, the Working Time Directive should explicitly mention TICTM work and the Workplace Directive on minimum requirements for safety and health at the workplace should take into account home as a place of work, as well as the co-working spaces that TICTM workers use. A number of issues arise, however, from the way the EU directives are transposed, implemented and complemented by national legislation. To this end, the Commission should issue further clarifications to Member States about the various directives and support them in complementing them with national legislation addressing TICTM work arrangements.

However, other interviewees think that there is need for a more comprehensive European regulation on telework, including minimum requirements for the right to disconnect while leaving to Member States their implementation, given the wide diversity of approaches and measures taken by EU countries on these issues, as shown in sections 4.3 and 4.4. In addition, there is need for the EU to establish specific employee rights that have relevance to TICTM. For example, workers' involvement and representation regarding the health and safety aspects of TICTM and surveillance data, to address the current information asymmetry and inequality between employers and workers as regards surveillance data.

Conversely, representatives of the EU social partners underline the risk of excessive regulation and the overlapping of directives and ask for a greater role of collective agreements. For example, the representative of Business Europe points out that it is not clear how the European Parliament's Resolution about a draft Right to Disconnect (R2D) Directive is going to add to the Working Time Directive, or how is it going to be implemented and overseen. Issues related to the right to disconnect should instead be left to social partners negotiations at EU, national, sectoral, etc. building on the Framework agreements on Telework (2002) and Digitalisation (2020).

The ETUC representatives underlined that future agreements should focus on: the right to choose, equal pay and treatment (also in terms of working hours and right to disconnect) between teleworkers and other workers, and company support for training and equipment needed by the worker, ways to address invasive surveillance and cyber-harassment/violence and protect the privacy of workers. An open issue is, however, the quality of social dialogue and capacity of social partners across Member

States, as there are countries, e.g. in eastern Europe where there is a distinct need to build social partner capacity and EU institutions could have a role on this.

4.2. Policy responses at national level

Reflecting the great diversity of Member States in terms of their institutional, legislative, industrial relations, cultural, contexts together with their different stages of digital development, the national approaches are quite varied. While some countries have introduced legislation directly addressing TICTM and the related work-life balance aspects, others seek to regulate aspects of such work, with no direct link to work-life balance arrangements. In addition, collective bargaining (at national, sectoral and often company level) often plays a significant role in defining provisions and practices related to TICTM.

Given the growing importance and use of teleworking and ICT-based mobile work, it is not surprising that a raft of national policies and laws have been introduced both pre- and post-COVID-19. As two recent reports by Eurofound have highlighted, a number of Member States have developed regulations (and policies) pertaining to TICTM work (Eurofound, 2020a; Eurofound, 2020g). The focus of these regulations has primarily been on linking to improved work–life balance and less (but increasingly) on mitigating the risks and inimical effects of such work on workers (Eurofound, 2020a; Eurofound and ILO; 2017). That said, **only a few Member States (BE, CZ, ES, FR, IT, LT, PL and PT) have legislation which directly links teleworking and ICT-based mobile work with efforts to support better work–life balance** (Eurofound, 2020a).

At the same time, **13 other Member States (AT, BG, DE, EE, EL, HR, HU, LU, MT, NL, RO, SI and SK) have legislation that while seeking to regulate aspects of such work** – mainly in terms of performance – do not link it directly to work-life balance arrangements (Eurofound, 2020a; Eurofound, 2020g). Finally, a few Member States (CY, DK, FI, IE, LV and SE) have no legislation pertaining to teleworking and ICT-based mobile work (Eurofound, 2020a).

In recent years, amidst growing concern about the impact of teleworking and ICT-based mobile work on the mental health and work-life balance of workers, the **right to disconnect** has also started to emerge in legislation, collective agreements and company practices in an attempt to mitigate any negative effects of such work. Such legislation seeks to address the blurred boundaries between work and home life and to safeguard the non-working time of employees. For example, **Belgium, France, Italy and Spain have all introduced legislation which explicitly promotes the use of ICT as a way of supporting flexible working**, associated with the right to disconnect which seeks to protect workers from the potentially negative consequences of being constantly available (Eurofound, 2020g).

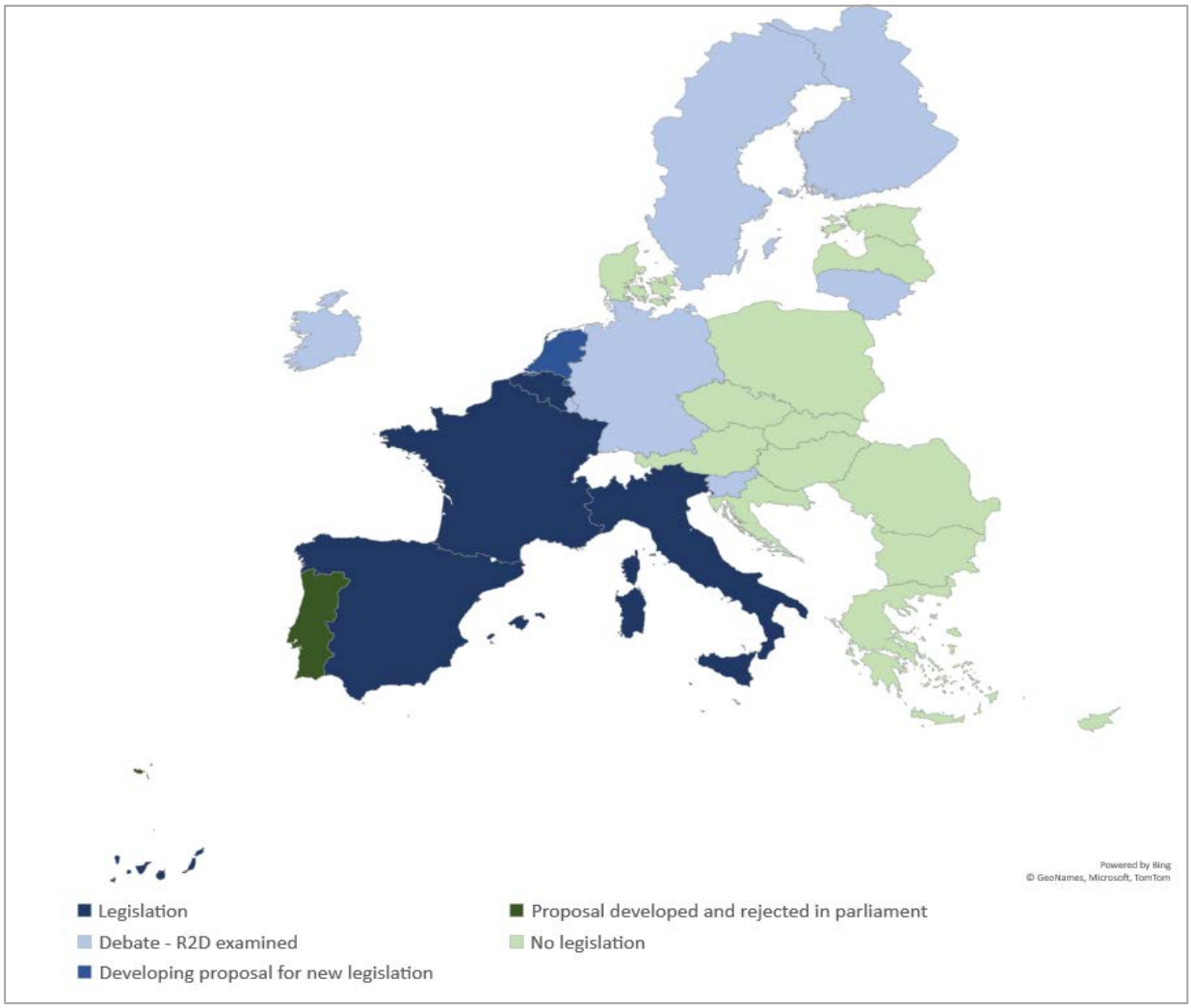
Although these four countries have introduced a legal right to disconnect, **none prescribe the way this right has to be operationalised**. Instead, they **rely on social dialogue**, at sectoral and company level, to determine the modalities of implementation. Moreover, there are differences between these countries regarding which workers are covered by the legislation as well as the existence of a fall-back option should sectoral or company negotiations fail to reach an agreement. For example, in this case the **French legislation** requires the employer to draw up a charter outlining the procedures that employees can follow to exercise the right (Vargas Lave and Weber, 2020a and 2020b; Eurofound, 2020g). Significantly, despite the dearth of evaluations on the impact of right-to-disconnect legislation on work-life balance and health and safety, emerging evidence indicates that '*such provisions have helped **boost collective bargaining on the issue**, resulting in more agreements signed both at sectoral and company levels*' (Vargas Lave and Weber, 2020a).

Other countries which have **proposed legislation in relation to the right to disconnect are the Netherlands and Portugal**; however, the legislative process has been stalling. In addition, in a number of Member States **(DE, FI, IE, LT, LU, MT, SE and SI) there has been a lively debate** about the right to disconnect, with discussions being most advanced in Germany, Malta and Ireland, where legislative proposals were put forward in late 2020. Interestingly, in some of these countries, the debate about the right to disconnect has resurfaced as a result of the surge of teleworking during the COVID-19 pandemic.

Finally, **in the remaining 13 Member States there seems to be no debate** on the right to disconnect. As has been argued, this may be due to the fact that (i) existing legislation is perceived to be sufficient; (ii) TICTM work is not widespread – as is the case in most eastern European countries; or (iii) collective bargaining is preferred in relation to addressing work-life balance aspects – as is the case in Scandinavian countries (Vargas Lave and Weber, 2020a).

Figure 29 below graphically illustrates the great diversity that exists in the approaches taken by the EU Member States as regards the right to disconnect.

Figure 29: Right to disconnect and national legislation: Status in the 27 EU Member States (2020)



Source: Vargas Lave O. and Weber, T., (2020b).

On a related but different note, Czechia, Lithuania, Poland and Portugal have legislation that, although promoting the use of ICT for flexible working and work–life balance, does not address any negative consequences of such work on workers.

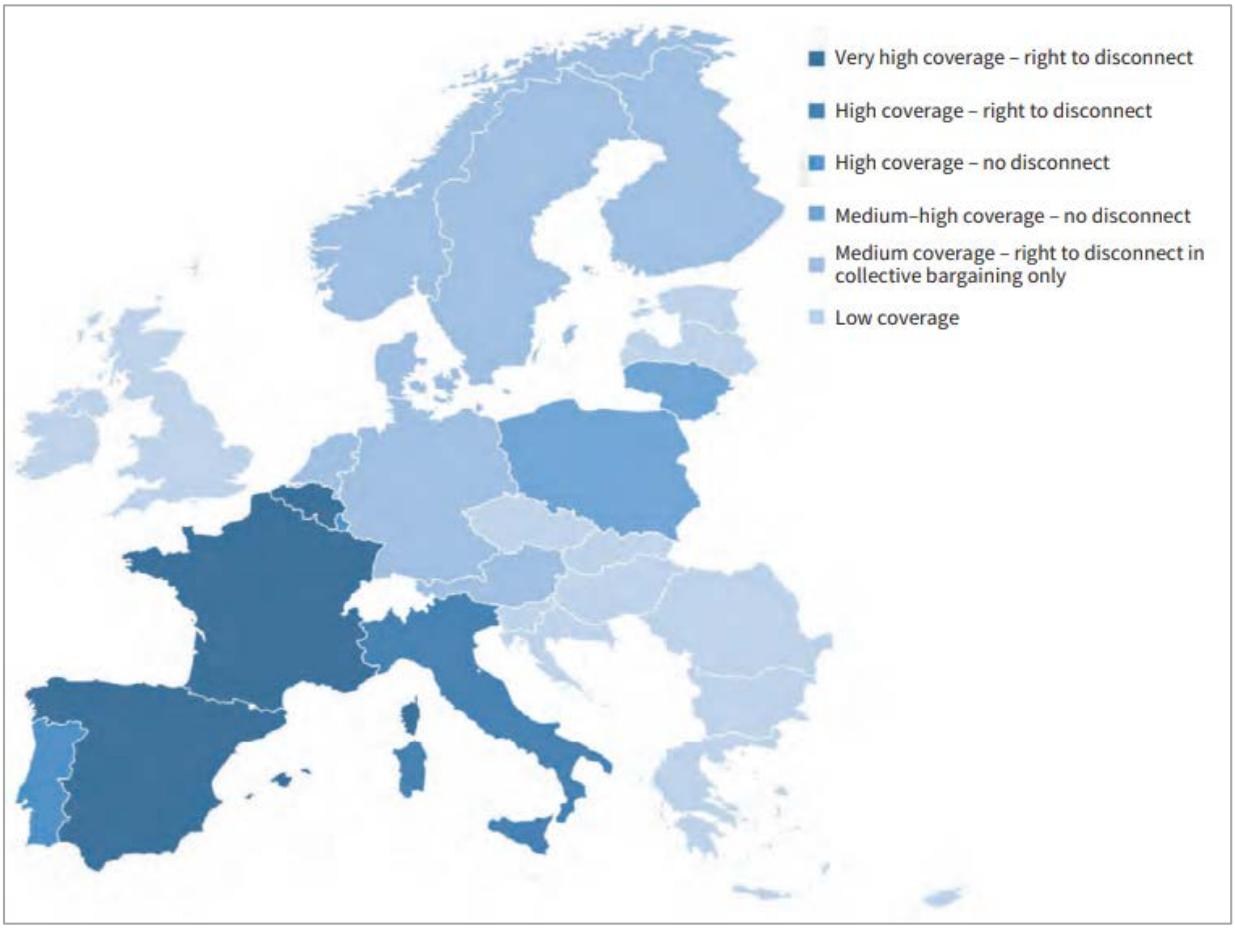
In general, **while the right to disconnect features in the legislation and/or sectoral and company collective agreements in a number of Member States, the use of such provisions, although growing, is not yet widespread (**Vargas Lave and Weber, 2020a).

That said, as recent Eurofound research (Eurofound, 2020g) has highlighted, **21 EU Member States** (AT, BE, BG, CZ, DE, EE, EL, ES, FR, HR, HU, IT, LT, LU, MT, NL, PL, PT, RO, SI and SK) **have adopted binding legislation regulating the availability and (at least some of) the modalities of TICTM**. Interestingly, some Member States such as Denmark, Estonia, France, Germany and Spain, have also incorporated either partially or completely the provisions of the Framework agreement on telework (Eurofound, 2020a).

The coverage of legislation linking provisions on telework and work–life balance also depends on company size thresholds and mechanisms through which provisions are implemented, such as collective bargaining, health and safety committees or direct contractual arrangements between employer and employee. Figure 30 included in Eurofound (2020a) provides a tentative assessment of the extent of coverage of such legislation and collective agreements across the EU.

In view of the above discussion, it is clear that the EU is characterised by a great variety of policies, laws, regulations, legal provisions, etc. that have a bearing on teleworking and ICT-based mobile work. **It is also common for collective agreements** – including at sectoral and/or company level – **to integrate such legal provisions or elaborate them further** (Eurofound, 2020g). In Member States which have no specific legislation for such work, teleworking and ICT-based mobile work is solely regulated by social partners through collective agreements at national, sectoral and/or company level, or through 'softer' measures. For example, reflecting their long-standing tradition of collective bargaining, Denmark, Finland and Sweden have collective agreements in a number of sectors which, in turn, result in a high coverage of workers on such working arrangements.

Figure 30: Approximate coverage of regulations that link teleworking and ICT-based mobile work to work–life balance, Member States



Source: Eurofound, (2020a).

Note: Despite the existence of a national agreement on telework in Greece, which follows the European social partner agreement, it has been ranked as low. This is because the overall use of telework and the practical application of the agreement at company level are considered low.

As mentioned earlier, a number of countries have introduced **legislation pertaining to teleworking and ICT-based mobile work**, either directly focusing on such work or linking it to labour flexibility and work-life balance. For example, as Box 9 below shows, in **Italy**, Law No. 81/2017 introduced the concept of 'smart working' (*lavoro agile*) in the wake of the previous experiences of 'smart working' regulated by the company-level collective agreements (Biasi, 2020). According to this Act, smart working is statutorily defined as 'a manner of performance of the employment contract' arranged by the two parties and featuring: i) the absence of rigid working time or working place limitations; ii) the likely use of high-technology devices and tools; and iii) the performance of the working activity both inside and outside the employer's premises (see Italian Country fiche for details).

Interestingly, *'Law No. 81 of 2017 does not cover all workers, but only so-called 'smart workers'. These employees combine working from their office base with working remotely, in order to balance work and family commitments (or for work-related reasons). The law stipulates that the smart working regime is put in place by an individual agreement between the employer and the worker. 'Smart working' is not conceived of as a stand-alone employment agreement, but as a different way of performing ordinary work, that is a work arrangement'*. (Eurofound, 2020g).

Box 9: Smart working (*lavoro agile*) - Law No. 81/2017, Law No. 27/2020, and Law Decree No. 34/2020 'Decreto Rilancio' (Italy)

Act No. 81/2017 introduces the concept of *'smart working'* (*lavoro agile*) as a working modality bound to targets or steps rather than to pre-set working time and space, one that is intended to boost competitiveness and to promote work–life reconciliation. The Act specifies that smart working should be considered as a modality of subordinate employment relationships, therefore preventing employers from considering 'smart workers' as self-employed.

Smart (agile) working arrangements must be agreed upon through individual agreements that set out the following:

- rules on work performance outside the office;
- methods for ensuring control and disciplinary power by the employer;
- working tools used by the employee; and
- measures ensuring rest and the right to disconnect.

The agreement can be permanent or fixed-term and can be terminated by either party provided the notice period is observed, or there is a justifiable reason.

The act entitles smart workers to receive the same wage and to enjoy the same employment conditions as comparable 'standard' workers in the relevant company. It also delegates collective agreements to introduce further clauses to promote smart working. Finally, smart workers are covered by insurance against accidents at work in their chosen place of work and, with some exceptions, during travel to and from work.

As a response to the COVID-19 pandemic, a **Decree of the Prime Minister was adopted on the 1 March 2020**, based on which employers could allow their workers to telework, even without the individual agreements in writing mandated by Law no. 81/2017. For the limited six-month period of the Decree, Smart Working will be considered as a measure of health and safety at work. In terms of the formal requirements of the simplified Smart Working arrangement, employers should provide the necessary ICT tools for employees to carry out their work remotely. Employers must also send information to their employees about the potential health and safety risks arising from these working arrangements.

Source: ILO, (2020b); Eurofound, (2017).

Another example is **Spain**, where in September 2020 a legislative Act (Royal Decree-law 28/2020, of 22 September) updated the previous 2015 partial regulation of remote work (Royal Legislative Decree 2/2015, of 23 October), as shown in Box 10 below.

Box 10: Teleworking regulation in Spain

Royal Decree-law 28/2020 of 22 September 2020 regulates remote working done on a regular basis, which means at least 30% of working hours over a reference period of three months, or the equivalent proportion depending on the duration of the employment contract.

The decree requires remote working arrangements to be formalised through **written agreements**. It also states that remote working must be **voluntary for the employee** and that any refusal to work remotely will not justify the termination of employment. Furthermore, the decree states that remote workers will have the same rights as on-site workers, e.g. in terms of pay or working hours. Lastly, the decree recognises that a teleworker has the same rights regarding work-life balance. Other teleworker rights included in the decree are the right to training, to career promotions, to have adequate means, equipment and tools for teleworking, to full compensation of expenses, to flexible working hours, to labour risk prevention, to privacy and data protection, to digital disconnection ('right to disconnect') and to collective rights.

Source Mariscal & Abogados Asociados, The Spanish Government approves the regulation for remote working, 2020, https://www.mariscal-abogados.com/the-spanish-government-approves-the-regulation-for-remote-working/; Regojo I., Spain's new decree on remote working, The National Law Review, 24 September 2020, https://www.natlawreview.com/article/spain-s-new-decree-remote-working; Bové Montero y Asociados, The key points of the new law on remote work in Spain, 2020, https://bovemontero.com/en/2020/09/28/the-key-points-of-the-new-law-on-remote-work-in-spain/; Laura delle Femmine, Spain's new decree on working from home – everything we know so far, El Paìs, September 2020, https://english.elpais.com/economy_and_business/2020-09-22/spains-new-decree-on-working-from-home-everything-we-know-so-far.html.

In **France**, teleworking has been regulated by L1222-9 and the Labour Code, while the **right to disconnect** (*droit à la déconnexion)* was introduced in Code (L2242-17) with Loi n° 2016-1088 of 8 August 2016 amended by Ordinance N° 2017-1387. According to this law, which came into force in January 2017, French employers are, in most cases, not allowed to contact their employees after work hours (Fairbairn, 2019). Regarding the right to disconnect, France is the first country to adopt legislation limiting work-related after-hours electronic communication (Secunda, 2019). Due to the COVID-19 pandemic, which forced many workers to work remotely, many clarifications regarding teleworking conditions and the right to disconnect were provided by the Ministry of Labour[54].

In **Romania**, although remote work and telework are not widespread, there are two main legal provisions regulating telework. The **Labour Code** (law53/2003) adopted in 2003 regulates work from home, to be performed only at the employee's residence not necessarily using ICT devices. The **Telework law** (Law 81), adopted in 2018, instead regulates telework for both permanent and temporary, full-time and part-time employment contracts. According to this law, telework is agreed based on a voluntary agreement between the employer and the employee and consists of at least one work day per month from work premises different to those of the employer. As described in the Romanian country case fiche, the law defines all the main aspects of telework to be included in the telework agreement (Barbu, 2019). This legislation is quite general and does not link remote working to work–life balance issues (Eurofound, 2020a). Significantly, the law provides the labour inspectorate with the power to carry out inspections at teleworkers' homes ('workplaces') to check whether labour legislation is respected and the work environment meets the occupational safety and health requirements. Interestingly, workers' representatives also have access to teleworkers' homes in order to verify their working conditions (Eurofound, 2020a).

In **Finland**, as in other Scandinavian countries, there is no specific legislation on telework, and the

[54] Ministère du travail, de l'emploi et de l'insertion, web portal 'Télétravail en période de COVID-29'. Available at: https://travail-emploi.gouv.fr/le-ministere-en-action/coronavirus-covid-19/questions-reponses-par-theme/article/teletravail-en-periode-de-covid-19.

regulatory framework is defined by collective agreements. Within this framework the main approach has been to implement the European Framework Agreement on Telework of 2002 through soft law mechanisms (Eurofound, 2010). In addition, the 1996 Working Hours Act, drafted with the social partners and giving employees the right to adjust their working hours, was revised in 2020 and extended to teleworkers and remote workers (details in the Finnish country report).

In **Ireland**, the approach is mainly based on soft law mechanisms such as guidelines, codes of practice and voluntary agreements (at an organisational rather than sectoral level) (Baltina, 2012). On 15 January 2021, the Irish Government published its **National Remote Work Strategy** which sets out a wide range of actions for this type of work, as described in the box below (Irish Department of Enterprise, Trade and Employment, 2021). On a legislative level, the main measures include developing a **Code of practice for the right to disconnect** and legislating for the right to request remote working (details in the Irish country report). This is expected to provide guidance for both employees and employers with regard to best practice and approaches to employee disengagement outside normal working hours. Significantly, once a statutory instrument, the Code will be admissible in disputes and adjudications (McCann Fitzgerald, (2021). It is also complemented by an employer checklist for those employers considering adopting remote working arrangements in the longer term, and includes guidance on health and safety, terms and conditions, training, equality, returning to work, ergonomics, and work-related stress.

Box 11: Making Remote Work: National Remote Work Strategy (Ireland, 2021)

Recognising the fact that the massive expansion of remote working in the face of the COVID-19 pandemic has brought about a paradigm shift and that such working will remain a feature of many workplaces in the future, on 15 January 2021, the Department of Enterprise, Trade and Employment published Ireland's National Remote Work Strategy. Its objective is to ensure that remote working is a permanent feature in the Irish workplace in a way that maximises economic, social and environmental benefits.

The Strategy is built around three pillars

Pillar One: Creating a conducive environment for the adoption of remote work

Actions under this pillar are aimed at supporting employers and employees regarding remote working. As such, they relate to the rights and responsibilities of employers and employees (e.g. **legislating for the right to request remote working**, and introducing a **code of practice on the right to disconnect**, providing employers and employees with ongoing up-to-date guidance on remote work), health and safety legislation and tax arrangements (e.g. reviewing tax aspects of remote working in Budget 2022).

Pillar Two: Developing and leveraging remote work infrastructure

Actions under this pillar are aimed at investing in appropriate and adequate infrastructure so as to facilitate increased remote work adoption both at home and in hubs (e.g. mapping and investing in a **network of remote working hubs** to underpin the development of the national hubs network, possible acceleration of the **National Broadband Plan** which focuses on high-speed broadband, including delivering connectivity as soon as is feasible across rural Ireland as a central part of remote work infrastructure).

Pillar Three: Building a Remote Work Policy and Guidance Framework

Actions under this pillar are aimed at ensuring policy makers have a shared vision and are supported by the most relevant data to inform evidence-based policy regarding remote working. They include (i) the development/**collection of national data on the incidence and frequency of remote work**, as part of a wider effort to improve data on flexible working arrangements and so provide an evidence base for future policy; (ii) the **setting up of a centralised cross-departmental knowledge base** on the costs and benefits associated with increased remote working to understand impacts on areas such as, employment, transport, carbon emissions, broadband, and equality; and (iii) four-monthly meetings of the **Remote Work Strategy Inter-Departmental Group** to ensure that there is cross-departmental alignment.

These three Pillars are further supported by **three underpinning conditions relating to the promotion and skills** with regard to remote work. First, the strategy also mandates that **public sector employers, colleges, and other public bodies move to 20% home and remote working in 2021**. Second, the strategy highlights the need by the National Hub Network Working Group to raise awareness of existing remote work hub infrastructure in Ireland. Third, the strategy also highlights the need to promote remote work amongst businesses. This includes raising awareness of remote work training and advising on the skills interventions required for the successful adoption of remote work. Businesses should also be advised on best practice in relation to ensuring equal opportunity amongst remote and office-based workers.

Source: [Irish] Department of Enterprise, Trade and Employment, (2021). Making Remote Work: National Remote Work Strategy, 15/1/2021, available at: https://www.gov.ie/en/publication/51f84-making-remote-work-national-remote-work-strategy/.

Following the **outbreak of COVID-19** and the sudden and massive expansion of teleworking and ICT-based mobile work, the legislative landscape relating to such work is changing rapidly across the EU.

For example, on 5 October 2020, the **German** Federal Ministry of Labour launched a legislative initiative for a legal regulation on such work (Simmons & Simmons, 2020; Financial Times, 2020). Its aims are both to ensure workers have the option of working from home when possible and to regulate work performed at home, such as obliging employers to monitor the working and rest times of teleworkers by 'digital time clock' (so as to prevent long working hours and preserve work-life balance) and providing work accident insurance. The **draft Mobile Work Act** (*Mobile-Arbeit-Gesetz*) is intended to provide for a legal entitlement for employees for at least 24 days per year of mobile work. The Ministry of Labour characterises mobile work as 'work that employees perform from a location outside of the actual business premises. Mobile work can either be performed at a location chosen by the employee or at a location agreed upon with the employer (e.g. home office)'. The draft law also distinguishes between occasional and regular mobile work by referring to the latter as 'scheduled recurring mobile work', for example once or several times a week, or twice a month on a certain day of the week (details in the country report).

In **Romania**, following a surge of the COVID-19 pandemic in autumn 2020, two **normative acts establishing a 'teleworking obligation'** on the part of the employer[55] were adopted in November 2020 (Roman and Margas, 2020) and represent a major change in that, to date, teleworking had not been mandatory in the face of the pandemic. Before these acts came into force, it was only recommended that employers ask their employees to work from home with their consent. The new legal provisions mandate public and private sector employers, where possible, to facilitate teleworking/home working during the pandemic (Roman and Margas, 2020; Popescu, 2020). In this case, the employer may agree with the teleworker to use his/her own equipment and materials for home-based work; however, this agreement must be in writing and specify the conditions of use.

The employer must also either issue a decision covering its employees or agree with each employee separately through an addendum to the employment contract as regards the performance of work remotely. Where relevant, the decision/addendum must also be registered in the Electronic Registry of Employees (*registrul general de evidență a salariaților - REVISAL*). Derogating from the general principle of consent, the new regulations grant the employer the right to unilaterally impose remote working on staff. Although such a derogation may be understandable during the current pandemic, it may have unintended adverse consequences when it comes to arranging other aspects of teleworking such as how work performance at home will be monitored by the employer (Popescu, 2020).

Moreover, to ensure that the laws pertaining to teleworking were followed in an effort to contain the spread of COVID-19, on November 10 2020, the Romanian Labour Inspectorate launched a National Campaign aimed at verifying the application of the legal provisions on remote working (Accace, 2020).

The new legal provisions are also likely to change the way the costs of teleworking are shared between employer and remote worker. Previously, when teleworking was not mandatory, this was rarely discussed. However, there is now a growing consensus that employers should contribute to the cost of teleworking (e.g. in terms of covering Internet and electricity fees, rent, etc.) (Popescu, 2020). More recently, Law no. 296 of 18 December 2020 also seeks to promote teleworking in Romania. To this end,

[55] Government Decision no. 935 of 5 November 2020 to amend and complete Annexes nos. 2 and 3 to Government Decision no. 856/2020 on extending the state of alert in Romanian territory starting 15 October 2020 and to establish the measures applied during it to prevent and combat the effects of the COVID-19 pandemic ('GD 935/2020'); and Government Emergency Ordinance no. 192 of 5 November 2020 to amend and complete Law no. 55/2020 on certain measures to prevent and combat the effects of the COVID-19 pandemic and to amend Art. 7a) of Law no. 81/2018 on regulating telework ('GEO 192/2020').

employers can offer up to RON 400 per month to workers who work from home, an amount subject to neither income tax nor social security contributions (Accace, 2021).

Regarding **surveillance and data protection**, National Supervisory Authorities are developing guidelines at national level to advise their governments and telecoms' operators on the best way to comply with data protection rules (EDPB, 2020). For example, in **France**, guidelines from the national Data Protection Authority (*Commission nationale de l'informatique et des libertés/CNIL*) concern a wide range of work-related topics such as the monitoring of internet or e-mail use by employees, monitoring and recording calls, and the combination of video recording or screenshots with recordings of phone conversations (Proust, O. and Crouziet, S., 2020). As has been argued, such guidelines may be used as a basis for implementing new tools such as video-conferencing software to enable employees to continue to work from home.

In some countries, legislation specifically intervenes on these issues. For example, in **Finland**, there is a raft of acts such as the Act on the Protection of Privacy in Working Life which seek to address issues arising from employee surveillance and monitoring[56]. The employer is, for example, required by law to inform employees and jointly agree on the monitoring rules in cooperation negotiations (*yhteistoimintaneuvottelut* or more commonly known *as yt-neuvottelut*)[57]. For example, the use of CCTV monitoring and GPS tracking – which is allowed only during working hours – must be agreed in cooperation negotiations.

In **Ireland**, like other Member States, the main legal principles on such monitoring are informed: (i) at European level, by the GDPR and Article 8(1) of the European Convention on Human Rights (ECHR), which provides a non-absolute right[58] to respect for private and family life and correspondence (Lister, 2020; Woods, 2019; Panel for the Future of Science and Technology (STOA), 2020); and (ii) at national level, by the Irish Data Protection Act 2018[59]. Moreover, on 6 March 2020, the Irish Data Information Commission issued a set of guidelines on COVID-19 and data protection which are also relevant for employers using technological devices to monitor employees working remotely (Irish Data Protection Commission, 2020).

At the **local level**, there are interesting initiatives promoted by local authorities and municipalities to support the creation of co-working spaces. For example, as reported in the Italian case study, the **Municipality of Milan (Italy)** is promoting co-working and near-home working initiatives in new smaller, decentralised spaces/offices/hubs for the municipality employees. It has also signed a local protocol with the social partners (trade unions and trade associations) to promote the use of smart working and co-working by companies throughout the territory, while it is currently supporting the creation of 65 co-working spaces and services in Milan for private sector workers and an interactive map for choosing co-working spaces.

The **Finnish "Työ 2.0" (Work 2.0 Lab)**, is a two-year project launched in December 2019 by the Ministry of Finance, Senate Properties, State Treasury and Government ICT Centre Valtor, to support collaborative and new ways of working in the **public sector** (OECD, 2020c). The Work 2.0 Lab is

[56] For example, the Act on the Protection of Privacy in Working Life, Act on Cooperation within Undertakings, Act on Cooperation in Government Departments and Agencies, Act on Cooperation within Municipalities and Data Protection Act - See Eurofound, (2020g).

[57] The cooperation negotiations come under the Co-operation Act and are relevant for companies with at least 20 employees. See: https://www.tek.fi/en/services/working-life-finland/cooperation-negotiations#:~:text=In%20Finnish%2%20cooperation%20negotiations%20are,individual%20package%20offer%20before%20signing.

[58] This right is not absolute and can be interfered with where it is proportionate for the employer to do so – See McCann Fitzgerald, (2021). *COVID-19: Employee Monitoring and Remote Working*, 23/2/2021, available at: https://www.mccannfitzgerald.com/knowledge/covid-19/covid-19-employee-monitoring-and-remote-working.

[59] [Irish] Data Protection Act 2018, available at: https://www.legislation.gov.uk/ukpga/2018/12/contents/enacted.

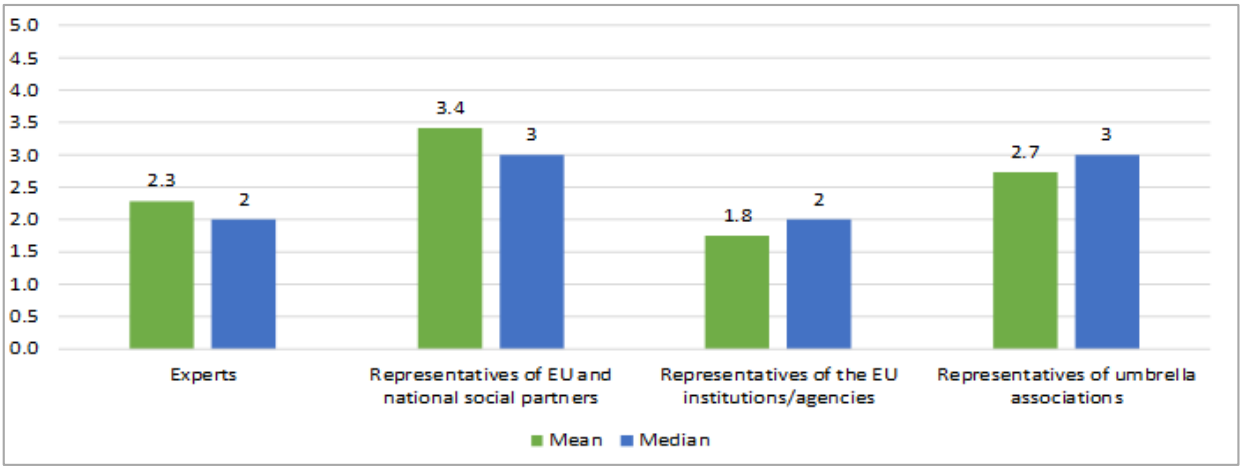
designed to bring actors together for networking, working, attending events and to experiment with creative ways of working and learning collaboratively via the promotion of: i) an Innovation Hub consisting of structures and platforms (environments, spaces, networks, methods); ii) a temporary workspace for individuals; iii) Events and workshops implemented by facilitators in the Lab (see the Finnish case study for details).

4.2.1. Stakeholders' assessment of national policies

The **survey** respondents expressed their opinion on the level of adequacy of the strategies already in place, at national level[60]. The figures below report the average answers according to the role of respondents, on a scale of 1 (=not adequate) to 5 (=very adequate).

The respondents' opinion on strategies already in place at **national level**, is lower than the one for EU level strategies, with a mean of 2.6. However, some of the respondents reported the highest grade (5 - very adequate). As shown in Figure 31, the category that consider the measures in place as most adequate, is that of representatives of EU and national social partners, followed by representatives of umbrella associations. On the contrary, representatives of EU institutions/agencies and experts, professional and academics are those who consider national strategies already in place less adequate for the challenges of TICTM work.

Figure 31: Do you think that the strategies covering work related arrangements already in place at national level in your country are adequate to face also the challenges associated with TICTM work?



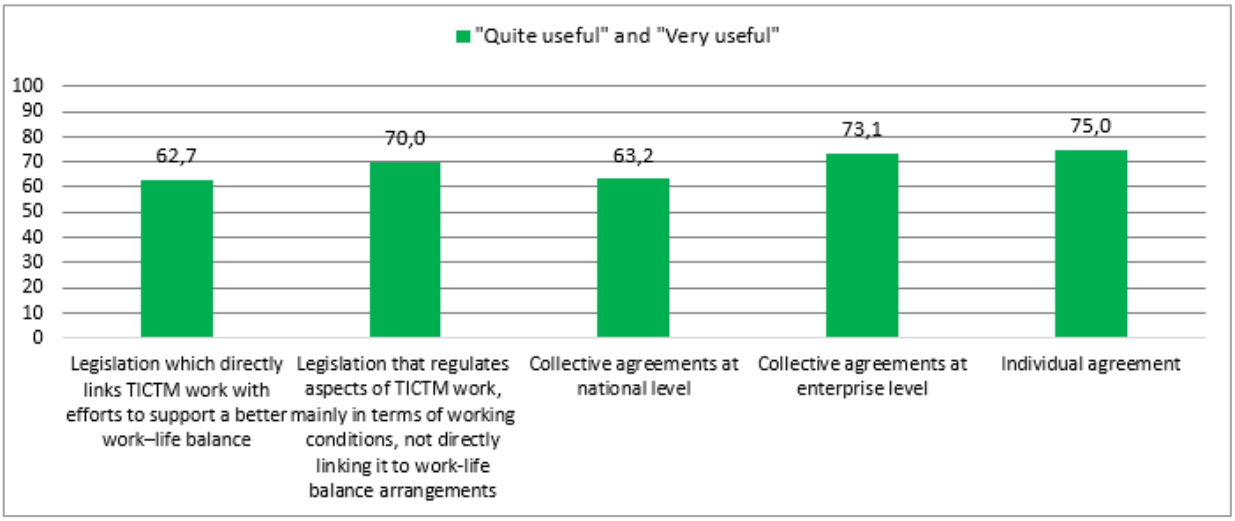
Source: IRS web-survey.

Note: Average index on a scale from 1 =not adequate, to 5 =very adequate according to respondents' role.

Regarding **national measures**, the survey asked respondents their opinion on the usefulness of interventions usually implemented at national level (Figure 32). Again, the group of initiatives deemed more useful by respondents are the *individual agreements*, with a share of 75% for 'quite useful' and 'very useful', followed by *collective agreements at enterprise level* (73.1%), while a lower share believes that collective agreements at national level could be quite useful or very useful (63.2%). Moreover, legislation that regulates aspects of TICTM work, mainly in terms of working conditions is considered quite or very useful by 70% of respondents, while legislation linking TICTM work to work-life balance, is considered useful by a lower share of respondents (62.7%).

[60] The opinion was expressed on the basis of a 1-5 Likert scale, with 1 indicating "not at all adequate" and 5 "very adequate".

Figure 32: How useful do you think are the following strategies/initiatives that can be implemented at national level to face the challenges associated with TICTM work?



Source: IRS web-survey.

Note: For each strategy/initiative respondents had to use the following scale: I do not know it, Not at all useful, Somewhat useful, Quite useful, Very useful. The bars show the shares of the respondents who replied 'quite useful' or 'very useful'.

Less than half of the respondents (49.4%) were aware of any specific initiative(s) implemented at national level to meet the challenges associated with TICTM work. Among those aware of national initiatives, the most often mentioned ones (58.8% of respondents) were regulations on TICTM working conditions, not directly linked to work-life balance arrangements (e.g. protection from employer surveillance, right to disconnect, working hours, etc.), followed at a distance by collective agreements at national level (mentioned by 17.6% of respondents) and company level (mentioned by 11.8% of respondents).

4.3. Response of social partners and collective bargaining at EU, national and company level

At EU level, European social partners have negotiated two autonomous framework agreements that are important for regulating TICTM work. The **European Framework Agreement on Telework (2002)**[61], defines telework, gives teleworkers the same rights as those working on employer premises and '*remains the main reference document at cross-industry level related specifically to telework*' (Eurofound, 2020g). This agreement provides a general framework for teleworking implemented across the EU through social partner agreements, collective agreements, national legislation, guidelines and codes of good practice[62]. This diversity of implementation modalities, although in line with the specific national institutional framework, industrial relations' systems and degree of digital development, has, inevitably, resulted in great variability of its applications across countries (Eurofound, 2020f).

Visser and Ramos Martin (2008) in their assessment of the implementation of the Framework Agreement in EU Member States up to 2007, identify **three main clusters of countries according to**

[61] ETUC, UNICE, UEAPME & CEEP, (2002). *Framework Agreement on Telework*, 16/7/2002, available at: https://resourcecentre.etuc.org/sites/default/files/2020-09/Telework%202002_Framework%20Agreement%20-%20EN.pdf.

[62] ETUC, UNICE, UEAPME & CEEP, (2006). *Joint Press Release: European Social Partners Present the Results of the Implementation of the European Telework Agreement*, 11/10/2006, available at: https://www.etuc.org/en/pressrelease/european-social-partners-present-results-implementation-european-telework-agreement.

the prevalent labour market regulation system. A first cluster included Scandinavia, the UK, the Netherlands, Germany and Austria, but also Italy and Spain. In these countries, guidelines and agreements have been the prevalent way adopted to implement the 2002 Telework Agreement. In the second cluster (Belgium, Luxembourg, France, Greece, Portugal, Poland, the Czech Republic, Hungary, Slovakia and Slovenia) the main tool was legislation, usually based on or preceded by a national agreement or by consultations with the social partners. Overlaps between the legal and collective bargaining instrument are present in Belgium, France, Greece, Spain and Italy (when considering draft legislation for the public sector in Spain and prior legislation in Italy). A third cluster is composed of the three Baltic States, Malta, Cyprus, Bulgaria and Romania, where the implementation process was not completed or, in some cases, even started.

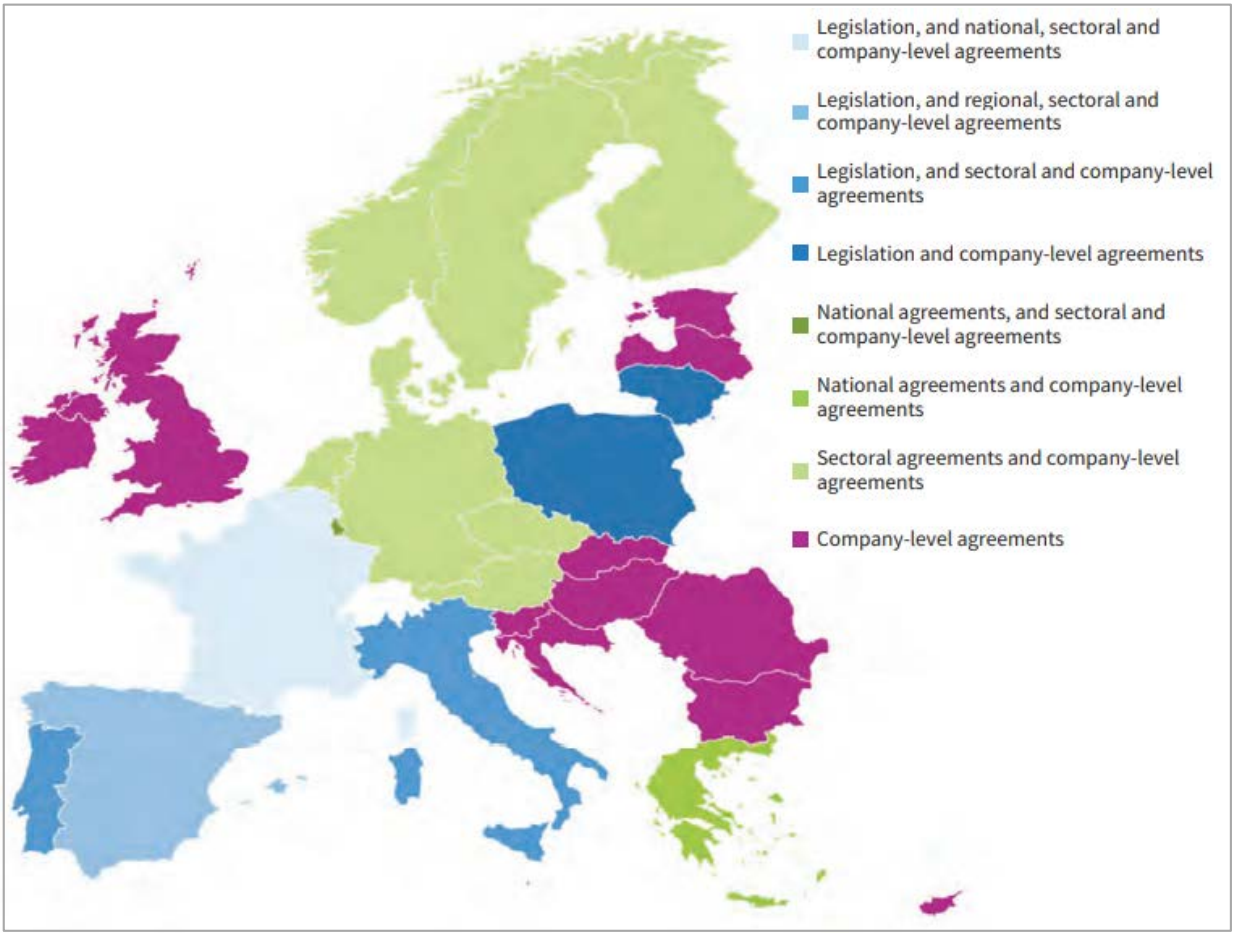
As well as a number of additional sector-based agreements, the 2020 **European Social Partners Framework Agreement on Digitisation**[63] addresses some of the more recent challenges emerging from telework/ICT based working relating to: digital skills' training and upskilling to foster employment, connecting and disconnecting, artificial intelligence and principle of human control over machines, and employee surveillance. To this end, it urges employers to, *inter alia*, create a management culture that avoids out of hours contact, agrees with their staff on working hours that support a healthy work-life balance and respects working time rules as well as protects their workers' health and safety. As has been argued, '*although it does not specifically establish a 'right to disconnect', it does set out how such a right can be guaranteed*' (Lynch, 2020). Interestingly, this EU-wide framework agreement covers both public and private sectors and all economic activities, including those using online platforms, where an employment relationship exists as defined nationally.

At national level, collective agreements, including sectoral and/or company level agreements, are important instruments to regulate TICTM, especially in countries such as Denmark, Finland and Sweden with no specific legislation for teleworking and ICT-based mobile work.

In most countries, **collective agreements are the main instrument of shaping the TICTM arrangements** and the link between such work and work–life balance arrangements in practice. In countries with relevant legislation, the latter is usually supplemented with collective bargaining at various levels. In countries with a sectoral bargaining tradition, the relevant provisions tend to be further enhanced through company-level bargaining. To this end, **sectoral and/or company agreements play a significant role in central Europe** (Austria, Germany), **the Netherlands and in Nordic countries** (Denmark, Finland and Sweden) (Eurofound, 2020g). As indicated by Figure 33 below and pointed out in a recent Eurofound report *'national, sectoral and company-level collective agreements play a significant role where specific legislation provides the highest level of regulation for work–life balance. This is particularly true in Belgium, France, Italy and Spain, and to some extent in Portugal*.' (Eurofound, 2020a).

[63] ETUC, Business Europe, CEEP, SME United (2020) European Social Partners' Framework Agreement on Digitalisation, available at: https://www.etuc.org/system/files/document/file2020-06/Final%2022%2006%2020_Agreement%20on%20Digitalisation%202020.pdf.

Figure 33: Highest level of regulation linking teleworking and ICT-mobile based work with work–life balance, by Member State



Source: Eurofound, (2020a). Telework and ICT-based mobile work: Flexible working in the digital age, available at: https://www.eurofound.europa.eu/sites/default/files/ef_publication/field_ef_document/ef19032en.pdf.

Note: Green countries have sectoral or national collective agreements, blue countries have legislation and pink countries only have company-level agreements.

For example, in **Sweden**, in recent years social partners have implemented bi-partite collaborations seeking to address adverse effects of remote working on workers (Eurofound, 2020a). One example is the joint collaboration – named 'sustainable working life' (*Hållbart arbetsliv)* – the focus of which is on white-collar workers in the public sector. To this end, *Partsrådet*, a bi-partite council for workers and employers in the public sector initiated a bi-partite collaboration the results of which are shown in Box 12 below.

Box 12: Remote work agreements in the public sector in Sweden

The social partners in the public sector in Sweden have agreed that in case of ICT-based remote work (which is common in the public sector), workers and employees can sign a "remote work agreement", a so-called *distansarbetaravtal*. It applies the European framework on telework. A remote work agreement includes:

- Indications of the duration of the agreement;
- How many days a week the worker works remotely;
- Working hours (usually according to local or central collective agreement);
- Availability (touching on the R2D);
- The tasks that the employee must perform remotely;
- Equipment;
- Insurance; and
- Responsibilities/areas.

Source: Eurofound, (2020g).

Inter-professional agreements on telework have been recently signed in some European countries and represent interesting examples of possible future trends in collective agreements. An example is the **French National Inter-professional Agreement on Telework** signed on 26 of November 2020 by three employers' organisations (MEDEF, CPME and U2P) and four of the five main trade union confederations (CFDT, FO, CFE-CGC, CFTC). Only the CGT refused to sign. As shown in Box 13 below, the Agreement emphasises the importance of collective negotiations between employers and trade unions for the implementation of new teleworking arrangements, rather than setting prescriptive or normative binding rules.

Box 13: The French National Inter-professional Agreement on Telework

The Agreement recommends the adoption of collective agreements at company level or an employer's charter after consultation with the Works Council (in the form of the Social and Economic Committee – *Comité social et économique (CSE)* – the new employee representative body which came into force in January 2020 and which is the successor to the Works Council)[64]. These arrangements should specify terms and conditions of teleworking, how employees formally notify acceptance of teleworking, the employee monitoring system, the frequency of remote working and the working hours. Telework could also be implemented on the basis of a mutual agreement between the employer and the employee. In exceptional circumstances, such as during a pandemic, employers can unilaterally resort to teleworking. It remains at the employers' discretion to decide which activities and tasks can be performed remotely. For this reason, the Agreement suggests that employers should define the criteria required to identify and map out jobs that can be performed remotely, and that this process should be subject to discussions with workers' representative bodies or directly with employees.

The Agreement also confirms the employee's right to disconnect and the need for a clear distinction between work and leisure time, so that an employee cannot be sanctioned for not being available after his/her normal working hours. In addition, recalling that under French Law the employers must control employees' workload and work environment conditions, the Agreement affirms that surveillance and monitoring systems must comply with the principles of loyalty and proportionality between the goal sought and the restrictions on individual rights. Employees must be informed in advance of any monitoring methods to be used, and the employees' representative body must be informed and consulted prior to their implementation. No permanent monitoring system is allowed to control remote work. Employers must also take all measures to protect confidentiality and all data used by the teleworker (in compliance with the EU GDPR). Teleworkers should receive guidelines concerning data confidentiality rules and protocols should be implemented to ensure data confidentiality and to secure access to company servers.

As regards health and safety (H&S) issues, the Agreement states that teleworking should be included in the company's mandatory risk assessment approach specified in Article L. 4121-1 of the French Labour Code, with a specific focus on the risk linked to possible social isolation. Moreover, employers must inform teleworkers of the company H&S policy, particularly regarding the use of computer screens and workplace/workstation ergonomics. Any accident occurring during teleworking is considered as work accident and must be declared to authorities as such.

Lastly, the Agreement provides that the employer should cover any expense incurred during teleworking on his/her behalf and that the costs to be covered should be negotiated between the social partners. Moreover, teleworkers should receive specific training to better adapt to the nature of teleworking.

Source: Ragu A., Artus C., COVID-19: Paris Employment Newsletter – Remote Work: What is New in 2021?, January 2021, https://www.natlawreview.com/article/covid-19-paris-employment-newsletter-remote-work-what-new-2021; IOE, French social partners sign a new interprofessional agreement on telework, Industrial Relations and Labour Law Newsletter, December 2020, https://ioewec.newsletter.ioe-emp.org/industrial-relations-and-labour-law-december-2020/news/article/french-social-partners-sign-a-new-interprofessional-agreement-on-telework; Boring N., Telework and the French "right to disconnect", August 2020, https://blogs.loc.gov/law/2020/08/telework-and-the-french-right-to-disconnect/; Noone J., French social partners sign national interprofessional agreement on teleworking, January 2021, available at: https://josephnoone.com/2021/01/07/french-social-partners-sign-national-interprofessional-agreement-on-teleworking/.

In **Luxembourg**, telework is also governed by an interprofessional agreement concluded in 2006 between employers' representatives (*UEL - Union des entreprises luxembourgeoises*) and the nationally representative unions Independent Luxembourg Trade Union Confederation (*Onofhängege Gewerkschaftsbond Lëtzebuerg – OGB-L*) and Luxembourg Confederation of Christian Trade Unions (*Lëtzebuerger Chrëschtleche Gewerkschaftsbond – LCGB*). Interestingly, the OGBL is currently looking to renegotiate this interprofessional agreement with the employers, especially with regard to the right to disconnect where the union is seeking to either clarify or add an explicit definition of this right (Independent Luxembourg Trade Union Confederation, 2020).

Belgium represents a very interesting case, in that its labour law has historically differentiated between (i) *structural telework*, regulated by Collective Labour Agreement (CLA) No 85, and (ii) *occasional telework*, regulated by the Act on Workable and Agile Work. However, in view of the massive expansion of teleworking due to the current pandemic, a third category of remote work has been added: *COVID-19 telework*, for which a new legal framework has been created (De Wolf and Soetens, 2021; Wauters, 2021). To achieve this, on 26 January 2021, the National Labour Council has recently concluded CLA No149 (see Box below for a description).

[64] Dumas Structure Avocats, web entry 24/09/2019, 'Obligations towards the social and economic committee (CSE) in French simplified joint stock companies of more than 50 employees'. Available at: https://www.dumas-structure.net/obligations-towards-the-social-and-economic-committee--cse--in-french-simplified-joint-stock-companies-of-more-than-50-employees_ad148.html.

Box 14: Collective Labour Agreement (CLA) No 149: COVID-19 Telework (Belgium, 2021)

The unexpected and massive surge of teleworking following the outbreak of the COVID-19 pandemic highlighted the lack of a legal framework for remote work that does not fall under the two categories – structural and occasional telework – historically regulated in Belgium. Responding to the absence of such a framework, on 26 January 2021, the National Labour Council concluded CLA No149, which is a supplementary CLA: Where no other structural or occasional telework arrangements are in place, this imposes a number of obligations on the company as regards mandatory or recommended remote working due to the COVID-19 pandemic, including provisions for employee health and well-being.

For companies with no structural or occasional telework regime in place, CLA No 149 includes a reference framework so that they can make the necessary arrangements to both facilitate COVID-19 related teleworking and safeguard their employees' well-being.

According to CLA No 149, employers have an obligation to (i) inform employees and (ii) produce written agreements on certain aspects of mandatory teleworking.

These arrangements can be included in a collective bargaining agreement, the work rules, an individual agreement with the employee, or in a policy. In any case, the rules on social dialogue must be respected.

In contrast to the rules regarding structural telework, CLA No 149 does not impose an *obligation* to contribute to connection or equipment costs. However, if no such reimbursement is paid, the parties must explicitly agree in this regard, so as to avoid an employee claiming an expense allowance afterwards.

CLA No 149 is aimed at employers with no telework policy in place. As has been argued, if these do not comply with its provisions, they risk (i) claims for contributions to telework costs, (ii) discussions with the occupational accident insurer - in case of an occupational accident - and (iii) a penalty for not complying with a generally binding collective bargaining agreement.

Source: Deloitte Legal (2021); Wauters, E. (2021).

Conversely, in **Anglo-Saxon and some Baltic and eastern European countries**, **company level initiatives and agreements** predominate in the case of multinationals and large companies, often prompted by the experience of distance working during the COVID-19 pandemic. For example, in **Romania**, companies have taken several measures to ensure the effective implementation of telework and to mitigate its negative effects, including: i) training and exchange of competences on soft and digital skills among managers and employees; ii) free psychological and coaching services to protect employees' wellbeing and to support them to better address any problems that may arise from teleworking; iii) flexibility in the employees' work schedule to allow them to better balance work and personal life; and iv) free babysitting services for employees with small children to allow them to better balance work and personal life.

Box 15: Examples of companies' teleworking agreements

Bayer Italia has signed an agreement with the main Italian trade unions (Filctem-Cgil, Femca-Cisl and Uiltec-Uil) called 'Next Normal', valid from 1 April 2021. Motivated by the Italian legislation on 'smart working' described in Box 9 above, the company is committed to introducing 'smart working' arrangements without limits for white collar workers, following a pilot phase until the end of 2021. The agreement is based on the voluntary principle, allowing white-collar workers to perform their tasks wherever they want and adopting a flexible management of their working hours and places. HR managers and workers will work at the office for some of their working time in order to facilitate the communication between team members and to maintain the sense of belonging. The agreement also provides for the training of teleworkers in digital and soft skills; includes health and safety protocols, as well as protocols for the management and organisation of teleworking activities, work-life balance, and the right to disconnect. Employees will be provided with the necessary equipment to perform work outside the office (laptop, mouse, headphones, and ergonomic chair) and with a meal voucher. Conversely, the worker will have to bear the cost of internet connection and must ensure that an adequate one is available in the remote workplace.

Siemens in July 2020 announced that it will allow 140,000 of its 385,000 world-wide employees to permanently work remotely two or three days per week. The company said that 'the coronavirus crisis has shown that working independently of a fixed location offers many advantages and is possible on a much larger scale than initially thought' and that the global staff survey they have conducted on the topic shows that teleworking is preferred by many employees as it allows more flexibility. Furthermore, the company specified that 'mobile work' does not necessarily imply working from home, but workers will be able 'to choose the work location where they will be most productive', such as co-working spaces, and that the company will change its leadership style, thus focusing more 'on outcomes rather than on time spent at the office'.

The **Suez Group**, a French utility company, on 10 November 2020, signed an agreement on teleworking with the company's trade unions (France's Trade Union CFDT, CE-CGC, CFTC and FO), which will involve about 35,000 employees throughout France. The agreement followed an internal survey in May 2020, where employees welcomed teleworking and expressed their desire to make it sustainable in the longer term. The agreement is based on the principle of telework being voluntary and is available to all employees that can telework, regardless of seniority or employment contract. To this end, it introduces the possibility of teleworking at an average rate of two days per week. Workers wishing to benefit from the agreement must submit a formal request to their manager showing that they meet the eligibility requirements (compatible workstation, home that allows teleworking, certificate of comprehensive home insurance that covers home working). Planning of teleworking days will be shared with the relevant manager. Lastly, an employee who works partly at home will enjoy several cash and in-kind benefits. The company will also offer ICT-based solutions to teleworkers that guarantee respect for privacy.

The **PSA Group** started the facilitation of remote working well before the pandemic, so that in 2019, nearly 18,000 employees regularly or occasionally adopted this mode of work – reaching 38,000 during the first COVID-19 wave in spring 2020. In January 2020, the company signed an agreement with employee representatives on 'engagement and well-being' which includes measures to increase the number of remote working days, from 25 to 30 per year, an experiment with remote working for HR managers and a strengthening of the right to disconnect. A new working plan, called 'New Era of Agility', was implemented in May 2020 encouraging a 'greater complementarity between remote work with collaborative and collective experiences on the company sites' to strengthen

teleworking and to make it the benchmark for activities not directly related to production. Furthermore, the company will proceed with monitoring and improving remote work conditions with the social partners.

A mobile working agreement has been in force since the end of 2017 in a **German textile manufacturing company** and was updated in the middle of 2020. This agreement provides that mobile working can be used all day or for part of the day and must be discussed with the supervisor or the team following an informal procedure. Nevertheless, operational issues have priority and thus employees were not granted the right to a fixed home office day in the company agreement on mobile working. In addition, the company agreement also stipulates that mobile employees only have to be available during agreed times and that there is no further obligation to be available more widely.

Source: Kelly J., Siemens says that 140,000 of its employees can work from anywhere, Forbes, 27 July 2020, https://www.forbes.com/sites/jackkelly/2020/07/27/siemens-says-that-140000-of-its-employees-can-work-from-anywhere/?sh=124fec326a44; Reuters, Siemens to let staff spend less time in the office permanently, 16 July 2020, https://www.reuters.com/article/us-health-coronavirus-siemens-idUSKCN24H1FI; Ardill L., Siemens rolls out "mobile working" plan for more than 140,000 employees, 22 July 2020, https://www.siliconrepublic.com/careers/siemens-remote-working-plan; Hockett M., Siemens announces remote work as permanent fixture for 140,000 employees, calls it part of "new normal", 28 July 2020, https://www.thomasnet.com/insights/siemens-announces-remote-work-as-permanent-fixture-for-140-000-employees-calls-it-part-of-new-normal/; Suez Group, Suez and France's trade unions CFDT, CE-CGC, CFTC and FO sign a telecommuting agreement, 13 November 2020, https://www.suez.com/en/news/press-releases/suez-and-france-s-trade-unions-cfdt-ce-cgc-cftc-and-fo-sign-a-telecommuting-agreement; Eurofound (2020a); Suez: Agreement on telework, case FR-2020-46/1466 (measures in France), COVID-19 EU PolicyWatch, https://static.eurofound.europa.eu/covid19db/cases/FR-2020-46_1466.html; Groupe PSA, Groupe PSA presents its new principles of working methods, 6 May 2020, https://www.groupe-psa.com/en/newsroom/corporate-en/new-era-of-agility/; Teller Report, Boosted by containment, telework will be encouraged at PSA, 7 May 2020, https://www.tellerreport.com/life/2020-05-07-boosted-by-containment--telework-will-be-encouraged-at-psa.HkGr_N8-5L.html; Groupe PSA, Motivation and well-being at work: Groupe PSA is committed, 2020, https://www.groupe-psa.com/en/careers/working-at-psa/well-being-at-work-agreement/.

It is worth adding here that, although the current massive expansion of teleworking and mobile working has rekindled the debate about the right to disconnect and set in motion legislative proposals such as the one proposed in the recent European Parliament's Resolution, a number of **companies have been limiting the out-of-hours contact for their staff for some time**.

For example, as far back as 2015, the French multinational Thalès concluded a group-level agreement providing remote workers the right to disconnect outside normal company opening hours (Holman Fenwick Willan LLP (HFW), (2017). Likewise, Orange (former France Telecom) has been one of the first companies that in 2016, concluded a group level agreement on working conditions where the right to disconnect was recognised as a fundamental right (Holman Fenwick Willan LLP, 2017; Eurofound 2020g).

Other companies which have put restrictions on employees' use of email outside normal working hours include Daimler, BMW (2014), Siemens, Puma, Allianz France, BNP Paribas, the French insurer Axa, the nuclear power company Areva and Atos (Eurofound, 2020g; Holman Fenwick Willan LLP (HFW),2017); Secunda, 2019). Daimler in Germany takes a particularly radical approach on connecting and disconnecting for work purposes: it has developed a software called 'Mail on Holiday' which automatically deletes incoming emails when an employee is on vacation, and sends an auto-reply to the sender letting them know that the recipient is out of the office, the email will be deleted, and provides the contact information of another employee for urgent matters (Fairbairn, 2019).

As Box 16 below highlights, car manufacturer Volkswagen has been one of the earliest adopters – and reportedly the first company in Germany – to implement a company-wide ban on out-of-hours emails

(Eurofound, 2020g).

Box 16: Company-level agreement on the right to disconnect at Volkswagen, Germany

Volkswagen is reportedly the first company in Germany to implement a company-wide freeze on out-of-hours emails in 2012 following a group level agreement – signed in 2011 – between its Works Council and management. The so-called 'regulation on the use of smart phones' was driven by the realisation by worker representatives that the significant increase in the use of smart devices both at home and in the workplace could lead to longer working hours, higher levels of stress, and poor work-life balance, all of which are detrimental to employee health and wellbeing. Although the agreement makes no specific reference to teleworking and/or mobile working as such, covering all Volkswagen workers, it is also relevant to teleworkers.

The agreement stipulates that managers and senior technical experts can use smartphones at any time whereas for other workers the connection between the server and the smart phone is disabled between 18:15 and 7:00. Workers can use the phone function but cannot receive emails, text messages or video calls.

When comparing the numbers of managerial and high-level expert staff to the rest of Volkswagen workers, one can assume that the right to disconnect applies to around 80% of the workforce.

Assessments show that the most Volkswagen workers appreciate the right to disconnect they enjoy as part of this collective agreement, although some would prefer more flexibility and control over their working hours. However, the Works Council preferred the 'server hard shutdown' adopted in order to avoid workers worrying that making use of the right to disconnect would brand them in the eyes of management as not 'being ambitious'. Crucially, surveys show high levels of job satisfaction and low levels of stress among those covered by the collective agreement.

Source: Eurofound, (2020g); European Commission and Eurofound Webinar on the right to disconnect (2020). There are also examples of company initiatives, as in the case of l'Oréal described in the box below, aiming to prevent domestic violence and sexual harassment using digital technologies that are particularly important for female teleworkers.

Box 17: L'Oréal and the domestic violence issue during the pandemic

L'Oréal has promoted the workplace as a key place to provide support for victims of domestic violence, as they are often being cut off from their circle of friends, or their family, by their abusive partner. The company has expressed its support to the ILO Violence and Harassment Convention by taking part in a campaign, launched by the Human Rights Watch Association, urging France to fight sexual harassment and violence at work by speeding up its ratification.

The company management was concerned about the risks of domestic violence that could be faced by their female teleworkers during lockdowns. They asked ILO for guidelines on what they can do as a private company, in order to provide time for victims to seek proper support, for instance pretending that they are at the workplace or allowing these women to continue to go to the offices.

Furthermore, L'Oréal, to directly help struggling women, created a €50 million charitable fund to support field organisations and local charities in their efforts to fight poverty among women, help women achieve social and professional integration, provide emergency assistance to refugee and disabled women, prevent violence against women, and support victims of domestic violence.

Source: L'Oréal, L'Oréal announced the creation of its program L'Oréal For the Future, available at: https://www.loreal.com/en/adria-balkan/articles/commitments/l-oreal-for-the-future-bh/.

Another interesting case in this respect is the **Spanish protocol to prevent workers' digital**

harassment signed in Spain in 2019 and described in Box 18 below.

Box 18: The Spanish protocol to prevent digital harassment of workers

In 2019, the Spanish Data Protection Authority (AEPD) published, in December 2019, a protocol on the prevention of digital harassment in private sector companies and public sector organisations. It was then signed by different government agencies and ministries, which also involved agreements with the major players in the digital world (e.g. Facebook). The AEPD is firmly committed to promoting actions aimed at preventing and eradicating all types of digital violence that makes use of data and affects the dignity, freedom and privacy of individuals. For instance, in cases in which the conduct constituting sexual harassment involves the dissemination of images or videos that seriously threaten the privacy of the affected person, the AEPD will urgently take the appropriate precautionary measures to stop the dissemination of such files. Furthermore, the AEPD stated that the recommendations suggest a declaration of commitment by the responsible party to prevent and eradicate digital harassment, and that once the position of the company is defined, it would be essential to adopt specific measures aimed at preventing cyberbullying, to establish employee training on the matter, and to implement measures aimed at the eradication of digital harassment.

The protocol also provides a resolution procedure of sexual harassment situations inspired, among others, by these principles:

1) Any employee/or member of the public has the obligation to inform her/his hierarchical superiors of cases of possible sexual harassment that she/he knows.

2) Any employee has the obligation to inform her/his superiors when he/she learns about the use of personal data that contribute to a situation of sexual or gender-based harassment, especially in relation to the communication and dissemination of videos and images with sexual content.

3) The person affected by a behaviour likely to constitute sexual harassment may report it to the organisation and will have the right to obtain an answer. The AEPD must always record the complaint, even when the facts are reported verbally, as well as everything that took place in the resolution procedure on sexual harassment.

4) The dignity of people and their right to privacy must be guaranteed throughout the entire resolution procedure on sexual harassment, as well as equal treatment between women and men.

The agreement was implemented following a tragic case that occurred at Iveco in Spain. Specifically, the wide dissemination of private photos and messages inside the company resulted in the female employee involved experiencing harassment and suffering shame. These were not adequately considered by the management, resulting in the woman's suicide. The legal response of the company was that, while work-related sexual harassment is forbidden by law, the use of social media must not be considered as being strictly work-related.

Source: Valdés I., Spanish woman takes her own life after work colleagues share her sex video, El Paìs, 30 May 2019, available at: https://english.elpais.com/elpais/2019/05/30/inenglish/1559225998_539688.html; Valdés I., "I can't take it anymore": how revenge porn pushed a Spanish woman to suicide, El Paìs, 3 June 2019, https://english.elpais.com/elpais/2019/06/03/inenglish/1559555440_857391.html;
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5. CONCLUSIONS AND POLICY IMPLICATIONS

a. The COVID-19 pandemic has led to a massive increase in the use of teleworking from home, while hybrid forms of TICTM are likely to prevail in the future.

The share of workers who started to work from home was 36.5% in the wake of the pandemic, compared to only 15.8% who worked from home at least several times a week before the COVID-19 outbreak. These figures mask significant differences across EU Member States. The highest shares of workers starting to work from home have been registered in those countries where teleworking was already well developed before the pandemic (e.g. BE, FI, LU, NL, SE), and in those that were most affected by the outbreak of the pandemic, (e.g. IT and ES) (ILO, 2020b).

In addition, **home teleworking has encompassed a much wider range of sectors and occupations than in the pre-pandemic past**. Although with lower shares compared to the service sectors, home-based telework during COVID-19 became quite widespread also among workers in the manufacturing and construction sectors and among low and mid-level clerical and administrative workers, predominantly women and young employees. Even so, TICTM is still used predominantly by city-based, white-collar, well-educated, service sector employees with strong digital skills.

As regards future trends, **expectations are that with the return to 'normal', the use of TICTM will continue, but not on a full-time basis as during lockdowns**. Hybrid forms will be more likely with some days a week at the workplace and some working either from home or from co-working spaces.

This has manifold implications for the future. **The hybrid model that is expected to prevail, necessitates the re-thinking of the way work is performed, co-ordinated and regulated both at company and societal level**.

TICTM work arrangements can have both positive and negative effects on workers, companies and society.

The effects of telework on workers are strongly linked to workers' personal characteristics and jobs and entail different opportunities and risks in terms of inclusion/exclusion from work for different groups of workers.

For workers, TICTM and especially teleworking from home, **entails greater time and place flexibility, enhanced job autonomy, improved work-life balance, reduced commuting time**. TICTM may also provide **new employment opportunities for persons with disabilities, women with care responsibilities, people living in rural or marginal areas**, **but these opportunities require enabling conditions** to also be present, e.g. child-care facilities and services, digital and soft skills training, access to adequate and affordable broadband and ICT equipment.

However, the greater time and place flexibility, and the higher autonomy in the organisation of work associated with teleworking, is often accompanied by **greater work intensity (autonomy paradox) and longer working hours**. Home teleworkers appear to struggle with managing the blurred boundaries between work and home, including the incursion of work into personal/family life and coping with the extension of working hours. Women with children, in particular, tend to be more often interrupted than fathers when teleworking and experience a reinforcing of traditional gender roles, with increased unpaid work and lower visibility in paid work.

Long working hours and the lack of sufficient space for work and of ergonomically fit equipment and furniture at home, may also increase the physical health risks of teleworkers. The sense of **social isolation and loneliness** associated with TICTM, arising from the lack of face-to-face, in-person

interactions and emotional support from co-workers, **may also negatively affect their mental health**. The increased use by employers of **online monitoring and surveillance methods** may add to the employees' anxiety and stress levels and **increase the invasion of the privacy** of remote workers. There is indeed growing concern – especially among trade unions – with regard to the invasion of the privacy of remote workers following increased surveillance and monitoring and with respect to employees' right to disconnect. **Women teleworking from home, also face increased risks in terms of digital harassment and domestic violence**.

On the employers' side, **TICTM work arrangements may reduce companies' production costs and improve workers' productivity; however, the link between TICTM and productivity is not clearly established**. It appears that the more extensive and intense teleworking is, the more pronounced its negative effects on worker satisfaction, performance and productivity are. **The positive effects on cost-reductions are instead proven**. Employers may reduce direct capital, energy and maintenance costs, which may be shifted onto teleworkers. Lower labour costs may be derived from 'tele-migration', e.g. attracting workers from all over the world, or as a result of workers' availability to exchange greater time and place flexibility against lower wages and higher attachment to the company, resulting in lower labour turnover. The net effects of TICTM working arrangements for companies, however, crucially depend on the **capacity of managers to effectively engage, motivate and oversee teleworkers**. This, in turn, requires a major shift in organisational culture, from managing attendance and inputs (e.g. hours in the office) towards managing by results and the establishment of trust-based relationships which may be quite challenging for some sectors and companies.

At societal level, the positive effects associated to TICTM relate to the expected lower carbon emissions and more balanced spatial development. A substantial body of evidence points to positive environmental impacts due to a decrease in traffic congestion and carbon emissions, and savings in terms of workers' commuting time and travel costs. Additional carbon footprint savings in relation to teleworking can also result from reduced office energy consumption, office construction, business travel, paper usage, etc. **However, the environmental impact of teleworking is less clear cut when including commuting distance, home office energy use, internet use, long-term consumer choices, and other rebound effects**. In general, to date, the available evidence shows that teleworking results in rather modest economy-wide energy savings. Conversely, by facilitating remote and distributed work also in peripheral geographical locations (including across borders), teleworking may eventually lead to a **re-distribution of workers and companies from urban centres and metropolitan areas towards the suburbs and peripheral, rural areas**.

On the negative side, this new way of working is, however, **contributing to the fragmentation of the workforce, the individualisation of the employment relationship, and the emergence of new inequalities in the labour market** between those who can telework and those who cannot. The latter may be employed in sectors/occupations that are not teleworkable, or they may lack the required digital skills, or have neither access to broadband connection nor to the necessary equipment and space at home to be able to telework from home. These inequalities are strongly linked with socio-economic inequalities.

Existing EU and national legislation, policies and collective agreements address some of the challenges of TICTM work arrangements

Although at European level there are no specific legislative measures targeting TICTM, there is robust legislation on working conditions that can be applied to these new working arrangements, e.g. the Working Time Directive, the Work-life Balance Directive, the Transparent and Predictable Working Conditions Directive, the European Framework Directive on Safety and Health at

Work. In addition, as illustrated in section 4.2, **there is a large set of EU initiatives and policies addressing the digital divide and need for digital upskilling, improving connectivity and broadband coverage and accessibility, promoting and supporting gender equality and equal opportunities for all, and addressing territorial inequalities**. The European Social Partners' Framework agreements on telework (2002) and on Digitalisation (2020) also address many of the TICTM related issues on a wide range of aspects associated with such work.

The situation is rather complex and diverse when considering individual Member States. Given the growing importance and use of TICTM, **many Member States have introduced a number of national policies and laws both pre- and during the COVID-19 pandemic**. The adopted national approaches are quite varied, reflecting the great diversity of Member States in terms of their institutional, legislative, industrial relations, cultural, contexts together with their different stages of digital development.

Eight Member States (BE, CZ, ES, FR, IT, LT, PL and PT) have introduced legislation directly addressing TICTM and the related work-life balance aspects, while 13 others (AT, BG, DE, EE, EL, HR, HU, LU, MT, NL, RO, SI and SK) regulate aspects of such work, with no direct link to work-life balance arrangements. The six remaining Member States (CY, DK, FI, IE, LV and SE) have no legislation pertaining to TICTM work, which is either regulated by social partners through collective agreements at national, sectoral and/or company level as in Scandinavian countries, or through 'softer' measures, e.g. codes of conduct or guidelines, as in Ireland. Despite these national differences, in most EU countries, collective agreements are the main instrument for shaping the use of teleworking and remote working using ICTs and the link between these forms of work and work–life balance arrangements in practice.

In addition, **at company level, multinationals and large companies have introduced company-specific teleworking arrangements**, often prompted by the experience of distance working during the COVID-19 pandemic. A number of companies have also sought to limit or eliminate out-of-hours contact (e.g. emails) along the lines of a right-to-disconnect approach (e.g. Volkswagen). There are also examples of company initiatives aimed at preventing domestic violence as in the case of L'Oréal and of protocols signed by private companies and public organisations to prevent digital harassment of workers, as in the case of Spain.

In recent years the **right to disconnect has emerged in legislation, collective agreements and company practices in an attempt to mitigate the harmful effects of TICTM work**, addressing the blurred boundaries between work and home life and the need to safeguard the non-working time of employees. For example, France is the first country that adopted legislation (in January 2017) limiting work-related after-hours electronic communication and including a right to disconnect (*droit à la déconnexion*). Belgium, France, Italy and Spain have introduced legislation which explicitly promotes the use of ICT as a way of supporting flexible working, associated with the right to disconnect that seeks to protect workers from the potentially negative consequences of being constantly available online. In a number of other Member States (DE, FI, IE, LT, LU, MT, SE and SI) there has been a lively debate about the right to disconnect, with Germany, Malta and Ireland, putting forward legislative proposals in late 2020.

The effects of TICTM for workers, employers and society pose a number of challenges for regulation and policy making at EU and national level asking for new strategies and approaches.

The debate among EU and national stakeholders focuses on whether there is need for new EU regulations targeted at TICTM workers or if it is sufficient to update existing ones, avoiding the risk of excessive and overlapping regulations and promoting a better balance between hard and soft

intervention approaches, including the role of collective bargaining.

According to some of the stakeholders interviewed, the implications of TICTM for work intensity, working time, work-life balance, and health and safety **can be addressed by proper application of the EU regulations and policy instruments already in place**, as long as they are revised in order to explicitly tackle the specificities of TICTM work arrangements. For example, the Directive on minimum requirements for safety and health at the workplace should take into account home and co-working spaces as working places. The way the EU Directives are transposed, implemented and complemented by national legislation is also to be considered. To this end, the Commission could issue further clarifications to Member States about the various directives and support them in implementing national legislation addressing TICTM work arrangements.

However, other stakeholders point out that there is **need for a more comprehensive European regulation on telework**, including minimum requirements for the **right to disconnect**, leaving their implementation to Member States, given the wide diversity of approaches and measures taken by EU countries on these issues. In addition, **there is need for the EU to establish specific employee rights that have relevance for TICTM**, such as those related to **employee surveillance and monitoring** associated with the use of new technological devices, digital tools and remote control software. Legislation has not, to date, explicitly addressed their implications for workers, although EU legislation can play a role, most notably through its 2018 General Data Protection Regulation (GDPR). The EDPB announced in April 2020 its intention to produce guidelines on: (i) the use of geolocation and other contact tracing tools and apps; (ii) the processing of health data for scientific research; and (iii) teleworking. Discussion is also on-going on how to **support greater worker involvement and representation in the health and safety aspects of TICTM, the use of surveillance data and the right to disconnect**, to address the current information asymmetry and inequality between employers and workers on surveillance data and workers' privacy rights.

Among the existing European directives, framework agreements and strategies that can be related to TICTM, those considered 'quite useful' or 'very useful' by the largest majority of respondents to the web survey conducted for the study, were the European Framework Agreement on Telework and the 2020 European Social Partners' framework agreement on digitalisation, as well as EU programmes promoting investments in broadband/digital infrastructures and the reduction of digital and territorial inequalities. The majority of respondents also agree that there is a **need for specific initiatives at EU level** to meet the challenges associated with TICTM work, and particularly for **legislation and directives**, although among representatives of the social partners the majority, as expected, opt for soft regulations and social dialogue.

Representatives of the EU social partners underline the risk of excessive regulation and ask for a greater role of collective agreements, also as regards issues related to the right to disconnect. In addition, according to trade union representatives, future agreements should focus on: **the right to telework and to disconnect; equal pay and treatment** (also in terms of working hours) between teleworkers and other workers; **company support for the training and equipment needed to telework**; ways to address **invasive surveillance and to guarantee tele-workers the right to privacy and data protection**, and to be protected against **cyber-harassment/violence**. An open issue is, however, the quality of social dialogue and the capacity of social partners across Member States **to cover all workers, including those working in SMEs** and in those countries where the social partners have a very limited role.

New policy approaches are also needed to address the societal implications of increased use of teleworking. The potential inequalities emanating from the lack of digital skills in the population and

limited access to ICT, should be considered together with support for the enhanced (employment) opportunities that these new forms of work offer to groups previously excluded, e.g. women and persons with disabilities or persons living in peripheral and rural areas. For example, the negative aspects of teleworking from home, e.g. loneliness, social isolation, inadequate space and equipment, could be overcome by supporting the creation of appropriate neighbourhood co-working spaces, a more accessible and improved provision of fast and reliable broadband connections, as well as neighbourhood child-care and public services, the re-design of housing and mobility policies, and support to workers in digital upskilling and for the improvement of work space and equipment at home.

Policy implications for EU Institutions

The analysis suggests that there is a **need for all relevant stakeholders at both EU and national levels to address all aspects of teleworking in a comprehensive, fair and equitable way**.

EU institutions could have a key role in facilitating these developments, supporting and complementing the actions taken by the Member States and the social partners through:

- **Revising and enforcing the legal and policy framework at EU level** to take into account the specificities of TICTM work arrangements, including minimum workers' rights (e.g. right to telework and right to disconnect; data protection and privacy rights; prevention of cybersecurity threats), and the prevention of negative mental and physical health effects of TICTM. As underlined by Eurofound (2020a), the implementation of EU legislation on health and safety protection in multiple locations may be particularly challenging, as it requires the development of specific guidance and training for both workers and managers/employers. Developing and implementing psychosocial risk assessments at company level could provide support and identify and mitigate possible health risks for remote workers.
- **Strengthening policy strategies and financial support to address the societal implications of extensive use of TICTM**, enhancing the employment opportunities offered by such forms of work on the labour market and enhancing the social inclusion of currently marginalised groups and territories, and mitigating possible negative effects. This requires: investing in the (digital) upskilling of workers and companies and in improving broadband connection and access; supporting the provision of appropriate equipment and ICT devices, and the creation of neighbourhood co-working spaces and (child)care services; and supporting the re-design of housing, mobility and spatial planning policies. As illustrated in the study, there are many EU initiatives and programmes addressing these issues, although these are fragmented into different policy strands; in order to ensure consistency and effectiveness, it would be useful to develop a dedicated Action Plan on TICTM with clear targets, support to Member States for implementation, and a specific monitoring system.
- To improve the implementation of revised regulation and policy strategies, EU institutions should oversee the proper implementation of key directives, such as the Working Time Directive and the Work-Life Balance Directive. They should also support Member States and the social partners with **guidance on the applicability of existing rights and obligations** (including on how employers can comply with data protection privacy and OSH regulations), together with **awareness raising measures targeted at TICTM workers** about their rights, the health and safety implications of TICTM, and ways to reduce these risks. Awareness raising and training measures should also **target SMEs and managers to familiarise them with the importance of new 'more collaborative and less hierarchical' organisational cultures** and

the establishment of trust-based relationships in working organisations increasingly involving TICTM working arrangements.

- Another key role of EU institutions is to **improve knowledge on TICTM and its effects**, providing reliable and accessible data and information on TICTM trends and related policy developments, supporting mutual learning, the exchange of good practices, and capacity building among EU and national stakeholders, including social partners and companies (particularly SMEs). To achieve this, EU and national institutions, together with the social partners, should review the lessons learned from the pandemic on how management and workers transitioned to teleworking and evaluate the effects of the legislative and policy measures adopted, in order to use these experiences to adjust existing policies and/or design new policies.
- **Social dialogue** and the active involvement of the **social partners at company and sectoral level** should also be supported, given their crucial role in ensuring the implementation and enforcement of workers' rights on the ground, identifying and addressing the specific challenges occurring at the workplace with respect to occupational safety and health conditions, work-life balance, equal working conditions, equal pay and career progression opportunities for all workers.

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ANNEXES

ANNEX I – Methodology and Tools

The study has been based on the triangulation of quantitative and qualitative data and information resulting from extensive desk research and field work.

Desk research involved the review of the literature and policy documents, and the statistical analysis of available data on current trends in the use of TICTM in the EU Member States.

Fieldwork included three main activities:

i) online interviews with 11 representatives of EU and international institutions and associations, including: the European Commission – DG EMPL and DG_Connect; Eurofound; JRC, EU-OSHA; ILO, European Women's Lobby; ETUC; Business Europe;

ii) a web survey, answered by 156 EU and national stakeholders, mainly experts (56.7%), and representatives of EU and national social partners (18.24%); and

iii) interviews with 15 national stakeholders in five countries representative of different types of EU Member States with regard to the use of and the approach to TICTM: Finland, Germany, Ireland, Italy, and Romania.

- Finland, among the EU countries with the highest share of teleworkers compared to the EU average, and representative of Scandinavian employment and welfare regimes, with no legislation on TICTM, but a relevant role of collective agreements in regulating employment relations, including telework, and universal coverage of welfare support;
- Ireland, with a share of teleworkers higher than the EU average, and representative of the Anglo-Saxon employment and welfare regime, with no legislative regulation of TICTM and company level agreements to regulate employment relations;
- Germany, with a share of teleworkers close to the EU average, and representative of the Bismarkian continental regulatory and welfare regime, with binding regulations on the modalities of TICTM, the incorporation of the EU Framework Agreement on Telework and the significant role of sectoral collective agreements;
- Italy, with a share of teleworkers lower than the EU average, and representative of the Mediterranean welfare regime, with a binding legislation regulating the availability and (at least some of) the modalities of TICTM and the role of collective agreements for work-life balance provisions;
- Romania, with Bulgaria the country with the lowest share of teleworkers, and representative of an eastern European country with legislation regulating aspects of TICTM – mainly in terms of performance – but with little attention to work-life balance, and a welfare regime still underdeveloped compared to western EU countries.

Ia. EU stakeholders interviewed

- OSHA's Prevention and Research Unit (interviewed on 15/2/2021)
- European Women's Lobby (interviewed on 8/2/2021);
- EU-OSHA, Co-ordinator of EU-OSHA's Research Programme on digitalisation and occupational health and safety (interviewed on 25/2/2021);

- EC-DG CONNECT (interviewed February 2021);
- JRC (interviewed on 12/2/2021);
- ETUC (interviewed on 10.2.2021);
- Business Europe (interviewed on 18/2/2021);
- ILO (interviewed on 2/2/2021);
- DG EMPL (interviewed on 9/2/2021);
- Eurofound (interviewed on 9/2/2021).

Ib. List of national stakeholders interviewed by country

Finland:

- Confederation of Finnish Industries EK

Germany:

- Deutsche Gesellschaft für Personalführung e.V. (DGFP);
- Input Consulting.

Ireland:

- Irish Congress of Trade Unions;
- Department of Enterprise, Trade and Employment, Labour Market and Skills Unit.

Italy:

- Smart Working Observatory, Politecnico di Milano;
- Labour and Social Security Area, Assolombarda;
- Confidustria, Economic and Research Department;
- UIL Milano and Lombardia.

Romania:

- Association of Business Service Leaders in Romania (ABSL);
- CNS "Cartel ALFA";
- Institute for the National Administration;
- PwC | People & Organisation.

Ic. The web survey

The web-based survey was carried out to expand the number of interviewed stakeholders. The main aim of the survey was to collect opinions and perceptions of EU experts and stakeholders on current and future expected challenges related to digital work and teleworking in order to improve the role and capacity of EU and national public institutions, the social partners and other stakeholders to address these challenges and make the most of the advantages of digital/telework while mitigating the negative impacts.

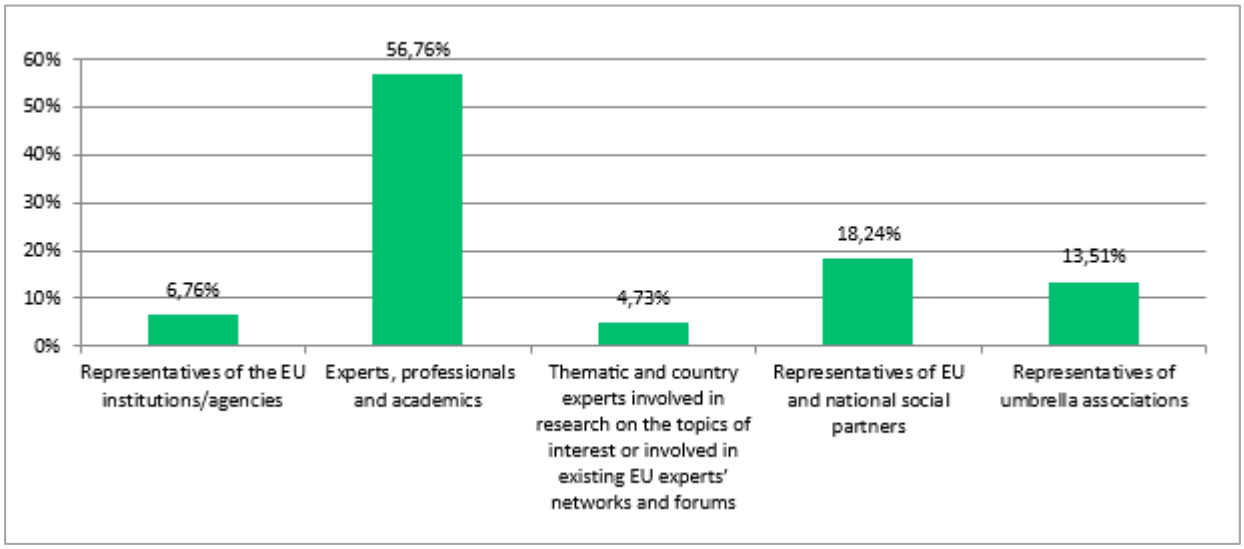
The web survey targeted:

- Representatives of the EU institutions involved in policy fields of interest: e.g. the European Commission; EU agencies (i.e. EUROFOUND, EIGE, JRC), members of the European Economic and Social Committee (EESC);
- Experts, professional and academics specialised in EU employment and social policies. Experts involved in comparative European reports on the issues of interest. Thematic and country experts involved in research on the topics of interest or involved in existing EU experts' networks and forums on the topics of interest, such as the European Equality Law Network, the High-level group on gender mainstreaming; the Advisory committee on equal opportunities for women and men; European Employment Policy Observatory National labour market experts, etc.;
- Representatives of EU and national social partners such as the European Trade Union Confederation – ETUC; Business Europe; ETUI, etc.;
- Representatives of umbrella associations, such as the European Social Platform, the Women's Lobby; COFACE Families Europe; European Association of Service providers for Persons with Disabilities (EASPD), etc.

The survey was launched on 21 January 2021 and closed on 8 February 2021, and 156 stakeholders responded to the survey.

Figures 34 and 35 present the distribution of the respondents by role, sex and age. More than half of the respondents (56.7%) are experts, professionals and academics, followed by representatives of EU and national social partners (18.24%).

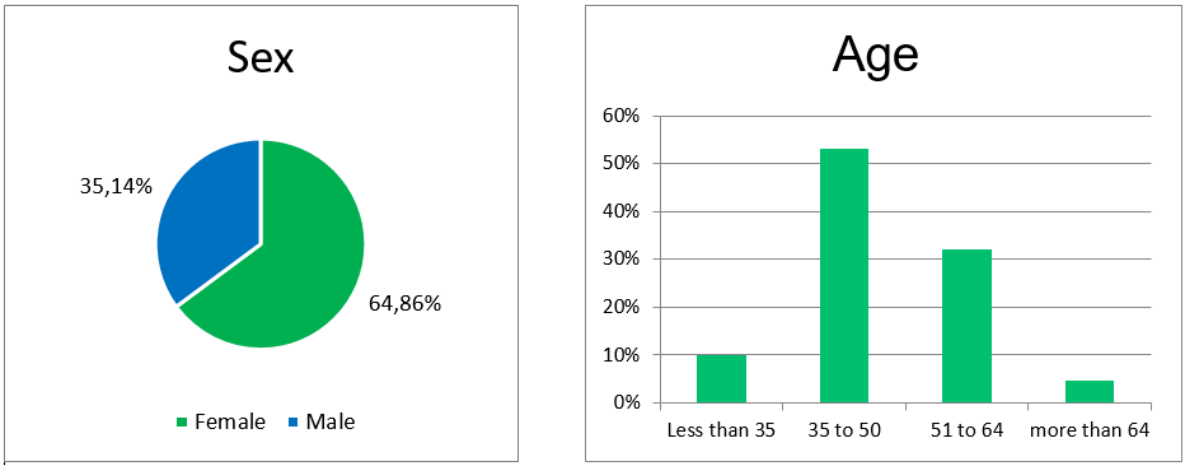
Figure 34: Respondents' distribution by role



Source: IRS web survey.

Overall, the respondents are 64.86% females and 35.14% males. On average, the experts, professionals and academics are more likely to be male than the other roles (45.8%). Conversely, the representatives of the EU institutions/agency are mainly women (90%). The large majority of respondents (85.23%) are between 35 and 64 years old (53% are 35 to 50 years old, and 32.2% between 51 to 64). Only 10% are younger than 35 years. Young respondents are more likely to be representatives of the EU institutions/agencies (30%), while older ones are representatives of umbrella associations (15%).

Figure 35: Respondents' distribution by sex and age



Source: IRS web survey.

Id. Web survey questionnaire

WEBSURVEY QUESTIONNAIRE ON THE POTENTIAL POSITIVE/NEGATIVE IMPACT OF TICTM WORK

For the purpose of the study, we use the following Eurofound's definitions of telework and digital work:

Telework and ICT-based mobile work (TICTM) is any type of work arrangement where workers work remotely, away from an employer's premises or fixed location, using digital technologies such as networks, laptops, mobile phones and the internet.

1. PERSONAL DATA

1.1 Country	

1.2 Position	Representatives of the EU institutions/agencies Experts, professionals and academics Thematic and country experts involved in research on the topics of interest or involved in existing EU experts' networks and forums Representatives of EU and national social partners Representatives of umbrella associations

1.3 Sex	Female Male

1.4 Age	Less than 35 35 to 50 51 to 64 more than 64

2. PERCEPTIONS ON CURRENT AND FUTURE EXPECTED CHALLENGES RELATED TO TICTM

Remote working has grown exponentially as a result of the COVID-19 pandemic and confinement measures, such as national/regional/local lockdowns. However, it is not a new phenomenon. Indeed, telework and digital work have emerged against a backdrop of ongoing changes in the world of work and life.

2.1 Which are the main trends related to TICTM work that the COVID-19 pandemic and associated confinement brought about?

Please express your opinion on the statements below by putting a cross for your response using the following scale: 1 - I do not know, 2 – I completely disagree, 3 – I quite disagree, 4 – I quite agree and 5 – I totally agree

1. TICTM work was already present and the COVID-19 pandemic only increased its diffusion					
2. TICTM work was already present with specific regard to certain groups of workers and now it also covers other groups of workers					
3. TICTM work was already present with specific regard to certain sectors and now it also covers more sectors					
4. TICTM work was already present with specific regard to certain occupations and now it also covers more occupations					
5. TICTM work will increase the need for high digitally skilled workers					
6. Those who worked from home because of the COVID-19 pandemic are mainly employees who had regularly teleworked before rather than 'new' teleworkers who had no previous experience of remote working					

2.2 In your opinion, which are the main positive / negative issues related to the increased use of TICTM work for workers?

Please express your opinion on the statements below by putting a cross for your response using the following scale: 1 - I do not know, 2 – I completely disagree, 3 – I quite disagree, 4 – I quite agree and 5 – I totally agree

TICTM work can positively influence work-life balance					
The spatial (location) and temporal (time) flexibility that TICTM work provides is positive					
TICTM work can lead to social isolation as opportunities for in-person communication decline					
Working conditions while teleworking, e.g. in terms of appropriate ICT equipment, ergonomically-safe work space at home, access to office space, etc. are less healthy and safe					
TICTM work adversely affects teleworkers' mental health					

TICTM work increases work intensity and interference with home life, adversely affecting the stress levels and well-being of teleworkers					
TICTM work improves work opportunities for people with disabilities					
TICTM work improves work opportunities for women with care responsibilities					
TICTM work improves work opportunities for people living in rural areas					
TICTM work increases autonomy in performing job-related tasks					
TICTM implies a high level of flexibility in time and place of work together with increased work intensity and long working hours due to the employer expectation that employees are online (and accessible) at all times					
TICTM work would exclude low skilled workers					
TICTM work would exclude workers whose physical presence at the workplace is necessary					
TICTM work would exclude older workers with low digital skills					
TICTM work would exclude people with no access to ICTs					
TICTM work would exclude workers living in remote areas with poor broadband connection					
TICTM work implies less time for commuting and reduced travel costs					

2.2.a. Please mention (in English) any other effects for workers related to the increased use of TICTM work that you consider relevant and that is not listed above

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2.3 In your opinion, which are the main positive / negative issues related to the increased use of TICTM work that can affect employers?

Please express your opinion on the statements below by putting a cross for your response using the following scale: 1 - I do not know, 2 – I completely disagree, 3 – I quite disagree, 4 – I quite agree and 5 – I totally agree

TICTM work can improve firm performance through cost reductions					
TICTM work can improve firm performance by raising workers' satisfaction and thus workers' productivity					
TICTM work requires ad hoc surveillance and monitoring practices to be put in place					
TICTM work requires a change from assessing performance in terms of inputs, i.e. hours worked, to outputs, which implies giving up some control over workers and, in principle, provides workers with more opportunities to "slack"					
Digitalisation may lead to more data on worker performance becoming available to managers, which may ultimately provide more information for efficient monitoring of workers than is generally available in a traditional work environment					
TICTM work can increase inequalities in the labour market across sectors and occupations (e.g. white-collar vs blue-collar)					

2.3.a. Please mention (in English) any other effects for employers related to the increased use of TICTM work that you consider relevant and that is not listed above

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2.4 In your opinion, which are the main positive / negative issues related to the increased use of TICTM work that can affect society?

Please express your opinion on the statements below by putting a cross for your response using the following scale: 1 - I do not know, 2 – I completely disagree, 3 – I quite disagree, 4 – I quite agree and 5 – I totally agree

TICTM work can contribute to lower carbon emissions					
TICTM work can contribute to the further development of the digital economy and improved competitiveness in a digital world?					
TICTM work can increase the digital divide among workers of different age, sex, territorial areas, socio-economic backgrounds, etc.					
TICTM work can contribute to the development of new employment regulation					
TICTM work can lower traffic congestion					
TICTM work can improve balance between urban, sub-urban and rural areas					
TICTM can contribute to counteract the depopulation and brain drain of marginalised areas					

2.4.a. Please mention (in English) any other effects for society related to the increased use of TICTM work that you consider relevant and that is not listed above

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3. STRATEGIES IMPLEMENTED SO FAR AT EU AND NATIONAL LEVEL TO FACE THE CHALLENGES ASSOCIATED WITH TICTM

At European level, there are no specific legislative measures targeting TICTM work; however, the main regulatory instruments that cover work-related arrangements can also be relevant for TICTM work. Moreover, a large set of EU initiatives and policies addressing the availability of digital skills in the population and the availability of broadband infrastructures have been put in place. A number of national policies, laws and regulations have also been introduced/are being introduced during the COVID-19 pandemic crisis.

3.1 Do you think that the strategies covering work related arrangements already in place at EU level are also adequate to face the challenges associated with TICTM work?

Not at all adequate	1	2	3	4	5	Very adequate

3.2 Within the list below, how useful do you think are the following strategies/initiatives already in place at EU level to also face the challenges associated with TICTM work?

	I do not know this strategy	Not at all useful	Somewhat useful	Quite useful	Very useful
The Work–Life Balance Directive (EU/2019/1158) (parents and carers have the right to request TICTM arrangements, although employers can reject the request if they have a clear rationale)					
The European Working Time Directive (2003/88/EEC) (the main instrument which regulates working hours, rest times, and leave periods also for teleworkers)					
The Transparent and Predictable Working Conditions Directive (EU/2019/1152) (it requires employment contracts to specify work patterns and places of work)					
The European Framework Directive on Safety and Health at Work (89/391/EEC) (prevention and protection of workers against occupational accidents and diseases)					
The European Framework Agreement on Telework (2002) (it defines telework and gives teleworkers the same rights as those working on employers' premises)					
The 2020 European social partners' framework agreement on digitisation (addressing challenges relating to: digital skills training and upskilling to foster employment, connecting and disconnecting, artificial intelligence and principle of human control over machines and employee surveillance)					
The European Skills Agenda supporting of the EU's digital and green transitions and also addressing the growing impact of the COVID-19 pandemic on the digital divide					
Connect and Reskill and upskill, two of the Flagship Areas proposed as priorities for investment by the European Commission in the 2021 Annual Sustainable Growth Strategy					

	I do not know this strategy	Not at all useful	Somew hat useful	Quite useful	Very useful
The EU cohesion policy deployment (in particular React-EU) to address the consequences of the COVID-19 crisis, with the increase of funds aimed at making Member State economies more resilient and by opening up for green, digital and growth-enhancing investments					
The objectives of the EU Gender Equality Strategy 2020-2025 to close gender gaps in the labour market and achieve equal participation across different sectors of the economy (TICTM creates opportunities to combine both family and working life)					
The Digital Education Plan to enhance digital skills and competences for the EU'S digital transformation					
Other (please specify in English)					

3.3. Do you think there should be specific strategies/initiatives at EU level to face the challenges associated with TICTM work?

yes

no

3.4. If yes, which kind of strategies/initiatives?

Legislation/Directives

Soft Regulation (e.g. Open Method Coordination, peer learning, etc)

Social dialogue at EU level

Other (please specify in English)

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3.5. Do you think that the strategies covering work related arrangements already in place at national level in your country are adequate to face also the challenges associated with TICTM work?

Not at all adequate	1	2	3	4	5	Very adequate

3.6. Are you aware of any specific initiative(s) implemented at your national level to face the specific challenges associated with TICTM work?

yes

no

3.7. If yes, which kind of national legislation and regulation are these initiatives related to?

Legislation which directly links TICTM work with efforts to support a better work–life balance

Legislation that regulates aspects of TICTM work, mainly in terms of working conditions, not directly linking it to work-life balance arrangements (e.g. protection from employers' surveillance, right to disconnect, working hours, etc.)

Collective agreements at national level

Collective agreements at enterprise level

Individual agreements

Other (please specify in English)

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3.8. If you know of any, could you please name some examples of good practices among national / regional / sectoral initiatives?

a) please specify in English the names/titles

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b) please indicate any web link related

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c) please, if relevant, specify the territorial and/or sectoral level

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3.9. Within the list below, how useful do you think are the following strategies/initiatives that can be implemented at national level to face the challenges associated with TICTM work?

	I do not know	Not at all useful	Somewhat useful	Quite useful	Very useful
Legislation which directly links TICTM work with efforts to support a better work–life balance					
Legislation that regulates aspects of TICTM work, mainly in terms of working conditions, not directly linking it to work-life balance arrangements (e.g. protection from employers' surveillance, right to disconnect, working hours, etc)					

Collective agreements at national level					
Collective agreements at enterprise level					
Individual agreement					
Other (please specify in English) …… …… …… ……					

4. FURTHER SUGGESTIONS TO MAKE THE MOST OF THE ADVANTAGES OF TICTM WORK WHILE MITIGATING THE NEGATIVE IMPACTS

4.1. Please mention in English any future challenges associated with TICTM work and ways to potentially mitigate the negative impacts

Challenge	Mitigation

ANNEX II - Additional tables/figures

Table 11: Share of employed aged 15-64 working from home by professional status, sex and frequency of work from home (%), 2006-2019 EU-27

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Employed	**10.0**	**10.0**	**10.5**	**10.5**	**10.8**	**11.1**	**11.4**	**11.5**	**11.5**	**12.7**	**12.9**	**12.9**	**13.3**	**14.3**
Employed men	10.3	10.4	11.0	11.1	11.6	11.8	12.1	12.1	12.0	13.3	13.3	13.3	13.7	14.5
Employed women	10.0	10.0	10.5	10.5	10.8	11.1	11.4	11.5	11.5	12.7	12.9	12.9	13.3	14.3
Employed usually	**4.6**	4.6	4.9	4.9	5.0	5.4	5.5	4.9	4.8	4.9	4.8	5.1	5.2	**5.4**
Employed sometimes	**5.5**	5.6	5.8	6.0	6.2	6.1	6.3	7.0	6.9	8.1	8.3	8.0	8.4	**9.0**
Employees	**6.6**	**6.8**	**7.5**	**7.5**	**8.0**	**8.1**	**8.4**	**8.5**	**8.5**	**9.5**	**9.7**	**9.8**	**10.3**	**11.1**
Employees men	6.1	6.3	7.0	7.1	7.6	7.7	8.0	8.0	8.0	9.0	9.2	9.4	9.8	10.5
Employees women	7.3	7.4	8.0	8.0	8.4	8.6	8.9	8.9	8.9	10.0	10.2	10.2	10.8	11.6
Employees usually	2.4	2.5	2.8	2.7	2.9	3.2	3.3	2.7	2.7	2.7	2.6	2.9	3.0	3.2
Employees sometimes	4.2	4.3	4.6	4.8	5.0	4.9	5.1	5.8	5.8	6.8	7.1	6.9	7.2	7.9
Self-employed	**28.8**	**28.8**	**29.4**	**29.2**	**29.3**	**30.2**	**30.8**	**30.9**	**30.8**	**33.3**	**33.2**	**33.7**	**34.2**	**35.7**
Self-employed men	28.3	28.3	28.7	28.6	28.7	29.6	30.1	30.0	29.9	32.4	32.2	32.5	32.9	34.1
Self-employed women	30.2	29.9	30.9	30.6	30.7	31.5	32.4	32.8	32.7	35.3	35.4	36.3	36.8	38.9
Self-employed usually	16.0	15.9	16.3	16.2	16.3	17.4	17.8	16.7	16.8	17.4	17.2	18.4	18.5	19.4
Self-employed sometimes	12.9	12.9	13.1	13.1	13.0	12.8	13.0	14.2	13.9	16.0	16.0	15.4	15.6	16.3

Source: Eurostat (LFSA_EHOMP).

Table 12: Share of employed aged 15-64 working from home by frequency of work from home (%), 2006 and 2019

	2006			2019		
	Employed			Employed		
	Usually	Sometimes	USU+SMT	Usually	Sometimes	USU+SMT
EU27	4.6	5.5	10.1	5.4	9.0	14.4
BE	9.0	7.7	16.7	6.9	17.7	24.6
BG	2.2	3.0	5.2	0.5	0.6	1.1
CZ	3.3	5.5	8.8	4.6	5.4	10.0
DK	3.9	21.7	25.6	7.8	20.7	28.5
DE	4.1	8.9	13.0	5.2	7.4	12.6
EE	4.4	4.7	9.1	6.8	13.5	20.3
IE	6.9	4.9	11.8	7.0	12.9	19.9
EL	1.6	2.9	4.5	1.9	3.4	5.3
ES	3.0	2.2	5.2	4.8	3.5	8.3
FR	10.3	7.5	17.8	7.0	15.7	22.7
HR	1.4	3.4	4.8	1.9	5.0	6.9
IT	3.6	1.5	5.1	3.6	1.1	4.7
CY	0.8	0.3	1.1	1.3	1.2	2.5
LV	3.2	3.4	6.6	3.0	1.8	4.8
LT	1.9	3.0	4.9	2.4	2.1	4.5
LU	8.5	1.3	9.8	11.6	21.5	33.1
HU	2.2	4.9	7.1	1.2	3.4	4.6
MT	3.8	4.9	8.7	6.1	5.4	11.5
NL	6.6	:	6.6	14.1	23.0	37.1
AT	9.9	9.6	19.5	9.9	12.1	22.0
PL	2.7	7.7	10.4	4.6	9.8	14.4
PT	1.2	3.7	4.9	6.5	9.0	15.5
RO	0.6	0.2	0.8	0.8	0.6	1.4
SI	5.0	6.9	11.9	6.8	11.0	17.8
SK	4.1	4.1	8.2	3.7	5.8	9.5
FI	9.2	7.2	16.4	14.1	17.6	31.7
SE	3.0	8.9	11.9	5.9	31.3	37.2

Source: Eurostat ([LFSA_EHOMP).

Note: Blue cells indicate data with low reliability. (:) indicates unavailable data.

Table 13: Share of employed aged 15-64 working from home by professional status and frequency of work from home (%), 2006 and 2019

	2006						2019					
	Employees			Self-employed			Employees			Self-employed		
	USU	SMT	USU+SMT	USU	SMT	USU+SMT	USU	SMT	USU+SMT	USU	SMT	USU+SMT
EU27	2.4	4.2	**6.6**	16.0	12.9	**28.9**	3.2	7.9	**11.1**	19.4	16.3	**35.7**
BE	4.7	6.0	10.7	33.7	18.7	52.4	3.7	15.2	18.9	26.5	34.4	60.9
BG	0.9	2.4	3.3	10.6	7.8	18.4	0.2	0.5	0.7	2.4	1.8	4.2
CZ	1.2	2.7	3.9	13.7	20.8	34.5	1.3	3.3	4.6	21.4	15.8	37.2
DK	2.0	19.9	21.9	22.7	43.1	65.8	5.4	20.3	25.7	36.7	27.2	63.9
DE	1.7	6.4	8.1	21.5	28.8	50.3	3.2	6.4	9.6	25.9	17.9	43.8
EE	2.7	4.3	7.0	22.9	8.6	31.5	4.2	12.1	16.3	28.2	24.6	52.8
IE	1.8	4.0	5.8	34.7	10.0	44.7	3.8	11.3	15.1	28.4	23.8	52.2
EL	1.3	2.6	3.9	2.2	3.6	5.8	1.4	2.9	4.3	3.0	4.9	7.9
ES	1.1	0.8	1.9	11.8	9.0	20.8	2.5	1.7	4.2	17.4	13.5	30.9
FR	7.4	6.1	13.5	32.7	19.8	52.5	4.7	13.6	18.3	24.4	32.9	57.3
HR	0.6	2.7	3.3	4.9	6.6	11.5	1.5	3.8	5.3	5.4	16.2	21.6
IT	0.9	0.6	1.5	11.9	4.2	16.1	1.1	0.6	1.7	12.9	3.1	16.0
CY	:	0.2	:	3.5	:	3.5	0.7	1.2	1.9	5.2	1.5	6.7
LV	0.6	2.5	3.1	21.4	11.5	32.9	1.1	1.4	2.5	17.5	5.0	22.5
LT	0.8	2.5	3.3	7.6	5.2	12.8	0.8	1.3	2.1	14.0	8.7	22.7
LU	6.5	1.2	7.7	32.1	:	32.1	8.9	20.5	29.4	37.7	32.8	70.5
HU	0.8	3.8	4.6	11.4	12.2	23.6	0.7	2.9	3.6	5.6	7.9	13.5
MT	3.0	4.0	7.0	9.2	10.5	19.7	4.3	5.1	9.4	16.6	7.4	24.0
NL	1.2	:	:	40.4	:	40.4	9.0	23.7	32.7	43.0	19.7	62.7
AT	5.8	7.9	13.7	38.3	22.8	61.1	5.8	10.4	16.2	42.2	25.4	67.6
PL	1.3	6.5	7.8	7.8	12.7	20.5	1.5	6.6	8.1	16.7	23.4	40.1
PT	0.4	2.8	3.2	4.2	7.2	11.4	4.8	8.3	13.1	17.4	13.7	31.1
RO	0.6	0.3	0.9	1.0	:	1.0	0.6	0.6	1.2	1.9	0.8	2.7
SI	4.8	6.7	11.5	8.0	8.7	16.7	4.7	9.5	14.2	22.2	21.7	43.9
SK	2.6	2.9	5.5	14.3	12.8	27.1	2.1	4.5	6.6	12.5	13.2	25.7
FI	5.8	5.6	11.4	33.2	19.2	52.4	10.0	16.8	26.8	44.8	23.1	67.9
SE	1.1	4.7	5.8	19.3	46.4	65.7	3.8	29.8	33.6	27.9	47.4	75.3

Source: Eurostat ([LFSA_EHOMP).

Note: Blue cells indicate data with low reliability. (:) indicates unavailable data.

Table 14: Share of employed aged 15-64 working from home by sex and frequency of work from home (%), 2019

	2019					
	Men			Women		
	SMT	USU	SMT+USU	SMT	USU	SMT+USU
EU27	9.3	5.2	14.5	8.6	5.7	14.3
BE	18.6	6.3	24.9	16.8	7.7	24.5
BG	0.6	0.4	1.0	0.6	0.5	1.1
CZ	6.0	3.9	9.9	4.6	5.4	10.0
DK	21.8	8.5	30.3	19.6	7.1	26.7
DE	8.5	5.1	13.6	6.1	5.3	11.4
EE	13.3	6.4	19.7	13.7	7.3	21.0
IE	14.1	7.6	21.7	11.4	6.2	17.6
EL	3.2	1.7	4.9	3.6	2.1	5.7
ES	4.0	4.8	8.8	3.0	4.8	7.8
FR	16.8	5.7	22.5	14.6	8.4	23.0
HR	5.3	1.3	6.6	4.7	2.6	7.3
IT	1.2	3.8	5.0	1.0	3.3	4.3
CY	1.4	1.0	2.4	1.1	1.6	2.7
LV	1.6	2.7	4.3	2.0	3.3	5.3
LT	2.2	2.3	4.5	2.0	2.4	4.4
LU	23.9	11.0	34.9	18.7	12.4	31.1
HU	3.3	1.1	4.4	3.4	1.2	4.6
MT	5.3	5.1	10.4	5.7	7.5	13.2
NL	22.1	15.4	37.5	24.1	12.5	36.6
AT	14.0	9.1	23.1	10.0	10.9	20.9
PL	9.6	4.3	13.9	9.9	4.9	14.8
PT	9.2	6.3	15.5	8.9	6.8	15.7
RO	0.6	0.5	1.1	0.5	1.1	1.6
SI	10.7	5.7	16.4	11.3	8.2	19.5
SK	5.8	3.5	9.3	5.8	4.0	9.8
FI	19.1	14.7	33.8	15.9	13.3	29.2
SE	32.3	6.4	38.7	30.2	5.5	35.7

Source: Eurostat ([LFSA_EHOMP).

Note: Blue cells indicate data with low reliability. (:) indicates unavailable data.

Table 15: Share of employed working from home by professional status, frequency of work from home and age (%), 2019

	Employed					Employees					Self employed			
	Sometimes		Usually			Sometimes		Usually			Sometimes		Usually	
	Y25-49	Y50-64	Y25-49	Y50-64		Y25-49	Y50-64	Y25-49	Y50-64		Y25-49	Y50-64	Y25-49	Y50-64
EU27	9.9	8.7	5.3	6.6	EU27	8.9	7.3	3.2	3.7	EU27	17.3	15.3	19.	20.
BE	18.9	17.7	6.6	8.7	BE	16.5	14.7	3.9	3.9	BE	34.9	33.	24.4	31.5
BG	0.6	0.8	0.5	:	BG	0.4	0.7	:	:	BG	:	:	2.9	:
CZ	5.8	5	4.5	5.3	CZ	3.8	2.6	1.5	1.	CZ	16.5	15.2	20.8	22.6
DK	24.9	20.7	8.3	9.3	DK	24.6	20.2	6.	6.1	DK	28.6	25.7	34.7	39.2
DE	8.7	6.9	5.1	6.2	DE	7.8	5.5	3.5	3.3	DE	19.	17.1	25.3	26.3
EE	16.5	8.8	7.4	6.4	EE	15.1	7.4	4.5	4.	EE	27.4	19.8	29.7	24.7
IE	14.1	13.9	6.4	10.5	IE	12.8	11.5	4.2	3.9	IE	25.3	22.3	24.7	32.7
EL	3.2	4	1.7	2.4	EL	2.6	3.9	1.3	2.	EL	5.2	4.5	3.	3.
ES	3.7	3.8	4.7	5.6	ES	2.	1.5	2.5	2.9	ES	14.2	12.7	18.3	16.3
FR	17.5	15.5	6.5	9.4	FR	15.4	12.7	4.5	6.1	FR	35.	30.8	23.	26.3
HR	5.5	5	1.9	2.2	HR	4.4	3.1	1.6	1.6	HR	17.2	15.6	5.6	5.5
IT	1.2	1	3.6	3.8	IT	0.6	0.5	1.	1.4	IT	3.4	2.8	13.9	11.6
CY	1.4	1.2	1.5	1	CY	1.4	1.2	0.8	0.7	CY	1.8	:	6.5	:
LV	2	1.6	2.9	3.4	LV	1.5	1.4	1.5	:	LV	6.3	:	13.5	25.5
LT	2.4	1.8	2.2	2.9	LT	1.4	1.2	0.8	0.9	LT	10.2	6.4	12.6	17.3
LU	22.5	20.5	11.6	12.3	LU	21.9	18.3	9.2	8.8	LU	31.7	36.4	37.3	38.1
HU	3.5	3.5	1.3	1.2	HU	3.	2.9	0.8	0.6	HU	8.1	7.8	5.7	5.4
MT	6.2	4.9	6.6	7.6	MT	5.9	4.4	4.8	4.6	MT	8.	6.7	16.1	18.9
NL	27.8	23.9	15	17.1	NL	28.9	25.2	10.1	10.5	NL	21.3	19.1	43.5	42.7
AT	13	12.8	9	14.1	AT	11.6	10.6	5.4	8.	AT	26.9	24.	42.2	42.6
PL	10.2	10	4.6	5.4	PL	7.1	6.6	1.6	1.6	PL	24.3	21.5	16.9	16.9
PT	10.2	7.9	6.3	8	PT	9.3	7.5	4.6	6.2	PT	17.1	9.7	18.9	15.7
RO	0.6	0.5	0.8	0.9	RO	0.6	0.5	0.6	0.8	RO	1.1	:	2.2	1.6
SI	11.8	11	6.8	8	SI	10.3	9.6	5.	4.8	SI	22.5	20.4	20.8	24.8
SK	6.3	5	3.8	3.8	SK	5.1	3.5	2.2	2.3	SK	13.7	12.2	13.2	11.1
FI	21	15.5	14.9	15.8	FI	20.5	14.5	11.1	10.6	FI	24.6	21.2	46.2	43.1
SE	35.4	31.4	5.9	7.2	SE	34.	29.7	4.1	4.	SE	51.2	43.4	26.8	28.6

Source: Eurostat ([LFSA_EHOMP).

Note: Blue cells indicate data with low reliability. (:) indicates unavailable data.

Table 16: Individuals (16-74) working from home* as a percentage of the total employment by sector, 2018 (%)

	All Individuals	Individuals working in									
		agriculture, forestry or fishing	mining or quarrying, manufacturing or other industry	construction	wholesale or retail trade, transport, accommodation or food service activities	information or communication	financial or insurance activities	real estate activities	business services	public administration, defence, education, human health or social work activities	other service activities
EU27	9	10	9	12	11	36	21	30	22	20	16
BE	10	24	14	15	15	33	29	60	20	19	19
BG	4	4	3	5	6	20	14	:	21	10	7
CZ	:	:	:	:	:	:	:	:	:	:	:
DK	13	#VALORE!	14	12	24	30	22	20	21	27	28
DE	10	25	11	12	10	38	15	20	18	15	24
EE	13	21	11	14	15	30	32	30	32	25	26
IE	8	16	8	11	13	57	23	:	29	13	15
EL	7	1	10	12	7	56	29	:	29	26	12
ES	9	9	10	18	11	31	33	32	23	27	17
FR	12	39	16	22	17	32	20	32	24	24	28
HR	5	9	9	0	7	26	21	:	15	15	4
IT	7	9	7	12	7	30	13	28	23	19	11
CY	3	3	1	4	2	16	4	20	11	12	2
LV	9	13	9	8	10	38	22	28	:	18	18
LT	7	6	5	6	9	31	28	41	18	10	16
LU	14	:	:	:	:	:	:	:	:	:	:
HU	7	5	8	6	7	51	37	:	23	20	8
MT	13	:	14	5	11	27	16	:	28	36	24
NL	20	40	13	23	19	52	51	51	33	37	40
AT	10	31	9	10	12	39	18	:	21	19	24
PL	8	3	6	7	12	40	20	23	22	19	13
PT	8	3	4	4	9	25	17	33	20	19	16
RO	3	4	2	3	3	14	17	:	11	8	8
SI	11	:	9	7	17	46	22	:	24	21	30
SK	9	6	6	15	11	50	37	:	31	11	26
FI	16	:	:	:	:	:	:	:	:	:	:
SE	:	:	:	:	:	:	:	:	:	:	:

Source: Eurostat [isoc_iw_hem], data extracted on 21/02/2021 (last updated 26/01/2021).

Note: * Includes: Individuals who worked from home every day or almost every day and ndividuals who worked from home at least once a week (but not every day).

Table 17: Percentage of individuals who have never used a computer, 2017

Country	Individuals (25-64)	Older individuals (55-64)	Individuals (25-64) with low formal education	Individuals living in rural areas	Employed individuals (25-64)	Manual workers (ISCO 6-9)	Unemployed individuals (25-64)
EU27	13	25	35	20	8	18	22
EA	12	22	34	18	7	17	21
BE	7	14	21	10	3	8	13
BG	25	47	69	48	14	27	45
CZ	7	18	32	14	4	8	14
DK	1	3	4	4	1	2	0
DE	4	10	16	8	2	6	14
EE	5	16	7	11	3	6	9
IE	15	27	38	23	10	25	20
EL	22	46	58	41	14	35	22
ES	14	31	32	25	8	18	21
FR	7	16	22	10	4	9	8
HR	22	42	58	35	10	14	29
IT	28	41	52	36	20	:	35
CY	19	43	57	30	14	31	17
LV	11	28	26	21	6	13	20
LT	15	33	46	26	7	14	37
LU	2	5	10	2	1	5	:
HU	12	26	45	25	7	14	26
MT	13	34	23	23	8	21	:
NL	2	4	5	3	1	4	2
AT	6	15	25	12	3	8	12
PL	16	39	58	25	10	19	25
PT	18	38	33	32	13	29	21
RO	24	45	57	39	18	30	30
SI	14	36	45	21	6	12	25
SK	9	23	51	18	4	10	21
FI	2	6	8	8	1	3	1
SE	2	1	7	2	1	2	8

Source: Eurostat dataset: [ISOC_CI_CFP_CU].

Note: Blue cells indicate data with low reliability. (:) indicates unavailable data.

Table 18: Share of respondents aged 18+ working from home before the outbreak of COVID-19 (April 2020 wave)

Country	Total 18+			Men 18+			Women 18+		
	Daily	Several times a week	Total	Daily	Several times a week	Total	Daily	Several times a week	Total
Austria	9.3	7.4	16.7	8.5	9.7	18.2	10.1	4.9	15.1
Belgium	10.2	7.9	18.1	9.6	8	17.6	11	7.9	18.9
Bulgaria	9.5	8	17.5	11.6	9.5	21.1	7	6.8	13.7
Croatia	14.3	5.2	19.4	15.4	6.2	21.7	13.3	4.2	17.5
Cyprus	3.4	8.2	11.6	3	11	14.1	3.8	5.1	8.9
Czechia	6.2	7.7	13.9	7.3	8.4	15.7	5.2	7.1	12.3
Denmark	5.9	6	12	5.9	10	15.9	6	2.2	8.2
Estonia	21.7	13.8	35.4	23.4	14	37.3	20.2	13.6	33.8
Finland	5.7	9.6	15.2	7.3	12.4	19.7	3.9	6.6	10.6
France	13.8	7.9	21.7	16.2	10.3	26.5	11.4	5.6	17.1
Germany	8.7	6.7	15.4	9.3	7.6	16.8	8.3	6	14.3
Greece	7	5.9	12.9	5.7	8.3	14	7.9	3.3	11.3
Hungary	8.2	5.5	13.7	8.8	6.3	15.1	7.8	4.8	12.5
Ireland	7.6	4.6	12.2	7.9	5	12.9	7.2	4.2	11.3
Italy	6.7	3.3	10	7.2	3.3	10.6	6.2	3.2	9.4
Latvia	8.7	10.2	19	:	:	:	8.5	6.5	15
Lithuania	9.9	5.5	15.3	8.5	5.7	14.2	11	5.4	16.4
Luxembourg	9.1	6.5	15.6	7.9	7.4	15.3	10.8	5.5	16.2
Malta	6	4.7	10.6	:	:	:	7	4.4	11.3
Netherlands	14.3	12.1	26.4	:	:	:	11.5	9.6	21.1
Poland	11.2	8.9	20.1	12	10.3	22.3	10.3	8	18.3
Portugal	6.4	6	12.4	8	5.5	13.5	5	6.4	11.4
Romania	9.6	5	14.6	8.6	4.9	13.5	10.4	5.2	15.5
Slovakia	6.6	5.2	11.7	8.1	6.2	14.3	5.1	4.3	9.5
Slovenia	5.3	4.8	10	7.8	5.4	13.2	2.7	4.2	6.9
Spain	7.2	5.4	12.6	7.7	5.4	13.2	6.7	5.4	12.1
Sweden	4.8	5.5	10.3	:	:	:	3.6	4.3	7.9
Total (EU27)	9.2	6.6	15.8	10	7.6	17.6	8.4	5.6	14.1

Source: Eurofound (2020), Living, working and COVID-19 dataset, Dublin, https://www.eurofound.europa.eu/data/covid-19.

Note: The data show 'daily' and 'several times a week' for respondents in the EU-27 when asked: How frequently did you work from home before the outbreak of COVID-19?

Blue cells: low reliability; (:) Excluded due to insufficient data.

Table 19: Share of respondents aged 18+ who started to work from home as a result of the situation caused by the COVID-19 pandemic (April 2020 wave)

Country	Total 18+	Men 18+	Women 18+
Austria	42	39.5	44.8
Belgium	55.1	55.7	54.8
Bulgaria	28.8	28.3	29.6
Croatia	28.3	28.5	28.1
Cyprus	33.5	:	:
Czechia	38.3	43.3	32.9
Denmark	46.2	48.8	43.5
Estonia	36.4	:	36.6
Finland	60.5	64.4	55.9
France	37.8	37.2	37.8
Germany	36.6	36.1	37.2
Greece	26.2	18.4	36.3
Hungary	28.1	23.1	33.9
Ireland	43.3	43.2	43.4
Italy	39.9	34.8	45.9
Latvia	31.1	:	29.9
Lithuania	37.1	35.2	38.7
Luxembourg	56.6	:	52.2
Malta	34.7	:	:
Netherlands*	53.4	:	58.3
Poland	32.8	35.2	31.4
Portugal	38	35.3	41.1
Romania	18.5	14.2	24.3
Slovakia	31.3	30.1	33
Slovenia	22.5	23.3	21.5
Spain	29.2	24.8	35.3
Sweden	40.4	:	35.7
Total (EU27)	36.5	34.9	38.6

Source: Eurofound (2020), Living, working and COVID-19 dataset, Dublin, https://www.eurofound.europa.eu/data/covid-19.

Note: The data show 'Yes' for respondents in the EU-27 when asked: Have you started to work from home as a result of the COVID-19 situation?

Slovenia is excluded from the data for this question because of a translation issue.

Blue cells: low reliability; (:) Excluded due to insufficient data.

Table 20: Average weekly hours of work worked by respondents aged 18+ in the last month prior to the survey (July 2020 wave)

Country	Total 18+			Women 18+		
	Total weekly hours of work	Weekly hours of work from home	Share of weekly hours of work from home	Total weekly hours of work	Weekly hours of work from home	Share of weekly hours of work from home
Austria	39.7	12.1	30%	37.4	11.1	30%
Belgium	39.5	24.6	62%	40.6	25.3	62%
Bulgaria	48.1	11.8	25%	47	12.4	26%
Croatia	57	8.3	15%	53.8	9.6	18%
Cyprus	:	:	:	:	:	:
Czechia	46.5	12.4	27%	42.9	9.5	22%
Denmark	51.3	11.3	22%	:	:	:
Estonia	46.1	14.1	31%	45.4	17.4	38%
Finland	46	17.2	37%	39.7	18.2	46%
France	43.4	14.8	34%	:	:	:
Germany	39.4	13.9	35%	34.9	13.9	40%
Greece	45.2	9.4	21%	42.6		
Hungary	41	12.4	30%	39.3	12.4	32%
Ireland	37	21.3	58%	37	22.5	61%
Italy	36.6	15.1	41%	34.9	14	40%
Latvia	61	16.8	28%	:	:	:
Lithuania	55.2	13.1	24%	55	13.5	25%
Luxembourg	:	24.1	:	:	:	:
Malta	:	:	:	:	:	:
Netherlands	44.4	14.7	33%	:	:	:
Poland	42.4	12.7	30%	:	:	:
Portugal	38.4	15.4	40%	37.1	16.4	44%
Romania	51.2	10.5	21%	50	14	28%
Slovakia	45.8	10.1	22%	45.9	12.7	28%
Slovenia	51.3	9.9	19%	54.9	11.6	21%
Spain	37.1	15.5	42%	35.7	16.7	47%
Sweden	45.9	15.5	34%	:	15.9	:
Total (EU27)	41.6	14.2	34%	39.8	14.3	36%

Source: Eurofound (2020), Living, working and COVID-19 dataset, Dublin, https://www.eurofound.europa.eu/data/covid-19.

Note: Total weekly hours of work is the mean for respondents in the EU-27 when asked: Last month, how many hours per week did you work on average?

Weekly hours of work from home is the mean for respondents in the EU-27 when asked: Out of these, how many hours did you work from home?

Blue cells: low reliability; (:) Excluded due to insufficient data.

Table 21: Survey respondents' answers regarding future challenges associated with TICTM work and ways to potentially mitigate the negative impacts

Challenge 1- Working conditions	Mitigation 1
Cost of connection	Laws about the internet costs for professional use
Low human interaction leading to isolation and mental health problems	Give opportunities to work in other environments to meet with colleagues; Mix TICTM with on-site work
Occupational health issues of workers with not adequate spaces or devices (small flats, bad chairs, etc.)	Minimum requirements legally set (but not too restricting, not to suffocate TICTM in SMEs)
Too much screen time	Reduce working hours
Culture change in company management (loss of control of employees)	Better performance, more retention of talents, general employee satisfaction
Coping with technostress	Specific training
Worker isolation	Increase video conferencing facilities also for social contact (not only working purposes)
Psychosocial impacts of the TICTM	Do large-scale psychological tests and analyse them
More free time	Working at home
Never-ending working hours and weeks	Better management skills
TICTM way of working may negatively impact the mental health of the employees	Employees who avail of TICTM are to work from the office at least once weekly
Digital skills	Lifelong learning
Fatigue and depression working remotely	Proper supervision and tools to overcome this
Mental health and risk of burn out	Direct and Indirect support; MSD in case ergonomic standards of teleworkers' facilities are lower
Loss of team-belonging feeling	Internal company culture/practices
Beware of privacy effects	Draft rules

Challenge 1- Working conditions	Mitigation 1
Bad posture and long hours in front of a monitor	Investment in equipment and training
Right to Disconnection	Landing in the Collective Bargaining
Social isolation	Not make TICTM obligatory
Privacy of workers at home	Adaptation of risk assessment

Source: IRS web-survey.

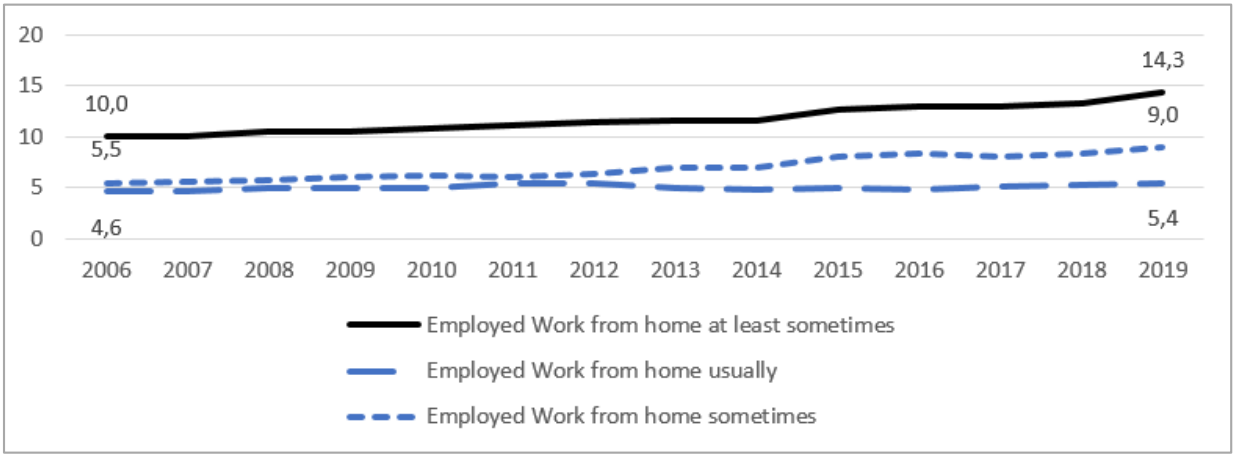
Challenge 2 – Work-life balance and gender equality	Mitigation 2
Family conciliation	Working time flexibility
TICTM work may increase care and household responsibilities, leading women to decrease their working hours or temporarily/permanently resign	Male employees with children or other dependents are to be encouraged and incentivised to share the care and household responsibilities, without being discriminated against by employers and colleagues
Longer working hours, disrupted balance between work/private life	Planning work, balancing tools and advice
Gender Inequalities	Gender balance regulation

Source: IRS web-survey.

Challenge 3 – Social implications and regulation	Mitigation 3
TICTM may create more barriers, labelling and inequalities, rather than serving as a sustainable way of working	Discussions at national level are to be carried out in order to pre-empt negative consequences which would affect employees who are not able to make use of TICTM; alternative ways of working and the provision of resources in order to give said employees fair and sustainable opportunities and way of working are to be developed and implemented accordingly
Inadequate technologies, skills supply to marginalised groups of people (rural areas, at risk of poverty)	EU COVID-19 recovery funds
Increase of the gap between poor and unskilled and rich and skilled	Training and share of good practices
Social dumping of digital work	Training and worldwide connection
Tendency to overregulate TICTM work	More leeway for digital solutions, harnessing potential
Existing national working time regulation not fit for purpose	Greater flexibility in national working hours regulation to fit TICTM
Ensure that this way of working remains in time	Allow free negotiation between employee and company
Social security schemes cannot be exclusive responsibility of the teleworker	Legal act which regulates social security issues by dividing the responsibility between both sides of the contract arrangement
Reducing the quality of services	Take care of customers rights
Social skills of young people	Maintaining and developing off-line work conditions

Source: IRS web-survey.

Figure 36: Share of workers aged 15-64 working from home by frequency (%), EU-27, 2006-2019



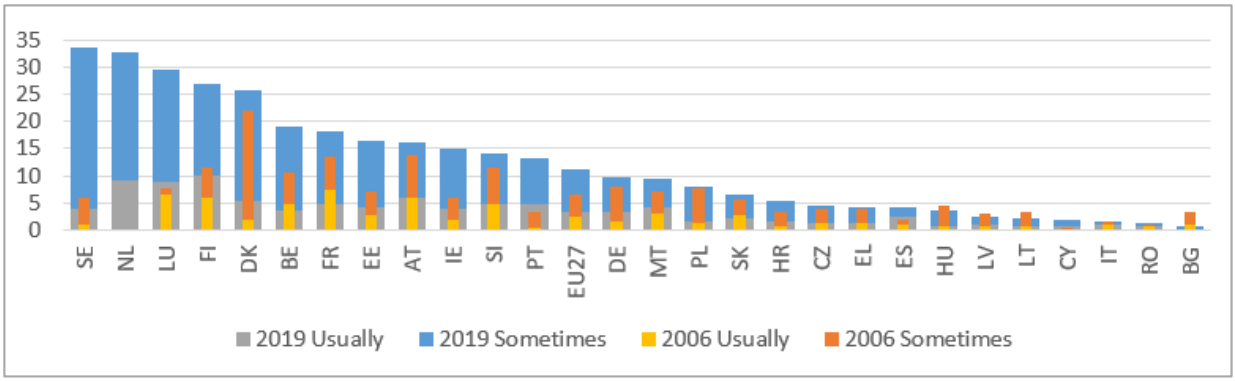
Source: Eurostat (LFSA_EHOMP).

Figure 37: Share of workers aged 15-64 working from home by status (%), EU-27, 2006-2019

Source: Eurostat (LFSA_EHOMP).

Note: Work from home at least sometimes: those working from home usually + those working from home sometimes.

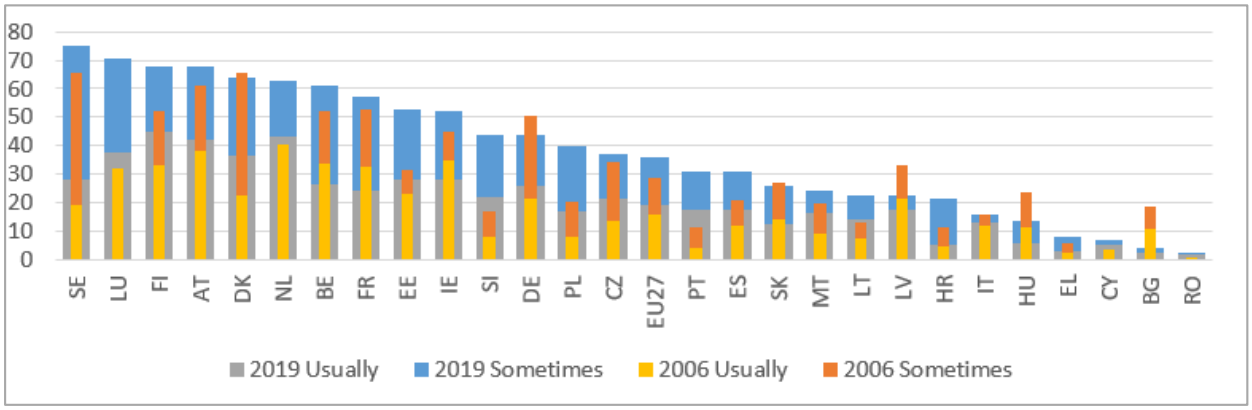
Figure 38: Share of employees aged 15-64 working from home by frequency of work from home (%), 2006 and 2019



Source: Eurostat (LFSA_EHOMP).

Note: For 2006 data: for sometimes not available (NL) and low reliability (LU, PT); for usually not available (CY) and low reliability (LV). For 2019 data: for usually low reliability (BG).

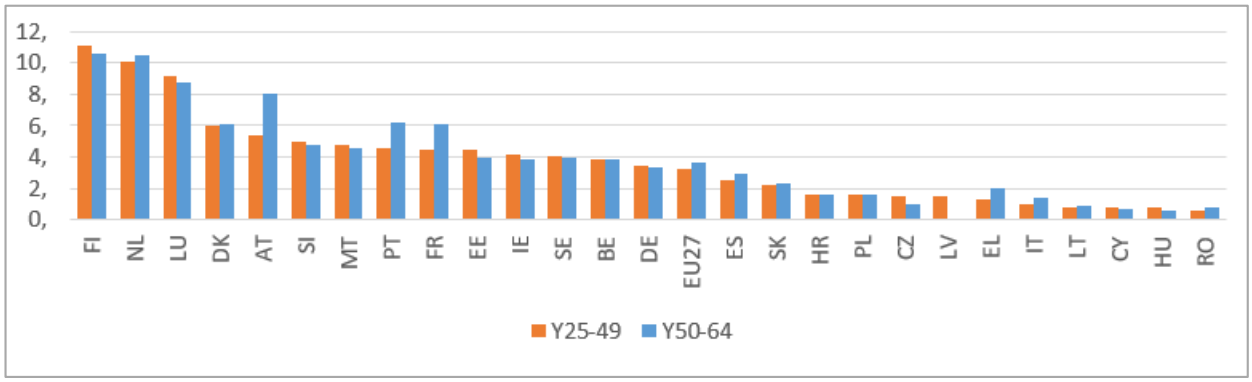
Figure 39: Share of self-employed aged 15-64 working from home by frequency of work from home (%), 2006 and 2019



Source: Eurostat (LFSA_EHOMP).

Note: For 2006 data: for sometimes not available (CY, NL, RO) and low reliability (HR, LT); for usually low reliability (HR, LT). For 2019 data: for sometimes low reliability (BG, CY, RO); for usually low reliability (BG, HR).

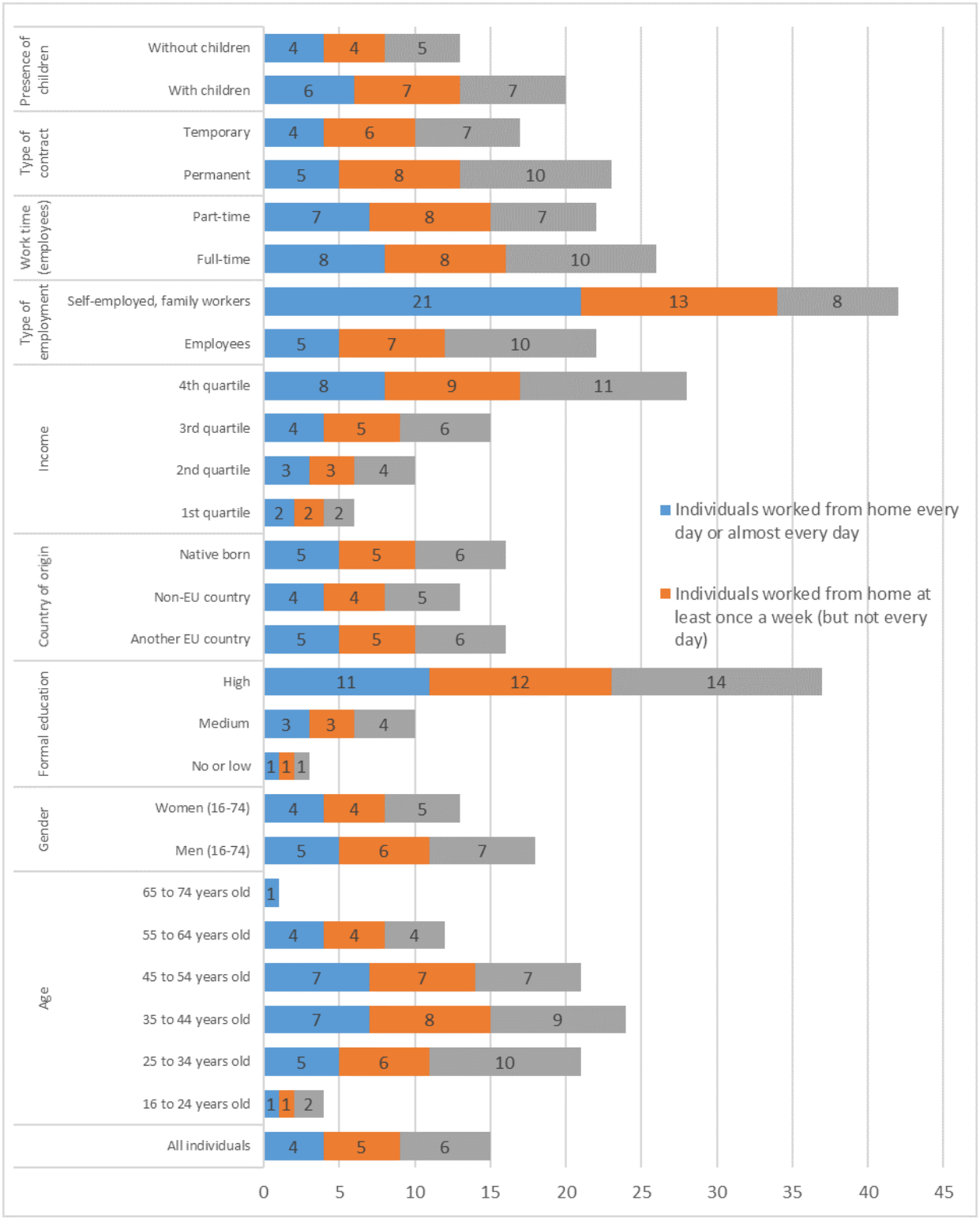
Figure 40: Share of employees usually working from home by age class (%), 2019



Source: Eurostat ([LFSA_EHOMP).

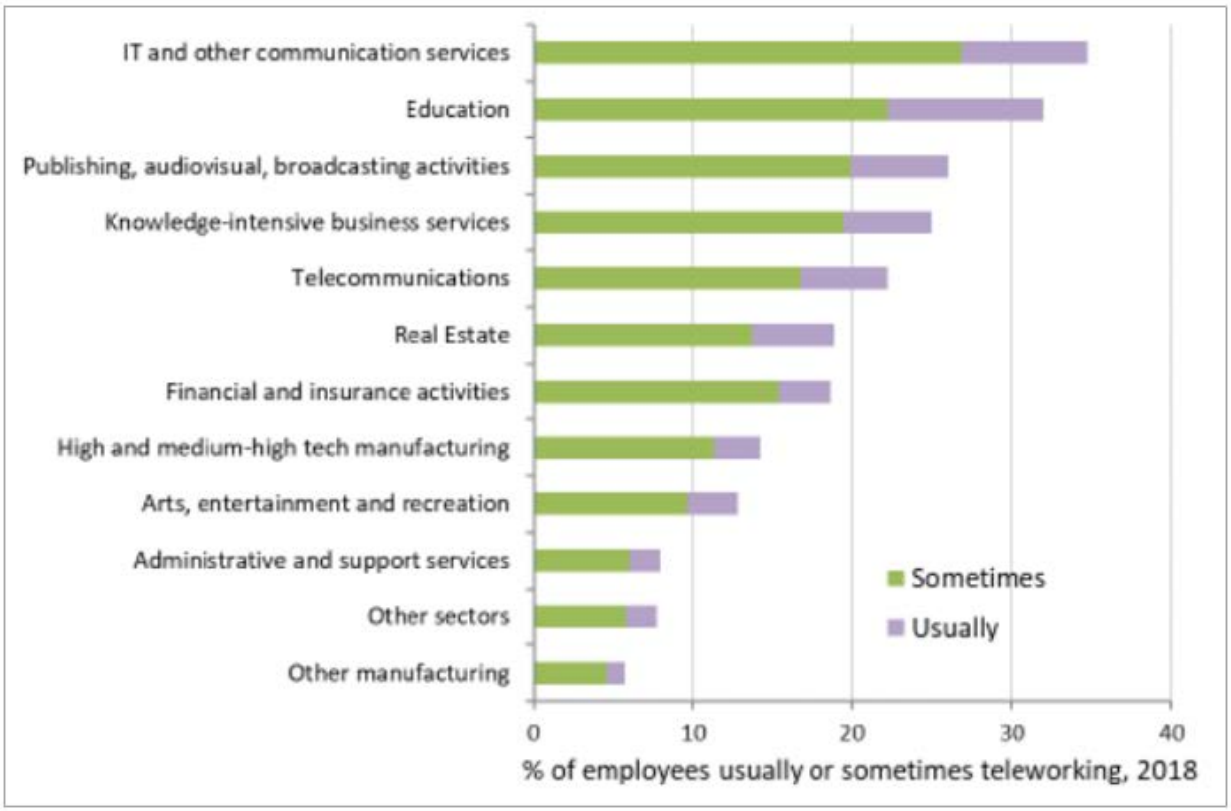
Note: Data not available for BG and low reliability for the age group 50-64 for CY, HR and LT.

Figure 41: Share of individuals working from home by frequency and socio-economic categories, EU-27, 2018 (%)



Source: Eurostat [isoc_iw_hem] accessed 08/11/2020.

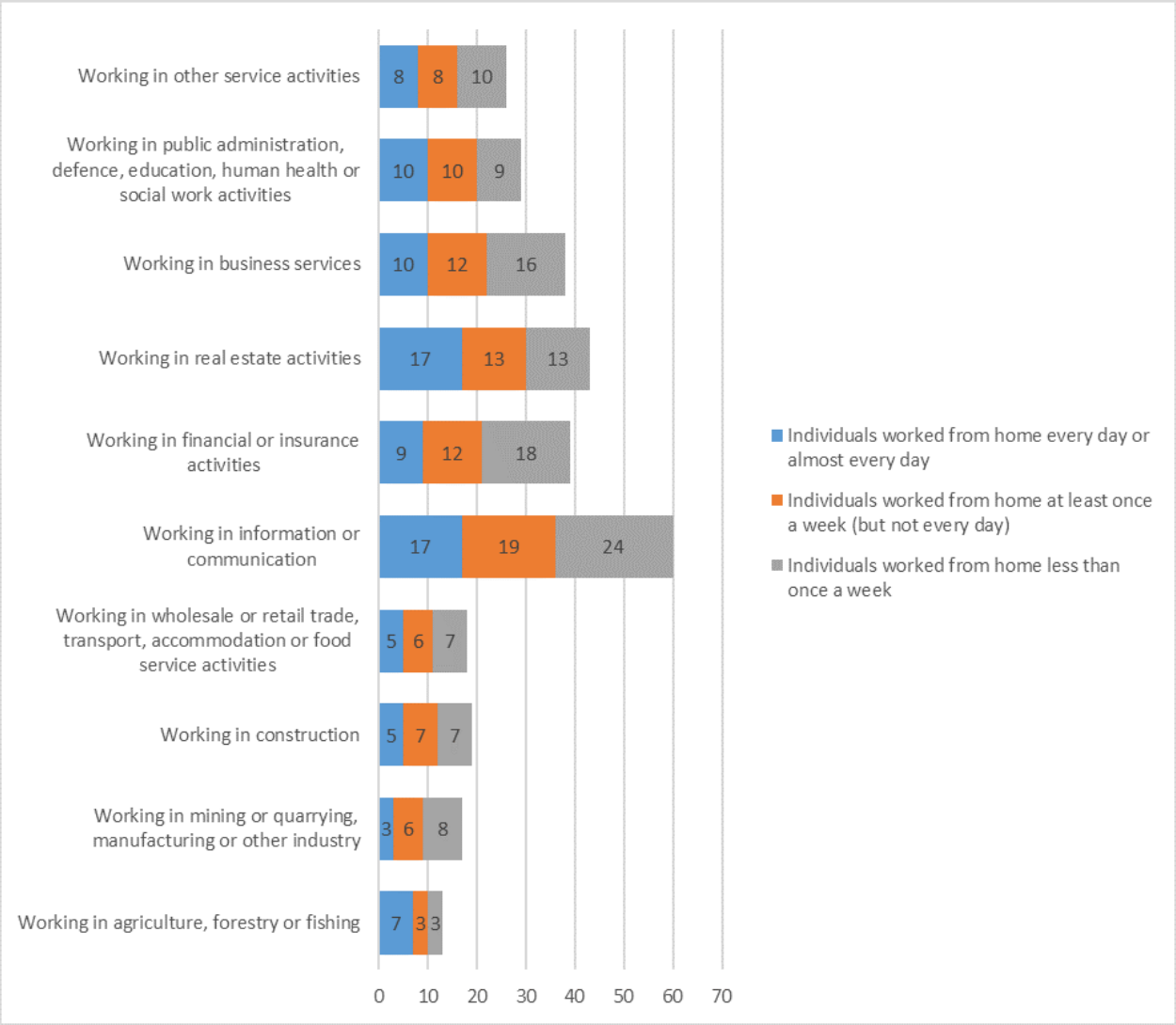
Figure 42: Share of employees working from home by sector and frequency (%), 2018



Source: Sostero et al 2020, Figure 4 pg. 11, estimates based on EU-LFS 2018.

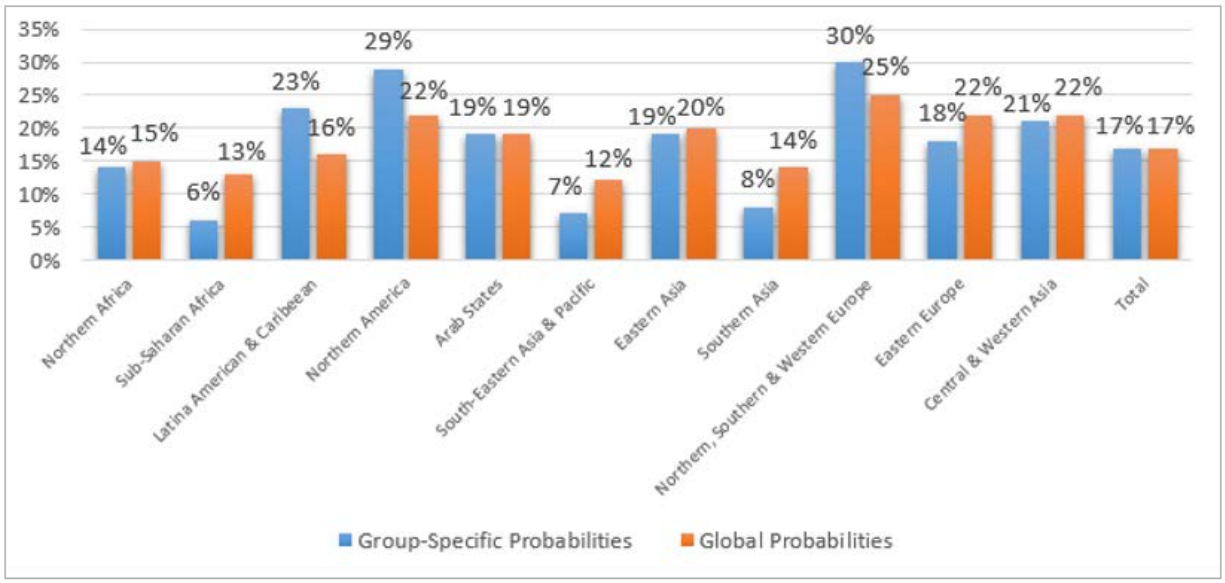
Note: The group "Knowledge-intensive business services" includes: Legal and Accounting Activities - Activities of Head Offices; Management Consultancy Activities - Architectural and Engineering Activities; Technical Testing and Analysis - Scientific Research and Development - Advertising and Market Research - Other Professional, Scientific and Technical Activities. The group IC and other communication services include: Computer Programming, Consultancy and Related Activities - Information Service Activities.

Figure 43: Share of individuals working from home by frequency and economic sector, 2018 (%)



Source: Eurostat [isoc_iw_hem] data extracted on 09/11/2020.

Figure 44: ILO estimates on home-based work in 2018



Source: ILO, 2020, Policy Brief: Working from Home: Estimating the worldwide potential.

Note: "Group-Specific Probabilities" show the actual proportion of workers that could potentially work from home given the existing social and physical infrastructures. "Global Probabilities" show the share of workers that could work from home if all countries had the same occupation-specific probabilities to work from home. In other words, they consider changes only in the countries' occupational structure. The differences between the two indexes considers both changes in occupational structure and in underlying social and physical infrastructure.

The study analyses recent trends in teleworking, its impacts on workers, employers, and society, and the challenges for policy-making. It provides an overview of the main legislative and policy measures adopted at EU and national level, in order to identify possible policy actions at EU level. The study is based on an extensive literature review; a web survey; interviews with representatives of European and national stakeholders; and five case studies of EU countries: Finland, Germany, Ireland, Italy and Romania.

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