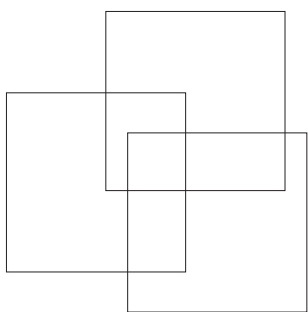


Working anytime, anywhere: The effects on the world of work



Joint ILO–Eurofound report



Working anytime, anywhere: The effects on the world of work



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Contents

	Executive summary	1
	Introduction	3
1	Outline of methodology	5
	Conceptual challenges and scope	5
	Standard expert questionnaire	6
	EWCS proxy of T/ICTM	6
2	Drivers and restraining factors for T/ICTM	9
	Drivers for the adoption of T/ICTM	9
	Restraining factors to the adoption of T/ICTM	10
	Drivers in countries outside the EU	11
3	Incidence and intensity of T/ICTM	13
	Trends and incidence of T/ICTM in 10 European countries	13
	Trends and incidence of T/ICTM in Argentina, India, Japan and the US	16
	Characteristics of T/ICTM workers	17
	Incidence and intensity of T/ICTM: Some conclusions	19
4	Effects of T/ICTM	21
	Working time: Working hours and working time organisation	21
	Individual and organisational performance	26
	Work–life balance	28
	Occupational health and well-being	33
5	Policy responses to T/ICTM	43
	Relevant EU directives and international labour standards	43
	European Framework Agreement on Telework	44
	National legislation and other governmental measures regarding T/ICTM	45
	National and sectoral social dialogue	48
	‘Right to be disconnected’ and related policies	49
	Company and organisation examples of T/ICTM	51
	Policy responses: Some conclusions	54
6	Conclusions and policy orientations	57
	Incidence and intensity of T/ICTM	57
	Effects of T/ICTM	57
	Policy responses to T/ICTM	58
	Policy suggestions	59
	Bibliography	61
	Annexes	67
	Annex 1: National studies	67
	Annex 2: Regression analysis based on the EWCS	68

Abbreviations used in the report

ATUS	American Time Use Survey
CTT	Centre for Telework and Teleinformation (Argentina)
EU-LFS	European Labour Force Survey
EWCS	European Working Conditions Survey
FEVS	Federal Employee Viewpoint Survey (US)
GSS	General Social Survey (US)
HRM	Human resource management
ICT	Information and communications technologies
JILPT	Japanese Institute of Labour Policy and Training
METI	Ministry of Economy, Trade and Industry (Japan)
MHLW	Ministry of Health, Labour and Welfare (Japan)
MIC	Ministry of Internal Affairs and Communications (Japan)
MLIT	Ministry of Land, Infrastructure, Transport and Tourism (Japan)
MNC	Multinational companies
OSH	Occupational safety and health
TEA	Telework Enhancement Act (US)
T/ICTM	Telework/ICT-mobile work
TPR	Teleworking Population Research (Japan)
WHO	World Health Organization

Executive summary

Introduction

New information and communications technologies (ICT) have revolutionised everyday work and life in the 21st century. They enable people to connect with friends and family – as well as with work colleagues and supervisors – at any point in time; however, they also facilitate the encroachment of paid work into the spaces and times normally reserved for personal life. The uncoupling of paid work from traditional office spaces has been a crucial factor in this development. Today's office work and, more broadly, knowledge work, is supported by the internet, and can be carried out from practically any location and at any time. This new spatial independence has transformed the role of technology in the work environment, offering both new opportunities and new challenges.

This report considers the impact of telework/ICT-mobile work (T/ICTM) on the world of work. T/ICTM can be defined as the use of ICT – such as smartphones, tablets, laptops and desktop computers – for the purposes of work outside the employer's premises. The report synthesises research carried out by Eurofound's network of European correspondents in 10 EU Member States – Belgium, Finland, France, Germany, Hungary, Italy, the Netherlands, Spain, Sweden and the UK – and by ILO country experts in Argentina, Brazil, India, Japan and the US. These contributors were asked to review and summarise the findings of data and research literature on the subject of T/ICTM in their respective countries.

The report classifies T/ICTM employees in relation to their place of work (home, office or another location) and the intensity and frequency of their work using ICT outside the employer's premises. The following groups were identified: regular home-based teleworkers; occasional T/ICTM workers, with mid-to-low mobility and frequency of work outside the employer's premises; and high mobile T/ICTM, with high frequency of working in various places, including working from home.

The extent of the adoption of T/ICTM across different countries, and its effects on working time, performance, work-life balance, and health and well-being are analysed using information from the national studies, supplemented by data from the sixth European Working Conditions Survey. The report also reviews policy initiatives by governments, social partners and companies in relation to T/ICTM. The findings can contribute to the development of effective policies in the areas of digitalisation, fair working conditions and decent work in Europe and other regions of the world.

Key findings

The incidence of T/ICTM is related not only to technological developments in different countries but also to existing economic structures and cultures of work. The countries analysed in this report with high shares of T/ICTM include Finland, Japan, the Netherlands, Sweden and the US. Overall, the incidence of T/ICTM varies substantially, from 2% to 40% of employees, depending on the country, occupation, sector and the frequency with which employees engage in this type of work. Across the EU28, an average of about 17% of employees are engaged in T/ICTM. In most countries, larger proportions of workers carry out T/ICTM occasionally rather than on a regular basis. T/ICTM is more common among professionals and managers, but is also significant among clerical support and sales workers. In relation to gender, in general men are more likely to perform T/ICTM than women. However, women carry out more regular home-based telework than men. This suggests that country-specific gender roles and models of work and family life play a role in shaping T/ICTM.

Regarding the positive effects of T/ICTM, workers report a reduction in commuting time, greater working time autonomy leading to more flexibility in terms of working time organisation, better overall work-life balance, and higher productivity. Companies benefit from the improvement in work-life balance, which can lead to increased motivation and reduced turnover as well as enhanced productivity and efficiency, and from a reduction in the need for office space and associated costs. The disadvantages of T/ICTM are the tendency to lead to longer working hours, to create an overlap between paid work and personal life (work-home interference), and to result in work intensification. Home-based teleworkers seem to report better work-life balance, while 'high-mobile' workers are more at risk of negative health and well-being outcomes. Partial and occasional forms of T/ICTM appear to result in a more positive balance between the benefits and drawbacks. From a gender perspective, women doing T/ICTM tend to work shorter hours than men, and women seem to achieve slightly better work-life balance effects.

The findings on the effects of T/ICTM are therefore highly ambiguous and are related to the interaction between ICT use, place of work in specific work environments, blurring of work-life boundaries, and the characteristics of different occupations. Moreover, whether T/ICTM substitutes for work in the office or instead supplements it appears to be an important factor in determining whether the reported outcomes are positive or negative.

The European Framework Agreement on Telework (2002) addresses, to some extent, the potential gains and risks of T/ICTM in EU Member States, but such a framework does not exist outside the EU. Some countries have launched initiatives that address the working conditions of T/ICTM workers. However, most of the examples relate to formal, home-based telework. Only very recently have initiatives from governments, social partners and companies begun to look into other forms of T/ICTM, such as working informal, supplemental hours, through measures limiting such work beyond normal business hours.

Policy pointers

- Because the use of ICT outside the employer's premises has benefits for both employees and companies, policymakers should aim to accentuate the positive effects and reduce the negative ones: for example, by promoting part-time T/ICTM, while restricting informal, supplemental T/ICTM, or high-mobile T/ICTM involving long working hours.
 - In practical terms, the organisation of working time is changing and working time regulations need to reflect this reality. It is particularly important to address the issue of supplemental T/ICTM, which could be viewed as unpaid overtime, and to ensure that minimum rest periods are respected.
 - A major challenge to applying OSH prevention principles and health and safety legislation to T/ICTM is the difficulty in supervising working environments outside the employer's premises. A project by the European Agency for Safety and Health at Work (EU-OSHA) – *Foresight on new and emerging risks in occupational safety and health associated with ICT and work location by 2025* – will help policymakers address these challenges.
- To fully harness the potential of T/ICTM and improve the working conditions of the workers involved, training and awareness initiatives are needed for both employees and managers on the effective use of ICT for working remotely, as well as the potential risks, and how to effectively manage the flexibility provided by this arrangement.
- T/ICTM can play a part in policies that aim to promote inclusive labour markets and societies, as some country examples indicate that it increases the labour market participation of certain groups, such as older workers, young women with children and people with disabilities.
- Governmental initiatives and national or sectoral collective agreements are important for providing the overall framework for a T/ICTM strategy. This framework needs to provide sufficient space for developing specific arrangements that serve the needs and preferences of both workers and employers.
- The findings regarding differences in the working conditions of those engaged in different types of T/ICTM – for example home-based telework or high mobile work, need to be considered. Policy measures should tackle the reasons underlying the negative effects on working conditions identified by the study.

Introduction

'Time and space are modes by which we think and not a condition in which we live.'

Albert Einstein

New information and communications technologies (ICT) have revolutionised everyday work and life in the 21st century. They enable people to connect with friends and family – as well as with work colleagues and supervisors – at any point in time; however, they also facilitate the encroachment of paid work into the spaces and times normally reserved for personal life. The uncoupling of paid work from traditional office spaces has been a crucial factor in this development. Today's office work and, more broadly, knowledge work, is supported by the internet, and can be carried out from practically any location and at any time. This new spatial independence has transformed the role of technology in the work environment, offering both new opportunities and new challenges.

Telework has existed since the 1970s, when telecommuting developed in the information industry in the US state of California (Nilles, 1975). ICT-based mobile work emerged later, as smaller and lighter wireless devices such as laptops and mobile phones enabled employees to work not only from home, but from practically any location where they needed to work (Messenger and Gschwind, 2016). In the early days, it was expected that, at some point in the future, everyone would work remotely. However, while ICT has indeed changed how we work, the use of ICT for work outside the employer's premises is still by no means a general practice for all workers. In fact, the adoption of these work practices was much slower than anticipated, due to various human, social and organisational factors (as discussed in Chapter 2), including basic human factors associated with people's needs to meet other people face to face (Vilhelmson and Thulin, 2016; Eurofound, 2010; Rasmussen and Corbett, 2008).

In parallel with technological advances, in recent decades more flexible working time arrangements have been adopted, driven both by the needs of companies for more flexible production and the desire of workers to be able to better balance their work with other, personal commitments – often related to family duties.

This development has been influenced by the rise in dual-career families and the ongoing challenge of dealing with both work and family demands.

The spatial and temporal flexibility brought about by new ICT has the potential to alter the way we work and live. Specifically, the literature suggests that place, mobility and the intensity of ICT use can have implications for working conditions and other outcomes. Scholars are increasingly focused on the advantages and drawbacks of new ICT in terms of such issues as working time, individual and organisational performance, work-life balance and occupational safety and health. Policymakers and those involved in employment relations have started to become aware of the implications of the 'anytime, anywhere' nature of ICT-based work. A few initiatives, including changes in legislation, programmes and social partners' agreements, have been established at national level in some countries.¹ However, most policies and programmes exist at the organisational level.

With this report, Eurofound and ILO aim to synthesise the national studies from Argentina, Brazil, India, Japan, the United States, Belgium, Finland, France, Germany, Hungary, Italy, Netherlands, Spain, Sweden and the United Kingdom.^{2,3} The authors of the contributions were asked to identify and compile existing information from country-level datasets and research studies on what is termed 'telework/ICT-mobile work' (T/ICTM) in this report. T/ICTM can be defined as the use of information and communications technologies (ICT), such as smartphones, tablets, laptops and/or desktop computers, for work that is performed outside the employer's premises. The report differentiates between different places of work and levels of frequency, grouping workers in relation to both the place of work (home, office and other locations) and the intensity or frequency of working with ICT from outside the employer's premises.

1 In this report, the term 'social partners' includes both worker organisations (trade unions) and employer organisations.

2 The ILO convened a Tripartite Meeting of Experts on Working-time Arrangements (TMEWTA) in October 2011. The objective of the research conducted in this joint Eurofound-ILO study is to address one of the major issues regarding hours of work identified in the Conclusions of the TMEWTA: the effects of new ICT on the organisation of working time and work-life balance.

3 Countries were selected on the basis of two criteria: high use of ICT outside the employer's premises, according to the sources of information used for preparing the study, and the inclusion of different geographical areas in Europe and the rest of the world.

However, the reality is more complex. T/ICTM is a growing phenomenon, affecting up to one-third of employees in some of the countries included in this report. The national studies reviewed include large-scale surveys and company case studies about the incidence of T/ICTM, as well as its effects on hours of work and work schedules, individual and organisational performance, work-life balance, and occupational health and well-being. The studies also include information on initiatives by companies, social partners and governments related to the use of T/ICTM. All this information was collected, carefully compiled and summarised for this report. Data from the sixth European Working Conditions Survey (EWCS) were used to estimate the incidence of T/ICTM in the EU countries and to explore associations between T/ICTM and working time, work-life balance and occupational health and well-being (Eurofound, 2016).

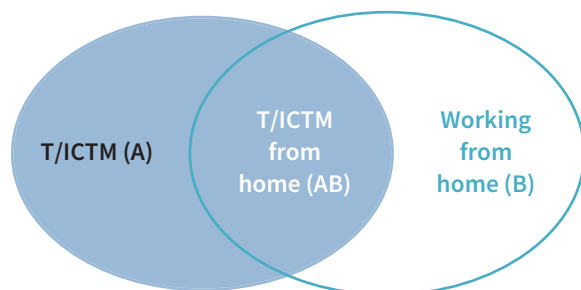
The scope of this report is the 15 countries listed above: five countries outside Europe and 10 EU Member States. In relation to the workforce of these countries, the study focuses on those employees who work, with varying frequencies, outside the employer's premises using ICT. The nature of the employment relationship and of the work performed by employees outside the employer's premises differs from the working situation of self-employed people. By default, for many self-employed people, their home is also their place of work. Although outside of the scope of this report, the authors nevertheless recognise the relevance of ICT and digitalisation for the self-employed and the potential implications for how they work, as well as the emergence of new forms of work enabled by ICT in which the employment relationship is unclear – such as so-called 'platform work'. It will be very important that the implications of digitalisation for these groups of workers are specifically addressed in future research at European and global levels.

1 Outline of methodology

Conceptual challenges and scope

In order to understand and compare the incidence and intensity of telework/ICT-mobile work (T/ICTM) across countries, it is necessary to be aware of the conceptual challenges, as well as of the limitations regarding the available data. Both of the terms used to describe this phenomenon and the operational definitions in the data sources vary across countries. A translation of the English term ‘telework’ into the country’s first official language is the most commonly used term to express what is labelled T/ICTM for this study. The term ‘telecommuting’ is also used in the US, as well as in India and Japan, to refer to work that obviates the need for commuter travel. Operational definitions typically fall into one of two overlapping categories: work performed with the help of ICT from outside the employer’s premises (A), and work done from home (B). Figure 1 illustrates the relationship between the two categories.

Figure 1: Work arrangements covered in the national reports



For example, data sources for the national study for Japan cover A and AB separately – both T/ICTM in a general sense and its intersection with B (working from home). The surveys referred to in the report for the US cover either A or B, but not their intersection as a separate category. The data for India come from a new employee survey conducted for this study that applies the definition of T/ICTM as shown in category A. The operational definition used in the Argentina study is also in line with this definition.

Among the national studies, European data sources sometimes label all workers working outside the employer’s premises with ICT as (A) and (AB). However, in some cases they include only those workers who work from home (B), which typically also involves working with ICT – for example, according to the national study for the UK, 94% of those working from home in the UK do so using ICT devices, based on UK data for the European Labour Force Survey (EU-LFS) 2015.

Drawing on the national studies, therefore, the report will sometimes refer to T/ICTM (or telework) as work done outside the employer’s premises in a variety of locations. In the report, the term T/ICTM has the same meaning as telework and the two terms are interchangeable. Home-based telework (T/ICTM from home) is used to refer to work performed at home using ICT.

While within the wide category of T/ICTM the sources of information at national level use a variety of terms and concepts, for the purpose of this study the terminology for the groups of workers is defined as follows: 1) Regular home-based telework: work done mainly on a regular basis from home; 2) High mobile T/ICTM: work involving a high frequency of working in various places outside the employer’s premises; and 3) Occasional T/ICTM or occasional telework: employees doing T/ICTM occasionally either from home or from other locations or both, with a low level of mobility.⁴ In this report, the term partial home-based telework is also used to refer to regular home-based telework done by employees working from home, for example, only one or two days a week – that is, part-time teleworking.

This categorisation aims to identify the various types of situations in which employees can perform T/ICTM, for the purposes of this analysis.

As explained in the introduction, the focus of this report is on employees. Self-employment (own-account work) can be conceptually challenging in the context of T/ICTM, due to the overlapping boundaries between ‘working from home’ with ICT and ‘working at home’ without ICT (such as traditional, industrial home-based work).⁵ In addition, in relation to the definition of T/ICTM used in this report, most self-employed people are in fact working at the employer’s premises – their

⁴ Regular home-based telework means work done from home on a regular basis. However, it does not necessarily mean working every day from home. For example, for the analysis of the EWCS, the threshold used for regular home-based telework is to work at least several times a month from home. In principle, it is possible to work regularly from home (for example, once a week) and, in this case, it could also be called partial home-based telework.

⁵ ‘Working from home’ is considered to be home-based telework, while ‘working at home’ refers to work done at home using the home as a place of work and production without ICT. An example of the latter is the worker sewing garments at home who sells their products to a company, often based on a piece-rate remuneration system.

own home – or they are the employers. In some chapters of the report, comparative information is presented to illustrate the differences between employees and the self-employed.

Standard expert questionnaire

A standard expert questionnaire on T/ICTM and its effects was jointly developed by Eurofound and the ILO in 2015. The questionnaire was used to structure and compile the data on T/ICTM available in each country analysed in this report. The breadth and depth of available data on T/ICTM vary substantially across the 15 countries observed. Data sources in all the national studies include large-scale surveys with individuals, while some include surveys with households and companies. Other information sources include research studies, in-depth interviews with experts and employers, white papers, laws and company policies on ICT-enabled work from outside the employer's premises.

The questionnaires for each country can be roughly divided into three groups, corresponding to the kind and quality of data sources used. Only limited pre-existing data on the topic could be made available in Brazil, Hungary, and India. Nationwide surveys on working from home and the use of ICT (generally as part of the labour force or working conditions surveys) in a more general sense were the main data source for the studies from Argentina, the US and the European countries. Surveys on T/ICTM in particular comprised the main data source for the report from Japan.

Statistics on T/ICTM were generated, to varying degrees, across these countries. What seems to fuel this variation is differing levels of interest in the topic among policymakers and public authorities. Policymakers and public authorities generally initiate and support research on T/ICTM in order to promote the adaptation of existing work arrangements and labour markets to the 'information age'. The actual adoption of T/ICTM among employers and employees seems to play a smaller role.

The information from Europe is complemented with data from the sixth wave (2015) of the European Working Conditions Survey (EWCS). The objectives of the EWCS are: (a) to measure working conditions across European countries on a harmonised basis; (b) to analyse relationships between different aspects of working conditions; (c) to identify groups at risks and issues of concern, as well as areas of progress;

(d) to monitor trends over time; and (e) to contribute to European policy development, in particular on quality of work and employment issues. The survey included 43,850 face-to-face interviews with workers – both employees and the self-employed. Both descriptive and multivariate analysis have been developed to investigate the incidence of, and associations between, T/ICTM, working time, work-life balance and health and well-being (Eurofound, 2015a)⁶. In the analysis of the EWCS included in this report, only employees are included.

EWCS proxy of T/ICTM

Despite recent developments, statistical sources included in the national studies show that several fundamental problems constrain the ability to draw comparative conclusions, such as use of different thresholds and ways of measuring the incidence of T/ICTM in Europe and elsewhere.

Bearing in mind these limitations, a good source for mapping out the incidence and intensity of T/ICTM across European countries from a cross-national perspective is the sixth European Working Conditions Survey (EWCS) carried out in 2015 (Eurofound, 2016). Based on the main place of work and the reported use of ICT, it is possible to create a proxy indicator based on EWCS 2015 data that captures the incidence of T/ICTM in all EU Member States. In the EWCS, respondents are asked if and how often their main paid job involves 'working with computers, laptops, smartphones, etc.' They are also asked about the frequency of working in their main paid job: at the employer's premises; at the client's premises; in a car or another vehicle; at an outside site; at home; or in a public space. Operationalisation of the definition of the workers doing T/ICTM in EWCS 2015 includes workers who (1) work with ICT 'all of the time' or 'almost all of the time'; and (2) work at one or more other locations than the employer's premises 'at least several times a month'.

A distinction is made between workers who work mainly from home (regular home-based teleworkers) and mobile workers. The T/ICTM group can also be divided between those who work outside the employer's premises at high frequency and those that only do so occasionally. The distinction is made mainly because a review of the relevant literature suggested that different levels of T/ICTM intensity and range of places at which individuals work might potentially have different consequences for working conditions.

⁶ See the regression analysis based on the EWCS in Annex 2.

Table 1: Operationalisation of categories of T/ICTM according to ‘use of ICT’ and ‘place of work’ items

Category	Use of ICT	Place of work	
Regular home-based telework	Always or almost of all the time	Working in at least one other location than the employer’s premises several times a month.	From home at least several times a month and in all other locations (except employer’s premises) less often than several times a month.
High mobile T/ICTM			At least several times a week in at least two locations other than the employer’s premises or working daily in at least one other location.
Occasional T/ICTM			Less frequently and/or fewer locations than high T/ICTM.
Always at the employer’s premises	All categories	Always at the employer’s premises.	

Source: Sixth EWCS (2015)

On the basis of the operationalisation of the groups listed in Table 1, each group can be defined as follows:

- *Home-based telework*: Employees working from home regularly, using ICT.
- *High mobile T/ICTM*: Employees working in several places regularly, with a high level of mobility and using ICT.

- *Occasional T/ICTM*: Employees working in one or more places outside the employer’s premises only occasionally and with a much lower degree of mobility than the high mobile group.
- *Always at the employer’s premises*: Employees who work exclusively from the employer’s premises, with or without ICT.

Finally, in addition to the national studies and the EWCS 2015, the analysis contained in this report also includes findings from relevant research literature.

2 Drivers and restraining factors for T/ICTM

Telework/ICT-mobile work (T/ICTM) is viewed as advantageous for both employers and employees for a number of reasons. One is the potential improvement of work–life balance, not least by the reduction in time spent commuting. It can lead to reductions in the following: physical transportation and urban congestion; pollution and energy use; office space and associated costs. It can create job opportunities, attract and retain qualified workers, and potentially even spark economic growth in remote regions (see, for example, Haddon and Lewis, 1994, and Bailey and Kurland, 2002.) Most of these motivations are highlighted in the national studies from France, Germany, Italy, the Netherlands, Spain, Sweden and the UK, as well as in all of the ILO national studies. In all these countries, T/ICTM – especially home-based telework – is becoming an increasingly important strategy for groups struggling to combine the daily use of time for various purposes at different locations (see Wheatley, 2012a).

Drivers for the adoption of T/ICTM

Work–life balance

As was highlighted in the European Working Conditions Survey (EWCS) (Eurofound, 2016), one of the main drivers for adopting T/ICTM, and flexible work arrangements in general, is improvement of the work–life balance of employees. ICT enables employees to better balance their work and personal life by eliminating commuting time and/or adapting their working hours to their personal needs. For companies, it is also a way of improving the retention of employees. For example, in Germany, a company survey on the reconciliation of work and family life finds that improved family friendliness in companies is a major driver for managers to adopt flexible working time arrangements, including telework and mobile work schemes (BMFSFJ, 2013). Over four-fifths (80.7%) of the companies surveyed stated that family friendliness was ‘important’ or ‘quite important’. The trend is towards individual agreements in the drawing up of working time arrangements. A study carried out by BITKOM highlights the fact that in addition to seeking to improve employees’ work–life balance, companies are aiming to achieve greater employee retention (Pfisterer et al, 2013). Further reasons given by employees for adopting mobile work schemes included: better reconciliation of family and working life (regarded as ‘very important’ or

‘quite important’ by 86% of respondents), greater time flexibility (rated as ‘important’ or ‘quite important’ for 79%), higher job satisfaction (‘important’ or ‘quite important’ for 65%), and no commuting (‘important’ or ‘quite important’ for 63%). Likewise, in Spain, according to a survey carried out by IDC in 2013 highlighted in the Spain national report, 70.9% of the employers surveyed reported that the main reason for applying flexible work policies was ‘social motivations’, especially the improvement of work–life balance.

Even in some countries where the T/ICTM phenomenon is not as widespread as in others, work–life balance can be a major factor driving change. For example, in Italy, the most representative trade unions – the Italian General Confederation of Work (Confederazione Generale Italiana del Lavoro, CGIL), the Italian Confederation of Workers’ Unions (Confederazione Italiana Sindacati Lavoratori, CISL) and the Union of Italian Workers (Unione Italiana del Lavoro, UIL) – have called for the adoption of teleworking in order to increase the quality of work–life balance policies for employees either living very far from the workplace (commuters travelling about three hours daily to reach the workplace), or looking after young children or close relatives with disabilities. Although not mentioned in the Italian national study, the situation could also be applied to workers who need to look after elderly relatives.

Advances in ICT

Another important driver for the development of T/ICTM is clearly the advances in information and communications technologies that have occurred in recent years. While home-based telework has been feasible for decades, so-called ‘new ICT’ such as smartphones and tablet computers have revolutionised work and life in the 21st century. Crucial to this development is the detachment of work from traditional office spaces. Smartphones, tablets and similar devices enable not only traditional forms of telework (working from home or home-based telework), they also facilitate working on the move (what this report calls ICT-mobile work) and working from any location. Findings from the Swedish national study, for example, suggest that, since 2005, the increased portability, interactivity and media richness of new ICT have made teleworking more feasible for many workers. As will be seen later in this report, the incidence of T/ICTM has increased dramatically since the 1990s in some countries, notably in Sweden and the US.

Flexible working time arrangements

The use of ICT to perform work outside the employer's premises is also linked to the extension of the use of flexible working time arrangements. According to Eurofound (2012), the motives for implementing flexible working time arrangements relate to the improvement of working conditions – more specifically, ways in which workers can reconcile work and personal life – as well as to the requirements of specific production systems, and therefore organisational needs, to improve productivity and performance. Therefore, since ICT enables spatial and temporal flexibility, those workplaces where flexible working time arrangements are developing can also be the environments in which T/ICTM develops.

The contexts in which T/ICTM is more easily developed include work environments with results-driven elements. From a sectoral perspective, the Spanish 'Fundación primero de Mayo' (2015) shows that in the manufacturing industry, due to the fact that work has to be executed in a workshop or production line, it is more difficult to introduce flexible working time arrangements and telework than in other sectors where there are more alternatives linked to results-based management. According to the UK national study, T/ICTM in the UK is more common in technology-intensive sectors and in Anglo-Saxon multinational companies (MNCs). However, there is a high degree of heterogeneity, suggesting that individual choices to develop telework are as important as the organisation's culture.

Finally, it can be said that occupations and work tasks increasingly involve communication and the transfer of knowledge and informational products, symbols and services over great distances. For these reasons, jobs and tasks have gradually become more appropriate for T/ICTM. This trend is still strongly associated with higher status occupations in the advanced service sector (Vihelmsen and Thulin, 2016).

Restraining factors to the adoption of T/ICTM

Despite this development, several factors impede the actual adoption of T/ICTM by organisations, regardless of the available technology. For example, in some countries and organisations, the culture of work makes organisations reluctant to introduce telework and other types of flexible work arrangements and individual employees can be reluctant to use those options even when they are available. For example, according to the Spanish study, the work culture in that country is characterised by relatively high levels of presenteeism and not primarily driven by objectives in many

workplaces. The result is the relatively low implementation of flexible work arrangements, including telework. According to the 2013 IDC survey mentioned earlier, only 13% of the Spanish firms offer this type of work arrangement.

Employer (or organisational) and managerial attitudes towards T/ICTM comprise another important factor – either for driving or restraining the growth of this work arrangement. In contrast to the situation in Spain, the Swedish study reported that managers in Sweden are more positive about having their employees telework than in other countries. Vihelmsen and Thulin (2016) found evidence that employers' willingness to permit telework increased in Sweden between 2005 and 2012, implying that significant constraining factors, associated with managers' trust, power and control, have been eased. In addition to managers' willingness to permit and support working from home, other factors include levels of trust between managers and employees, self-perceived job sustainability, workplace interaction needs, and the availability of office space and equipment at home.

According to most of the national studies for this report, there appears to be a considerable degree of management resistance to T/ICTM in many organisations – including those that already have teleworking/telecommuting policies in place. All the national studies concur that this resistance is due mainly to the fact that the traditional 'command and control' style of management is not really possible with T/ICTM, and many managers fear this loss of control. For example, the US national study notes, 'Managers are often distrustful of teleworkers. Out of sight, they assume teleworkers are slacking off' (p. 26). Among the countries included in this study, management resistance to T/ICTM is perhaps strongest in India, as indicated by the following statement from the India national study:

Managers may resist teleworking especially in high power distance countries like India because of their inability to control or monitor physically dispersed subordinates who by telecommuting also reduce their dependence on them. In fact, to reclaim their power the supervisors may increase direction and control [of] work procedures or even increase the surveillance of subordinates.

(National study for India, p. 33)

Interestingly, according to the national study for Belgium, employers with experience in adopting teleworking appreciate its advantages more than those who have not yet had that experience. This finding suggests that some employers might be prejudiced against teleworking.

Drivers in countries outside the EU

Outside the EU, the extent of adoption of T/ICTM is also closely related to country-specific drivers of this work arrangement. In the US, telework/telecommuting began in the 1970s and 1980s, in the information industry in California (Nilles, 1975), and has gradually expanded over the decades. The Telework Enhancement Act (TEA) of 2010 even stipulates that US federal government agencies should enable T/ICTM for all federal government employees (For additional information, see Chapter 5). Today, telework/telecommuting is increasingly promoted in the US as a type of business model that attracts top talent and reduces both commuting time and costs, and office space and associated costs.

In Japan, T/ICTM is promoted mainly as a tool to combat the erosion of the labour force. Declining birth rates, paired with an ageing population and low employment rates among women, have led to a decline in labour force participation over the last two decades. In response, public agencies like the Ministry of Internal Affairs and Communications (MIC), the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) and the Ministry of Health, Labour and Welfare (MHLW) strongly promote T/ICTM in order to encourage increased labour force participation, particularly among women with young children. Moreover, comprehensive national data on this topic are generated on a regular basis in Japan, due to the particular attention paid to T/ICTM among the public authorities. However, there is a distinct difference between teleworkers who work primarily from home – called ‘telecommuters’ in Japan – and ‘mobile workers’. While participation in telework is entirely voluntary for telecommuters, it is often mandatory for mobile workers – who are mainly sales persons – to increase customer-serving time and reduce office space costs.

In Argentina, a range of efforts to create policies and public institutions established for this work arrangement at national level have focused attention on T/ICTM. A Commission on Telework initiated by the Ministry of Work, Employment and Social Security (*Ministerio de Trabajo, Empleo y Seguridad Social*, MTESS) presented a legislative project in 2007 aimed at regulating the standards for occupational health and safety for teleworkers. Experts on this Commission came from the Centre for Telework and Teleinformation (CTT) at the University of Buenos Aires, which was created in 2000 as a response to the severe economic crisis that struck Argentina in the 1990s. CTT scholars evaluate the capacity for job creation through T/ICTM in the information age and work closely with public agencies, worker organisations and employer organisations.

In Brazil and India, public interest in T/ICTM has been growing more slowly than in the countries discussed thus far. National debates about the merits and limitations of the work form have been encouraged only relatively recently in Brazil – for example, there was a seminar on the topic held by the Brazilian Commission on Participative Legislation (CLP) in June 2013. A central driver for this debate is the growing concern about air pollution and traffic congestion in major urban areas such as São Paulo, where, according to the Brazil national study, annual average concentrations of pollutants (such as fine particulate matter and ozone) are very high and average commuting time is very long (one hour and 40 minutes) – hence T/ICTM is seen as a means of reducing commuting and pollution. However, while similar problems in terms of severe traffic congestion and the resulting pollution have arisen in India, there has been little public debate on T/ICTM as a possible response and flexible working time arrangements are not part of the prevailing business model.

3 Incidence and intensity of T/ICTM

Researchers have been increasingly concerned with the incidence and intensity of telework/ICT-mobile work (T/ICTM), with more data on these topics being gathered at national and sub-national levels. As mentioned in Chapter 1, however, several difficulties in relation to the available data prevent comparative conclusions from being drawn and hence a comprehensive and comparative picture of T/ICTM across the countries included in this study.

One problem is that, despite a growing consensus, there is still no universally accepted definition of telework or T/ICTM (see, for example, Sullivan, 2003). Different definitions are used, depending on the place of work, the intensity of ICT usage and the distribution of time between office and home/other locations. For instance, while some studies focus strictly on the home as a work location (for example, Greenworking, 2012) – that is, on home-based teleworkers – others have a broader focus and include all places of work outside the employer's premises (for example, CBS and TNO, 2014; Dares, 2004). In addition, some authors consider only those who perform T/ICTM regularly (CBS and TNO, 2014), while others include those who do telework occasionally (for example, Lyly- Yrjänäinen, 2015). These differences ultimately lead to different conclusions and results, which impede the drawing up of a comparative analysis, or at least make such an analysis difficult.

Another problem is the limited availability of data on the incidence and intensity of T/ICTM in many countries. Despite the growing interest of researchers in this work arrangement, accurate and comprehensive data in some countries are either rare or do not reflect the actual population doing this type of work because they only relate to people working from home. In the sections that follow, data on the incidence and intensity of T/ICTM will be presented mainly as regards employees. However, for some countries and for some indicators, information is only available for total employment; these national figures therefore cover all workers, not just employees.

Trends and incidence of T/ICTM in 10 European countries

Several national time series datasets enable historical trends regarding the number of T/ICTM workers to be mapped. According to these sources, the share of workers doing T/ICTM has increased since the beginning of the 21st century, as some authors, such as Popma (2013) and Holtgrewe (2014), have pointed out. In France, for example, the share of employees performing

T/ICTM increased from 7% in 2007 to 12.4% in 2012 (Greenworking, 2012). Similarly, in Sweden, the share of enterprises with employees who telework increased from 36% in 2003 to 51% in 2014 (Statistics Sweden 2015). In Sweden, the most recent research (Vilhelmsson and Thulin, 2016) shows that, following a period of relative stagnation in the number of people teleworking, from 2005 to 2012 there was a significant increase. This increase is possibly due to some of the drivers mentioned in Chapter 2 (for example, the growing capacities of ICT devices and an increase in knowledge-based activities), as well as a reduction in some restraining factors, such as managerial resistance.

However, a closer look reveals that the incidence is very low in some of the countries analysed while the expansion of T/ICTM has stagnated in other countries in recent years. In Hungary, for example, the number of regular home-based T/ICTM workers has not grown as expected. Despite a reported increase between 2006 (0.7%) and 2014 (1.3%), the actual share of such workers remains small (KSH, 2014). In France, T/ICTM has not yet been rolled out in most large enterprises: 75% of such enterprises allow telework, but only in pilot projects (Greenworking, 2012).

Germany is below the EU average in terms of home-based telework and lags considerably behind other countries, such as the Scandinavian countries (Brenke, 2016). Only 12% of all employees in Germany work primarily or occasionally from home, although 40% of jobs are suitable for this form of work, in that they involve use of ICT and do not require the worker to be in a certain location.

Data from Spain indicate that 6.7% of workers carry out T/ICTM in that country (INSHT, 2011).

It is worth taking a closer look at the working habits of teleworkers and ICT mobile workers, in terms of the main work location, the frequency of telework or mobile working, or the work organisation and working time of teleworkers. The work location is a critical element in distinguishing between home-based telework (home as the main workplace) and ICT-mobile work (working from other places outside the employer's premises, such as coffee shops, trains and planes and other public spaces).

Walrave and De Bie (2005) show that in the Flemish region in Belgium more than half (60%) of the employees who work outside the employer's premises using ICT do so from home. Less common places of work include customers' offices (16%) and forms of transport (11%). Very few workers performing T/ICTM make use of a telecentre or other teleworking location (4%).

Similarly, Pfisterer et al (2013) show that in Germany the main location for employees using ICT outside the employer's premises is the employee's home, followed by cars and trains and then hotels and other places. This pattern holds true for both men and women to an almost equal extent (women tend to work from home slightly more than men). Thus, in general, home-based telework is more common than ICT-mobile work: when using ICT outside the employer's premises, employees generally prefer to work at home rather than more flexibly in various places or on the road.

In terms of the intensity of T/ICTM – how frequently employees carry out such work – there seems to be no uniform pattern apparent across the studies considered. Pfisterer et al (2013) and TOR-VUB (2004) show that employees who carry out home-based telework do so quite frequently (national studies from Belgium, Germany and the UK). According to Pfisterer et al (2013), 21% of the employees in Germany who use ICT daily do home-based telework every day (compared to 10% of those using ICT once a week and 13% using it occasionally). Similarly, Perkiö-Mäkelä and Hirvonen (2013) show that in Finland employees who have performed T/ICTM within the last 12 months have usually done so on a weekly basis (41%). One-fifth (20%) have carried out T/ICTM monthly, while 26% have done so irregularly. In contrast, Statistics Sweden (2015) shows that, out of all Swedish employees, most telework for only a few hours per week (24%) rather

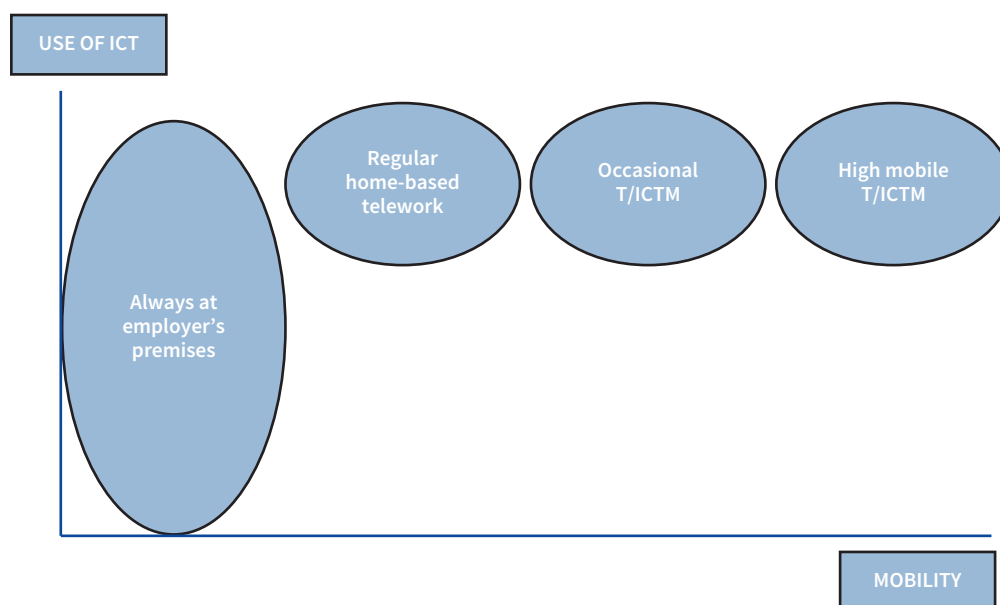
than on a frequent basis (4% telework up to two days a week and a further 4% telework for three days a week or more).

The above-mentioned key dimensions of T/ICTM – workplace/mobility and intensity of use of ICT – were used to develop a proxy indicator using the EWCS 2015.⁷ The following categories were created from these data: regular home-based teleworker; high mobile T/ICTM worker; and occasional T/ICTM worker. The latter category includes both some occasional home-based telework and occasional ICT-mobile work.

Full definitions of the terms in Figure 2 and details on the methodology employed can be found in Chapter 1.

In the EU in 2015, about 3% of workers mainly did regular home-based telework, about 5% did high T/ICTM and about 10% did occasional T/ICTM. In total, about 17% of employees were doing T/ICTM (Figure 3). The fact that those who do 'regular home-based telework' comprise the smallest group might suggest that working from home is the form of T/ICTM least popular among employees. However, employees working from home can also be included in the groups of occasional and high mobile T/ICTM, as these workers work in various places, which can occasionally include their home. In fact, 47% of those in the high mobile T/ICTM group and 51% in the occasional T/ICTM group worked from home at some point during the 12 months prior to being interviewed.

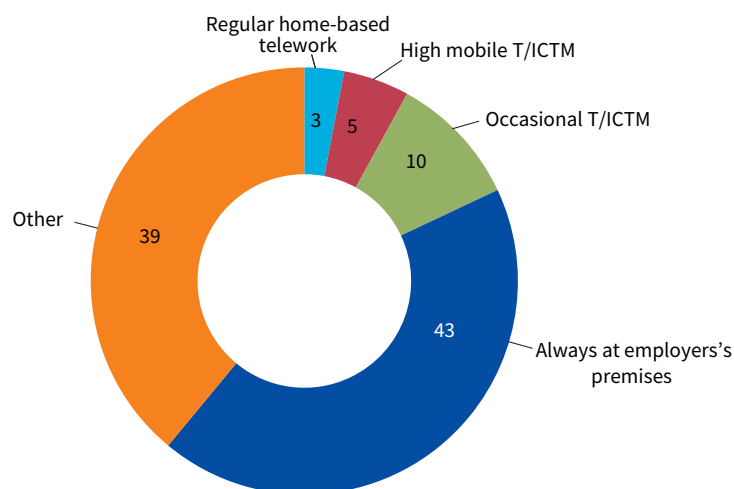
Figure 2: Classification of employees doing T/ICTM based on level of mobility and use of ICT outside the employer's premises



Source: Developed by authors.

⁷ As noted in Chapter 1, the group 'others' is excluded from the analysis because it comprises a mixed group of workers using or not using ICT when working with low frequency outside the employer's premises.

Figure 3: Proportion of employees engaged in T/ICTM in the EU28 (%)



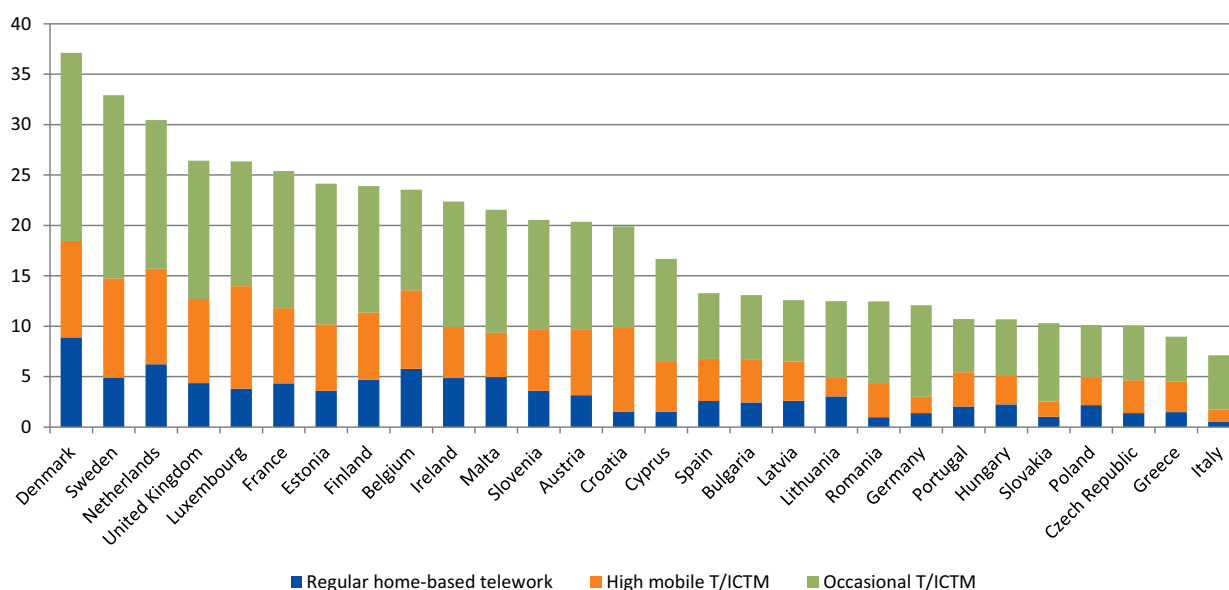
Note: These data are based on the proxy categorisation of T/ICTM.

Source: EWCS 2015.

Figure 4 shows the incidence of T/ICTM among employees in the 28 Member States of the EU. Among the 10 EU countries included in this study, a higher proportion of employees in the Scandinavian countries use ICT – always or almost all of the time – and work, to varying degrees, outside the employer's premises. Other EU countries with a relatively high share of workers performing T/ICTM are Belgium, France, the Netherlands and the UK. Four of the countries included in this study fall below the EU28 average: Germany, Hungary, Italy and Spain. Taking into account the different methodologies and sources of information used at national level, the results of EWCS 2015 and the

national sources of information presented above are comparable. The EU Labour Force Survey (2015) shows that among the 10 countries, Germany, Hungary, Italy and Spain also have lower percentages of employed persons working from home, whereas Belgium, Finland, the Netherlands and Sweden are above the EU average regarding the share of employees working from home (Eurostat, 2015). In this case, the indicator includes employees working from home independently of the use of ICT. However, as noted earlier regarding EU countries with the relevant information, the large majority of employees working from home do so with ICT.

Figure 4: Percentage of employees doing T/ICTM in the EU28, by category and country



Source: EWCS 2015.

Another interesting finding, using the proxy of the EWCS 2015, is that in some countries, the share of workers who engage in occasional T/ICTM is to some extent larger than the share of those engaged in T/ICTM on a regular or high intensity basis (high mobile T/ICTM and regular working from home). However, in other countries the incidence of both groups is similar.

Trends and incidence of T/ICTM in Argentina, India, Japan and the US⁸

Regarding these four countries outside the EU, the development of T/ICTM over time can only be shown for the US. There, 37% of all workers report that they ‘telecommuted’ or teleworked (or do T/ICTM) in 2015, which is up slightly from 30% during the previous decade. This proportion is four times greater than the 9% of workers who did so in 1995 (Gallup, 2014; Gallup, 2016).

Level of intensity in T/ICTM is compared across these four countries, insofar as this is possible. Specifically, this comparison focuses on employees who work outside the employer’s premises, with the help of ICT, at least one day a week or eight hours per week.

The Teleworking Population Research (TPR) in Japan only includes employees in a full-time job, and the benchmark intensity of eight hours per week refers to what is called ‘teleworker in a narrow sense’ in the report from Japan. In the US, the (General Social Survey) GSS allows for a similar benchmark of intensity: at least once per week. The survey for India roughly matches this frequency level, with an estimation of T/ICTM of at least one day per week. Estimations for T/ICTM in Argentina are not provided by intensity.

The share of T/ICTM workers varies across the countries studied in the ILO reports – from 20% in the US, 19% in the non-agricultural ‘organised sector’ (formal economy) in India, 16% in Japan, to just 1.6% in Argentina.⁹ (No data on the incidence of T/ICTM are available for Brazil, but it is interesting to note that telemediated services in that country more than doubled during the past decade, reaching 1.0 % of formal wage employment before stalling during the recent economic downturn.) Given the fact that ‘organised sector’ employment in India represents a relatively small portion (14%–16%) of total employment in that country (Institute of Applied Manpower Research, 2012), the incidence of T/ICTM in the countries outside Europe is really only substantial in the US and Japan.

Survey items for occasional T/ICTM at a lower level of intensity are still very rare in research on the topic. Japan is a notable exception, most likely due to the extensive efforts of the Japanese government to promote T/ICTM. The TPR survey in Japan includes items for ‘teleworker in a wide sense’, defined as T/ICTM of less than eight hours per week and as little as only one minute per week. Telework of such a low intensity could include a single phone call or email from home or from places such as cafés or trains. The Japan national study estimates that the share of T/ICTM workers among all employees under this low level of intensity is estimated to be quite high: approximately 32% of all employees in Japan.

Figures similar to those for T/ICTM in Japan can be identified for the US when more occasional use is considered. For example, results of the Federal Employee Viewpoint Survey (FEVS) indicate that T/ICTM is done by 29% of all federal government employees when the categories ‘very infrequently’ and ‘one or two days a month’ are included. In other words, only about 70% of federal employees never do T/ICTM. A comparable share of employees who never do T/ICTM can be identified for the total US workforce (60%) using GSS data and also for all respondents of working age in the Ipsos data (68%). Based on the findings from the entire range of available data sources, the US study estimated that the incidence and intensity of T/ICTM among US employees is as follows: 2.5%–4% of employees perform T/ICTM at least 2.5 days per week; 6%–10% of employees do it one to 2.5 days of T/ICTM per week; 4%–5% of employees do occasional T/ICTM, on a monthly basis; and an additional 6%–11% carry out T/ICTM less frequently.

The findings suggest that lower-intensity T/ICTM varies among European countries included in this report, and that occasional T/ICTM may be on the rise in Japan and the US. An estimated share of around 30% to 40% of employees in both Japan and the US use ICT infrequently and/or for short periods of time, in order to perform work from outside of the employer’s premises.

Table 2 presents data available for the 10 EU countries and the five countries from the rest of world analysed in this report, either on home-based telework or all T/ICTM. As highlighted before, it is important to bear in mind that these figures are based on different thresholds and ways of measuring the incidence of T/ICTM. Nevertheless, they provide a general indication about the overall level of importance of this work arrangement in different countries around the world.

⁸ There are no T/ICTM data available for Brazil.

⁹ It is important to keep in mind that the ‘organised sector’ (formal economy) in India represents only a small portion of the total Indian economy. Assuming that T/ICTM is rare in the ‘unorganised sector’ (informal economy), the percentage of T/ICTM workers in the total Indian economy is actually quite small.

Table 2: Rates of T/ICTM by country

Country	Group	%	Year	Source
Argentina	T/ICTM (N/A) All workers	2	2011	National Survey on Information and Communication Technologies (ENTIC)
Belgium	Home-based telework (at least sometimes)** All workers	20	2011	Belgium Labour Force Survey
	Home-based telework (at least 1 day per week) Employees (Flemish region only)	23	2004	TOR-VUB
Finland	T/ICTM (during the last 12 months) Employees	28	2013	Finnish Working Life Barometer
France	T/ICTM proxy All workers	7	2004	DARES
		12	2012	Greenworking
Germany	Home-based telework (at least 1 day per week) All workers	12	2014	Mikrozensus
Hungary	Home-based telework (last four weeks) All workers	1	2014	Hungarian Labour Force Survey (Hungarian Central Statistical Office)
India	T/ICTM (at least 1 day per week) Employees	19**	2015	Own
Italy	T/ICTM (Scope N/A) All workers	5	2013	Smart Working Observatory of the Polytechnic University of Milan
Japan	T/ICTM (at least 8 hours per week) Employees	16	2014	Teleworking Population Research (TPR)
Netherlands	T/ICTM (At least 1 half day per week) Employees	15	2014	Statistics Netherlands and TNO
Spain	T/ICTM (proxy) All workers	7	2011	National Working Conditions Survey (National Statistics Institute)
Sweden	Home-based telework employees* (total)	32	2012	Statistics Sweden
	Employees (at least 1 day per week)	8		
UK	Home-based telework (reference week) Employees	4	2015	Labour Force Survey – Office for National Statistics
US	T/ICTM (at least 1 day per week) Employees	20	2012	General Social Survey (GSS)

Note: This table shows the percentage of workers (total employment or employees only) engaged in varying levels of T/ICTM. Where available, data for at least one day a week have been selected. The percentages have been rounded. *Refers to working from home with or without ICT.

**The figure for India is for employees in the non-agricultural 'organised sector' (formal economy) only. There are no data available for Brazil.

Source: National studies.

Characteristics of T/ICTM workers

The national data collected from the 10 EU Member States enables some conclusions to be drawn about the characteristics of T/ICTM workers. Findings from the ILO countries, regarding occupation, economic sector and gender of T/ICTM workers, are also presented, despite certain data limitations for these countries.

Occupation and employment status

For Germany, Brenke (2014) shows that not all types of work can be performed outside the employer's premises and not all jobs are dependent on ICT. Some occupations (like shop assistant or those in manufacturing operations) require the employee to work at a fixed workplace in order to perform work-related tasks. Other occupations (such as bus drivers or construction workers) require the worker to constantly

work outside the employer's premises, but do not typically involve use of ICT. Similarly, in Hungary and the Netherlands, the lowest share of T/ICTM is found among plant and machine operators, as well as elementary occupations and craft and related trades workers (KSH, 2005; CBS and TNO, 2014).

In line with the findings of a report on new forms of employment (Eurofound, 2015), the highest share of T/ICTM workers is normally found among the so-called 'knowledge' workers – highly qualified employees, often in managerial and professional positions; see Hungary (KSH, 2005), the Netherlands (CBS and TNO, 2014), and Spain (INSHT, 2011). In the UK, for example, those employees who mainly work from home and who depend on the use of ICT are overrepresented in the more professional occupations: 18% of them are managers, while 24% have professional occupations and 25% are in associate professional and technical occupations. This tendency is also reflected in data from the Netherlands, where 41% of employees who use ICT at least half a day a week outside the employer's premises are managers, and 24% of them are professionals (Ruiz and Walling, 2005). Similarly, in Finland, several studies show that T/ICTM is more common among employees with a higher occupational status (Perkiö-Mäkelä and Hirvonen, 2013; Sutela and Lehto, 2014; Lyly-Yrjänäinen, 2015). Results from the EWCS 2015 confirm that workers engaged in T/ICTM are mainly found in higher level professions (examples include managers, professionals and technicians), but the EWCS shows too that the proportion of clerical employees is also important. One example of an occupation that involves high-mobile T/ICTM is that of commercial/sales representative. Those doing occasional T/ICTM include office clerks and teachers.

In relation to employment status, Ruiz and Walling (2005) show that in the UK it is largely self-employed workers who work from home and who depend on the use of ICT (60% as compared to 38% employees). In the case of employees, teleworkers are more likely to be employed on a full-time (67%) than a part-time basis (33%). In Spain, statistics also suggest that T/ICTM workers are overrepresented among the self-employed (25% of all self-employed using computers). Analysis of the EWCS 2015 data confirms that self-employed workers are overrepresented among those doing T/ICTM and especially among high mobile workers. The EU-LFS 2015 also shows higher representation among self-employed workers in home-based (telework): twice as many employees in relation to occasional telework and almost 10 times more when it is at a high level of intensity. Although this report focuses on employees, it

is of interest to note that the self-employed spend more time than employees working outside their work premises.

In India, Japan and the US, ranking of incidence of T/ICTM by occupation, within each country, demonstrates a similar pattern. Managers, professionals, clerical support workers and service and sales workers (ranked from high to low) are the occupations most commonly enabled by ICT.

Although the relative prominence of each of these occupational categories varies by country, each of these occupations offers unique conditions for T/ICTM. For example, many of the tasks of clerical support workers are commonly enabled by ICT and can, therefore, be done remotely for some share of the working week. Sales workers are frequently at their clients' premises while using ICT to maintain contact with their colleagues remotely. The work of managers, as well as that of highly-educated professionals, allows for a relatively high degree of autonomy, which enables these workers to work outside of their employer's direct supervision at the employer's premises. In contrast, relatively low shares of T/ICTM workers can be found in those occupations that are characterised by the need for physical presence at the employer's premises, low ICT use and/or low autonomy. Such conditions are typically found in the elementary occupations, in which the share of T/ICTM workers is found to remain below 10% in all of these countries.

Economic sector

This pattern of T/ICTM distribution is also recognisable across economic sectors in the 10 EU countries. In those sectors that require the employee to work at a fixed workplace in order to perform work-related tasks (such as manufacturing), the share of T/ICTM is relatively low (except for managers), while sectors with high ICT dependence and more flexibility regarding the work location show high shares of T/ICTM. In the Netherlands in 2014, for instance, T/ICTM is most prevalent in the following sectors: information and communication (42%), financial and insurance activities (36%) and professional, scientific and technical activities (28%) (CBS and TNO, 2014).¹⁰ In Hungary, the proportion of teleworkers is higher in services and among non-profit and non-governmental organisations, but below average in the public sector (KSH, 2005). In Spain, ICT-mobile work seems to be more prevalent in the service sector than in agriculture, construction and industry (INSHT, 2011). In Sweden, it has been found that telework is strongly associated with high-status occupations in the advanced service sector (Vilhelmson

¹⁰ In the Netherlands, electricity, gas, steam and air conditioning supply also shows a high share of employees using ICT at least half a day per week outside the employer's premises (42%). However, these workers might not be classified as T/ICTM workers as such. The workplace of employees in this sector is mostly at clients' premises; work outside the employer's premises is contingent on the industry itself and not a work arrangement enabled by the use of ICT.

and Thulin, 2016). The EWCS 2015 shows more consistent cross-country results in Europe: T/ICTM is more prominent in the IT sector, the financial services sector, services in general, followed by public administration.

Outside the EU, the incidence of T/ICTM by economic sector ranks quite differently within the countries analysed. Specifically, the highest shares of T/ICTM in Japan can be found in the manufacturing sector (16% of employees). The main T/ICTM sectors in the US are professional, scientific and technical activities and human health and social work activities (16% of employees). In Argentina, where T/ICTM is relatively rare, this work arrangement is by far most prominent in the public administration and defence sector (19% of employees), as it has been heavily promoted by the government for many years. Finally, the highest shares of T/ICTM in India (organised sector only) occur in the public administration and defence sector and the electricity, gas, steam and air conditioning supply sector. In the latter, T/ICTM workers are likely to be mobile workers.

Gender

Regarding demographic characteristics, available results based on national data vary substantially across countries. The distribution of teleworkers between men and women for example is almost equal in Germany (Pfisterer et al, 2013) and Hungary (KHS, 2005). By contrast, in Finland (Perkiö-Mäkelä and Hirvonen, 2013), the UK (Ruiz and Walling, 2005), France (Greenworking, 2012), Sweden (Statistics Sweden, 2015) and the Netherlands (CBS and TNO, 2014), teleworkers as well as ICT-mobile workers (captured in the Dutch data) are more likely to be men than women. The difference ranges from a slight one – four percentage points in Finland and six percentage points in the Netherlands – to a considerable one – in France, 63% of employees working outside the employer's premises and using ICT are men, while in the UK, the male–female breakdown of T/ICTM workers is 70%–30%. The EWCS 2015 data analysis shows that, overall, gender differences in T/ICTM are not related to the distribution of workers by gender across sectors or occupations. The findings suggest that this is more related to working long hours. As men tend work longer hours, they also engage in more T/ICTM outside the employer's premises.

The EWCS findings also show that there is a higher share of men doing T/ICTM in general (54% are men and 36% are women). Interestingly, the percentage of women is higher in home-based telework (57%) than in T/ICTM (34%), while men are overrepresented in the latter. These results are consistent with national data when a distinction of these typologies is available in the national studies. The EU-LFS 2015 shows a more equal gender distribution in relation to home-based telework (11% of women versus 10% of men). Therefore, it can be concluded that in Europe, in general, women tend to

perform slightly more home-based telework than men, whereas men carry out much more ICT mobile work than women. This may be due to, among other reasons, women using home-based telework as a strategy for combining paid work with their family and other personal responsibilities.

In the study countries outside the EU, men have a higher incidence of T/ICTM compared to women, with the exception of Argentina. The largest gender difference in the incidence of T/ICTM in these countries is in Japan: only 13.7% of all female employees in that country are T/ICTM workers, compared with 21.4% of all male employees. This substantial gender difference in T/ICTM in Japan appears to be in contradiction with the proclaimed purpose of telework as a means of enhancing the female labour force participation in that country (see discussion in Chapter 2).

The results regarding the share of T/ICTM workers by gender also demonstrate a clear gender gap in these countries, with more men than women participating in T/ICTM. India and Japan exhibit the largest differences in the gender distribution of T/ICTM. In India, up to 80.4% of T/ICTM workers are men (19.6% women), and in Japan, 67.7% T/ICTM workers are men (32.3% women). While the gender distribution in India can be partly associated with a higher response rate among men than women in the survey, the labour force participation is substantially higher among men than women in India (Institute of Applied Manpower Research, 2012).

The available information therefore suggests that there are important gender differences in relation to T/ICTM across countries included in this study. In some of them, such as the UK, Japan, France and the Netherlands, this work arrangement is clearly male-dominated, whereas others, such as Argentina, Sweden, and the United States, have more balanced gender shares. However, when looking at only home-based telework, the EU-LFS and the EWCS 2015 both show that in some European countries such as France there is a higher proportion of women than men working from home on a regular basis, and a somewhat higher proportion of men doing occasional home-based telework. This suggests that gender is important in relation to T/ICTM, and that it is likely that use of ICT for work outside the employer's premises is being shaped by country-specific gender roles and models of work and family life.

Incidence and intensity of T/ICTM: Some conclusions

Generally, it is confirmed that T/ICTM is on the rise in most of the countries analysed in this report. Employees doing T/ICTM still tend to do it more from home than from other places. However, some data suggest an increase of using ICT in other places, particularly on a more occasional basis.

Table 3: Classification of countries in relation to use of ICT outside the employer's premises from a comparative perspective

High proportion of employees doing T/ICTM	Medium proportion of employees doing T/ICTM	Low proportion of employees doing T/ICTM
Finland	Belgium	Argentina
Japan	France	Germany
Netherlands	UK	Hungary
Sweden		Italy
USA		Spain

Note: For the EU countries, classification is based on the ranking of countries using EU-LFS 2015 and EWCS 2015 data from a comparative perspective. India is excluded because the available survey data are based on the organised (formal) sector of the economy, which represents only a small percentage of the workforce in the country. There are no T/ICTM data available for Brazil.

Findings from the comparative analysis regarding the incidence of T/ICTM across the countries analysed in this report indicate that regular ICT-enabled work outside the employer's premises is most common among the following: employees who are granted a certain degree of autonomy in their work, such as managers and professionals; employees who are ICT-enabled, such as professionals and clerical support workers; and those whose job traditionally involves working at clients' premises, even without ICT, such as those in sales. In terms of sectors, T/ICTM is more common in financial services, IT-related sectors and public administration. Interestingly, there are some differences by country that seem to be related to different economic structures and the work culture in different occupations or sectors. In general, occupation appears to matter more than economic sector in terms of the incidence of T/ICTM.

The breakdown by gender reveals country-specific variations that can be traced back to prevailing gender roles and models of work and family life. In general,

men do more T/ICTM partly because they work longer hours, which seems to be related to the prevalent gender division of roles in relation to paid and unpaid work.

To conclude, the typical home-based teleworker or ICT-mobile worker tends to be a high-skilled knowledge worker in a professional or managerial position and mainly works from home rather than working more flexibly in different places.

Table 3 represents an attempt to classify countries regarding the incidence of T/ICTM, based on the different sources of information. There are five countries with a high incidence: Japan and the US, followed by Finland, the Netherlands and Sweden in Europe. It seems that central and southern European countries generally have a lower incidence of such work, as is also the case with Argentina. Variations can be explained by different factors: the spread of ICT, internet connectivity, ICT skills, economic structure, GDP of the country and geography and culture of work, including managerial models.

4 Effects of T/ICTM

It is difficult to reach definitive conclusions regarding the effects of telework/ICT-mobile work (T/ICTM) on the world of work based on the current state of research on this topic. This is either because studies are not done on a scale that could provide a sufficient basis for general, nationwide conclusions, or because operational definitions vary across countries or from those used in this report. Nevertheless, in the context of the almost complete absence of comparative research on this topic, the results presented in this chapter can provide some comparative evidence regarding the effects of T/ICTM.

Key findings regarding the effects of T/ICTM are synthesised from the national studies, supplemented by data from the EWCS 2015 and presented for the following dimensions of work: working time, individual and organisational performance, work-life balance and occupational health and well-being.

Working time: Working hours and working time organisation

The first effect explored is the effect of telework and ICT-mobile work on the working time of the workers who participate in such work arrangements, both in terms of work duration (the number of hours worked) and the organisation of working time (when work is performed). The potential for changes in the duration of working hours and diversification in the organisation of working time is greater among home-based teleworkers and ICT-mobile workers than for other workers because ICT help people to arrange work more flexibly and allow work to be performed at any time and in any location. This is related to working time autonomy, which is also discussed in this chapter.

Effects of T/ICTM on work duration

The fact that T/ICTM can be performed flexibly has potential effects on the number of hours worked. Employees are not bound to employer's premises as a fixed workplace, but rather are able to perform work-related tasks at any place and any time. This creates opportunities for both longer and more flexibly-arranged working hours. In addition, the distinction between T/ICTM as a substitute for traditional office work – substitutional working hours – and T/ICTM as a supplement to office work beyond normal working hours – supplemental working hours – becomes blurred.

Such possible effects are very much reflected in the studies from the selected EU Member States, as well as in the national studies commissioned by the ILO in other regions of the world. According to almost all of

these national studies, T/ICTM workers tend to work longer hours than average employees. For example, in Belgium, employees report 39 contractual working hours a week, yet the actual working hours vary and are different for teleworkers and non-teleworkers. While non-teleworkers work an average of 42.6 hours per week, teleworkers work somewhat longer: an average of 44.5 hours per week – 1.9 hours more (Walrave and De Bie, 2005). Similar results are given for Finland (Ojala, 2011), the Netherlands (CBS and TNO, 2014), Spain (INSHT, 2011), Sweden (Trygg, 2014) and the UK (Tipping et al, 2012). In Spain, the results of the National Survey on Working Conditions show that 19% of workers who work at the employer's premises work more than 40 hours a week, compared to 24% of those working at home and 33% working at another location.

In fact, the only EU study whose findings differs from the above is the UK-based one by Wheatley (2012b), which further disaggregates working hours by gender and work location. These findings suggest that both male and female home-based teleworkers work less than non-teleworkers, with male home-based teleworkers working 34.6 hours per week compared to 37.2 for non-teleworkers. It also found that T/ICTM workers work longer hours than the average, with 39.3 hours for those working while travelling and 38.5 hours for multi-site T/ICTM workers. The figures for female employees are substantially lower overall, reflecting the greater propensity for female employees to work part time; nevertheless, they also show a similar pattern: 21.3 hours for teleworkers versus 26.6 hours for non-T/ICTM workers and longer hours for T/ICTM workers who travel for work (29 hours) or work from multiple sites (28.7 hours). These gender differences are also found in a Finnish study, which shows that teleworking men have higher average weekly working hours (38.6 hours) than the national average of 36.8 hours, while teleworking women, at 35.9 hours per week, have lower mean weekly working hours. Hence, 19% of male teleworkers work longer than 41 hours, compared to 6% of female teleworkers (Ojala, 2011).

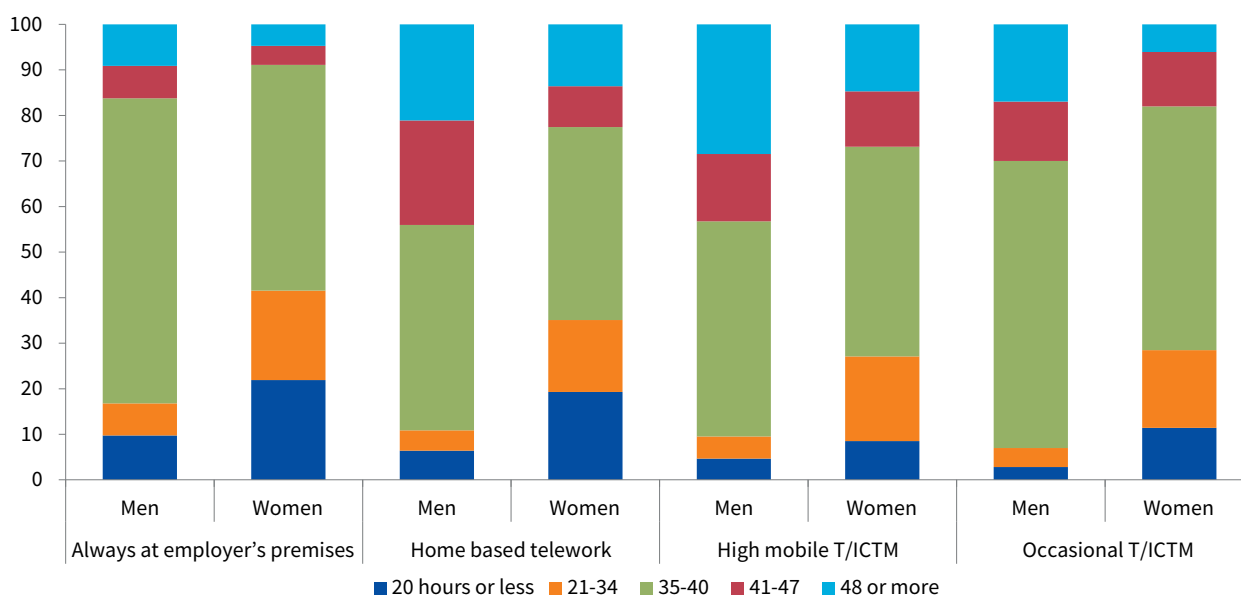
On this basis, the general observation can be made that T/ICTM workers tend to work longer than non-T/ICTM workers. This is the case not only in Europe, but also in other regions of the world. For example, the survey by the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) in Japan, referred to in the Japan national study, indicates that T/ICTM workers spend on average 43.9 hours per week on paid work. Those who work from home with the help of ICT equipment spend 46.5 hours per week on paid work. These figures compare to an average of only 39.1 hours of work per week in the Japanese workforce as a whole. Results for those who perform T/ICTM with lower intensity provide

further clarification regarding these figures. Employees who state that they use ICT for work between one minute and eight hours per week report an even lower average of 37.6 hours of work per week. In other words, the higher the intensity of T/ICTM, the more time is spent on work per week. Unsurprisingly, 63% of the T/ICTM workers in dependent employment in the Japanese Institute of Labour Policy and Training study say that the expansion of working time is the biggest disadvantage of this work arrangement (JILPT, 2015).

Findings comparable to those for Japan are also reported for the US and Argentina. In the US, findings based on data from the American Time Use Survey (ATUS) indicate that 78% of the increase in working hours from 2007 to 2014 among male workers relates to time spent working from home rather than in the office. T/ICTM as a supplement to – rather than as a substitute for – work at the employer's premises is also reported in the US-based General Social Survey (GSS). Over two-fifths (41%) of the respondents in the 2014 survey reported that they work from home 'to catch up on work'. A slightly higher proportion of T/ICTM workers is also found among those who work more than 60 hours a week (34%) than among those working between 50 and 59 hours a week (30%). Likewise, a study by the CENIT Foundation (Centro de Estudios para la Transformación) in Argentina found that 30% of respondents reported that they work longer hours when they telework (Fundación CENIT, 2012). In India, survey results indicate that a higher proportion of T/ICTM workers work long hours (defined as more than 48 hours per week) than office-based workers (66% compared to 59%).

As the results above suggest, it appears that T/ICTM often leads to an extension of total working hours. What makes this extension difficult to estimate is the fact that much of this additional T/ICTM appears to be spent over and above regular (normal) working hours and outside of formal arrangements, which means that working outside the employer's premises using ICT appears to supplement normal working time to some extent. For example, the study by Glorieux and Minnen (2008) shows that about half of those who perform telework in Belgium do so as an addition to their work at the employer's premises. Similar results were found in a Spanish study, which showed that 64% of Spanish workers carry out work tasks during their leisure time, eight percentage points more than the average (56%) (Randstad, 2012). Beauregard et al (2013) found that the difference between hours worked and contracted hours is higher for teleworkers than for office-based workers. In Japan, T/ICTM outside of formal agreements is reported by a majority of respondents in the MLIT study cited in the Japan national study. In fact, 68% of these T/ICTM workers stated that they are explicitly not allowed to work from outside their employer's premises. In the US, more T/ICTM workers reported telecommuting outside of normal working hours in addition to working in the office during the day; however, a recent Gallup survey found that almost equal proportions of those workers who telecommute do so during the normal workday instead of going to the office as those who use it to supplement their normal workday in the office (46% and 45% respectively). Gallup concludes that, 'this represents a significant shift in the nature of telecommuting' (Gallup, 2016).

Figure 5: Percentage of employees by type of T/ICTM, gender and working hours, EU28



Source: EWCS 2015.

In Europe, the EWCS 2015 data show that the share of employees working long hours – defined as more than 48 per week – is higher among workers doing T/ICTM than other employees, including regular home-based teleworkers and especially among high mobile workers (see Figure 5). This is the case for both men and women, although men are more likely to work such long hours both in the office (or industrial plant) and in each category of T/ICTM, especially high mobile T/ICTM. These results appear to confirm the findings from the national studies that T/ICTM workers are more likely to work long hours than their office-based counterparts. This result is further supported by multivariate analysis. A logit regression confirms that T/ICTM workers work longer hours than their office-based counterparts, but other variables, such as age, country, occupation and sector also play a role. However, after controlling for these variables there is still a positive association between T/ICTM and working hours, indicating either that T/ICTM workers are more likely to have longer working hours or that those with longer working hours are more likely to be T/ICTM workers. Given the nature of ‘anytime, anywhere’ work, this is the result that would be expected.

Data from the UK Labour Force Survey provide additional, more detailed information on overtime among teleworkers, compared to office workers (UK Data Service, 2015). According to these data, the number of hours of overtime worked is higher for teleworkers (9.8 hours per week) than for office workers (8.4 hours per week). Moreover, the overtime of teleworkers is seldom remunerated: 80% of overtime done by teleworkers remains unpaid (an average of 7.8 hours), compared to 60% of overtime done by office workers (an average of 5 hours). Likewise, only 10% of the respondents in the survey conducted by the national experts in India reported that they were paid for work beyond their regular office hours, and the share among T/ICTM workers is even lower (4%), despite the fact that these workers work more overtime. The use of ICT for work during breaks was reported by 57% of those who always work at the employer’s premises, compared with 83% among T/ICTM workers. In fact, 65% of the respondents to this survey stated that work-related mobile devices made them work beyond normal business hours.

Therefore, not only can T/ICTM be a supplemental addition to normal working hours, it is also often informal and unpaid – another indicator of the blurring, elastic boundaries between substitutional and supplemental hours, and hence between work and private life. One major reason for these blurring boundaries is the increased availability of employees for work outside normal working hours by means of ICT. In Finland, according to its quality of work life survey, 65% of teleworkers reported that they had been contacted about work-related matters outside normal working hours in 2013, mostly via email. Over one-third (35%)

reported that such contacts had been made several times during the reference period (Sutela and Lehto, 2014). Similarly, in Spain, 68% of Spanish workers confirm that they receive emails or phone calls beyond normal working hours (Randstad, 2012). In Sweden, more than half of the respondents of a survey (53%) of both mobile and non-mobile workers were available after normal working hours, even on a daily basis (Unionen, 2013). In addition, 31% agreed ‘completely’ or ‘to a certain degree’ that they often check work emails after normal working hours. The most common reason cited for being contactable is to help colleagues (73% of mobile workers and 48% of non-mobile workers stated this as a reason). The second most common reason is to help customers and clients (61% of mobile workers and 30% of non-mobile workers stated this as a reason) (Unionen, 2013). To a lesser extent, the respondents gave ‘the expectations of the employer’ as a reason for being contactable (25% of mobile workers, 17% of non-mobile workers).

Another reason for the longer working hours in T/ICTM is the increased capacity it gives workers to perform work, irrespective of the location. In a survey of 406 teleworkers and ICT-mobile workers in France carried out by independent research institute OBERGO, 61% stated that their working time has increased (Lasfargue and Fauconnier, 2015a). In qualitative follow-up interviews, the report found that the reason for such an increase is the reduced time spent on commuting to and from work, which takes an average of 1.38 hours per day. This reduced travel time is used to spend more time at work in the morning: hence, travel time becomes working time. Moreover, according to the two Finnish studies, the share of employees whose working time is not monitored by the employer is higher among employees who telework (36%) than among employees in general (20%) (Sutela and Lehto, 2014 and Vesala and Tuomivaara, 2015). This finding provides an indication that responsibility for monitoring working time is increasingly being shifted towards the employees themselves – hence, from an individual workers’ point of view, time management has become more complex.

Effects of T/ICTM on working time organisation

T/ICTM impacts not only on the duration of working hours, but also on the organisation of working time. The spatial flexibility of performing work-related tasks irrespective of location allows for an alteration of regular work schedules, including performing work outside of regular business hours. The relatively longer work hours of T/ICTM workers, who may use spatial flexibility to supplement traditional office work (as shown above), further contributes to the modification of traditional work schedules. In fact, as Walrave and De Bie (2005b) show for Flemish teleworkers in Belgium, the structure of these workers’ typical teleworking day looks quite different from a normal, eight-hour office

day. Almost half of the teleworkers (45%) carry out small errands in between work activities, gear working hours to family needs or perform domestic chores when having a break. Just a minority of home-based teleworkers stick to the timetable of the office (9%), whereas others either start working earlier or later or finish working earlier or later (36%). Thus, while the working day of teleworkers is typically longer than those of office workers (as shown above), it is also more 'porous' (see Genin, 2016).

The evening (18.00 to midnight) seems to be a popular time for T/ICTM workers to work both substitutional hours (CBS and TNO, 2014) and supplemental hours (Glorieux and Minnen, 2008). According to CBS and TNO (2014), 27% of teleworkers often carry out their work in the evening, and 43% of them sometimes do so. Managers (38%), in particular, tend to work regularly in the evening. Similarly, in Finland, Anttila et al (2009), drawing on the time use survey by Statistics Finland, found teleworking to be typical, especially during evenings. Knowledge workers, in particular, were found to frequently work at home during the evening hours, peaking between 20.00 and 22.00. Interestingly, this study found that such work is usually supplemental rather than a substitute for traditional office work. Likewise, the national report for India found that survey respondents who are teleworkers were substantially more likely to work after 18.00 than office-based workers (66% versus 54%).

Working during the weekend is also more typical among T/ICTM workers than office-based workers. According to CBS and TNO (2014), half of the teleworkers in the Netherlands work on Sundays, either sometimes or regularly, compared to 38% of non-T/ICTM workers. The typical nature of weekend work among home-based T/ICTM workers is confirmed by survey results from Belgium (Glorieux and Minnen, 2008), Spain (INSHT, 2011) and Finland (Anttila et al, 2009). In the latter case, respondents reported that such work is usually supplemental work rather than a substitute for traditional office work. Likewise, the national report for Japan indicates that almost 30% of teleworkers work six or seven days a week, while the report for India found that survey respondents who telework are more likely to work six or more days per week than their office-based counterparts (67% versus 58%).

However, working at night (defined as midnight to 06.00) is as unusual among teleworkers as it is among non-teleworkers. In fact, according to CBS and TNO (2014), working regularly at night is even less prevalent

among home-based T/ICTM workers (3%) than among other employees (8%) in the Netherlands.

Employers' attitudes towards such atypical work schedules are mixed. According to Pfisterer et al (2013), 29% of the surveyed employers in Germany did not expect employees to be available for work outside normal working hours. Another 28% stated that they expected availability, but only in exceptional cases. Of the surveyed companies, 19% expected employees to be available on weekday evenings and 17% expected them to also be available on weekends. Only 4% expected employees to be available during holidays or at night. In contrast, in France, according to the OBERGO survey cited above, respondents reported that the reason for their longer and more intensive working time and more atypical work schedules while teleworking is the perceived pressure to justify their activity while being absent from the office (Lasfargue and Fauconnier, 2015a).¹¹

T/ICTM and working time autonomy

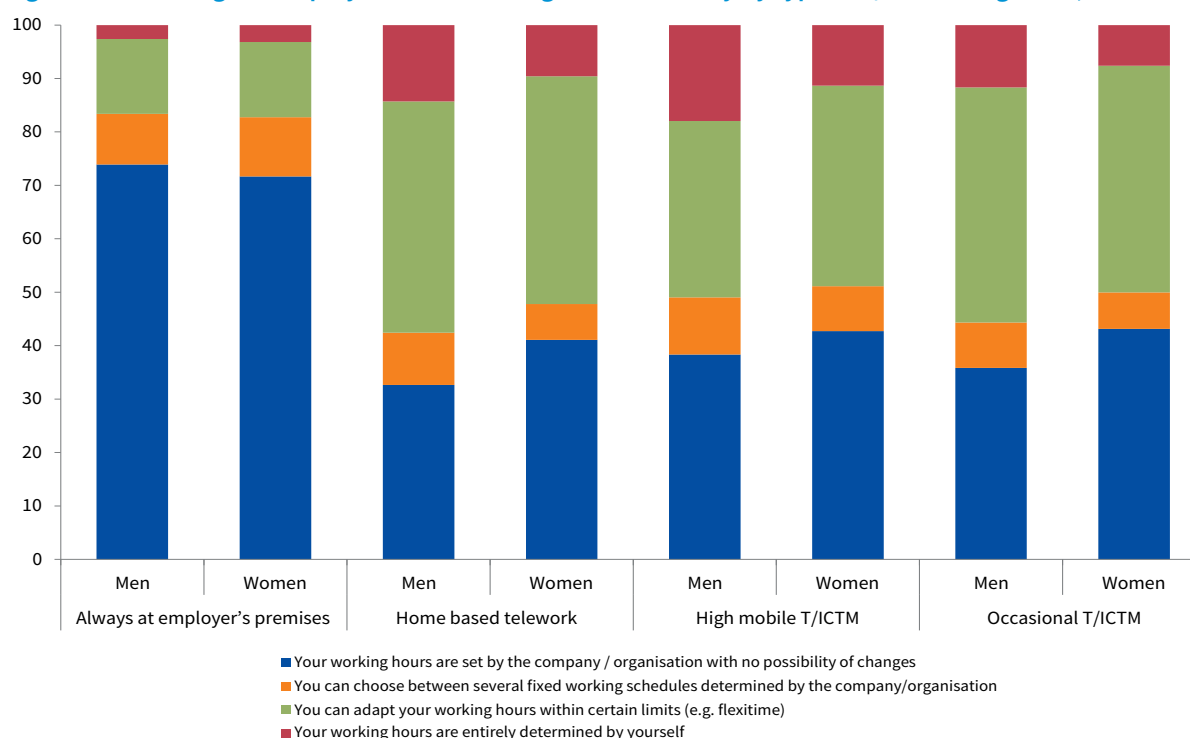
In those countries where information is available, T/ICTM is often reported to be associated with increased employee-oriented working time flexibility: that is, 'working time autonomy'.¹² This is the case in Belgium, Finland, France, Japan, the Netherlands, Spain, Sweden, the UK and the US. For example, research studies examining the working time of teleworkers in the UK (such as Wheatley, 2012b) often focus on the positive elements of the ability of teleworkers to combine work and domestic tasks. This tends to implicitly assume that teleworkers have some degree of task discretion, although this is often not a topic that is covered explicitly. In France, the autonomous organisation of working time was identified as a particularly strong effect of telework: 84% of teleworkers stated that their freedom to manage working time had increased and 88% noted that their balance between professional, family life, and social life was better on the days they teleworked (Lasfargue and Fauconnier, 2015a).

T/ICTM is also more common in professional jobs and at higher levels of seniority, both of which are known to be positively correlated with various measures of task discretion and autonomy. The degree of this autonomy often depends upon an informal understanding between the employee and the manager, which is shaped by managerial attitudes towards remote working. Ojala's study (2011, cited in the national study for Finland), further shows that autonomous and

11 This research institute receives financial support from the CFDT, one of France's two large trade union confederations.

12 Working time flexibility may be employer-oriented, employee-oriented, or a more balanced form that combines aspects of both types of flexibility. Employee-oriented working time flexibility is also known as 'time sovereignty', which means that workers have some degree of choice and influence over their working hours and work schedules.

Figure 6: Percentage of employees with working time autonomy by type of T/ICTM and gender, EU28



Source: EWCS 2015.

‘inspiring’ jobs are the strongest predictors of telework and supplemental work at home, which indicates that teleworkers in general have the discretion to determine their own work schedules and pace of work. As already noted, the working time sovereignty of teleworkers is further demonstrated by the results, which indicates that the share of employees whose working time is not monitored is slightly higher among employees who telework than among employees in general.

In Europe, the results of the EWCS 2015 confirm that there is indeed a substantially higher share of workers performing T/ICTM with working time autonomy than there is among those workers who are working entirely at the employer’s premises. This is the case for both women and men in all three of the T/ICTM categories, although men are slightly more likely to have such working time autonomy than women in each category.

Therefore, it seems that workers involved in T/ICTM enjoy a significant degree of discretion, at least in relation to the organisation of their working time, and this autonomy is to some extent due to the fact T/ICTM is more common among medium-level to high-level white-collar workers.

Working time: Some conclusions

The results presented in this section demonstrate that the working hours of T/ICTM workers, particularly those of high ICT-mobile workers and home-based teleworkers, are typically longer than for those employees who always work at the employer’s

premises. Whether work performed outside of employer’s premises is a substitute for regular work at the employer’s premises, or a supplement to it, is a key factor. The available evidence suggests that working outside the employer’s premises using ICT appears to supplement normal working time to some extent, although this may or may not be required by the employer. Moreover, this supplemental T/ICTM appears to be unpaid, at least in countries with available data. T/ICTM workers are also more likely to work in the evenings and on weekends than workers who always work in the office, although they are less likely to work at night. Thus, not only are more workers availing of ICT to work outside the employer’s premises, this situation also appears to affect both the duration and the organisation of their working time.

Last, but not least, a substantially higher share of T/ICTM workers enjoy a significant degree of working time autonomy than their office-based counterparts. This is an important finding because, as will be discussed later in this chapter, a Eurofound study points to the importance of working time autonomy in relation to the work–life balance of workers, particularly as regards the implications for productivity (Eurofound, 2012). Findings also reveal differences between countries, which seem to be related to the country’s specific working time patterns, culture and gender roles. Moreover, workers’ qualitative experience of their working time and the implications of these new patterns for working time regulation need to be explored.

Individual and organisational performance

The phenomenon of T/ICTM facilitates flexible work schedules, which while they typically improve individual performance also make management and supervision more complex. With respect to the effects of T/ICTM on performance, two levels of performance can be identified: individual and organisational.¹³ Central to the success of T/ICTM is its effect on the performance of individual employees. The causal link between T/ICTM and job performance is not as clear as is often presumed, but depends to a large extent on the balance between communication and location that is inherent to all forms of telework.

The available studies indicate generally positive effects of T/ICTM on individual performance, as reported in the national studies from Argentina, Brazil, India, Japan and the US. Moreover, most of the findings from the European national studies also support the conclusion that T/ICTM generally has positive effects on individual performance.

Working time flexibility and work-life balance as a means of improving individual and organisational performance

Several of the drivers for adopting T/ICTM (Chapter 2) are aimed at improving individual and organisational performance. Studies from France, Sweden and the UK suggest that improvements in performance are related to longer working hours and the ability to concentrate on certain tasks due to lack of interruptions that normally occur in the workplace.

From the employee perspective, workers in Sweden, for example, feel they are motivated to telework so they can concentrate better or finish their work outside normal working hours (Trygg, 2014). These aspects can contribute to a higher performance among employees. In fact, nearly 80% of employers in that country stated that allowing employees to sometimes work outside the employer's premises generally leads to higher productivity (André, 2013). A UK study similarly suggests that flexibility and autonomy have a role in improving performance, but with some nuances (Beauregard et al, 2013). According to the study, productivity is higher among home-based teleworkers, and two main reasons are put forward for this. Firstly, home-based

teleworkers tend to work more unpaid hours than their office-based counterparts, so an increase in productivity is partly due to an increase in actual working time. The second explanation is that home-based teleworkers are more productive because they experience fewer interruptions than office-based workers.

Similar results were found in France: according to the OBERGO study, 84% of teleworkers stated that their productivity increased due to telework, and 81% said that their work was of higher quality than their office work (Lasfargue and Fauconnier, 2015a). The reasons given in the French report also relate to the individual, micro-level organisation of work aspects, such as teleworkers being less frequently interrupted by colleagues or their superiors; spending less time answering phone calls or communicating via email; and having more time to work due to the fact that they do not have to travel to and from the office. Both the French and UK contributions suggest that partial T/ICTM seems to have a higher impact on performance/productivity than the more extreme cases of no or high levels of T/ICTM. In terms of countries outside Europe, these performance-related aspects have been reported in Brazil.

For companies, T/ICTM is found to be a way of improving staff retention. T/ICTM (especially home-based telework) is becoming an increasingly important strategy among workers struggling to combine the daily use of time for various purposes at different locations, as investigated by, for example, Wheatley (2012a). Therefore, T/ICTM can be a way to attract those workers. Kelly et al (2008) found that organisations also use T/ICTM as a recruitment tool to attract high-skilled professionals, the main group of workers demanding flexible work schedules.

A rather different approach to improving productivity focuses on making offices more flexible (for example, 'hot desking'), with the aim of saving costs related to office space. This approach consists of using the space made vacant by teleworkers for other employees. The drawback is that some workers may find themselves being pushed into involuntary telework, due to the sometimes obligatory character of such measures (Nilsson, 2014). Flexi-space requires the worker to work anywhere and therefore ICT is an essential enabler. According to the EU national studies, this approach has been developed in Belgium, France, the Netherlands, Sweden and the UK.

¹³ **Concept of individual or job performance:** As a multidimensional construct, individual or job performance can include: task-specific behaviours (such as ICT use for personal use rather than work-related issues); non-task specific behaviours (such as higher autonomy); communication tasks (such as information-sharing capability of ICT); effort; supporting groups or colleagues; and managerial tasks (possibilities of ICT for monitoring and improvement of managerial role). This description is adapted from Campbell et al (1990). Therefore, an assessment of how well these job dimensions are executed would define the level of performance. Does ICT use outside the employer's premises improve the individual execution of the dimensions mentioned? **Organisational performance:** The concept of organisational performance in this study is broadly defined, not only as the economic situation of the establishment including labour productivity, profitability and market shares, but to also include development of work and staffing problems, such as absenteeism, recruitment and retention, staff motivation and commitment and customer satisfaction. This definition is adapted from the Eurofound report, Links between quality of work and performance (2011).

Several company case examples discussed in the Brazil national study show how improved individual performance through regular T/ICTM can be aggregated into enhanced organisational performance. In addition, evaluations of a T/ICTM pilot project for the company SERPRO, the Brazilian federal data processing company, showed that introducing working-from-home (home-based telework) policies resulted in net benefits for the company, due to a combination of improved productivity, reduced costs and improved quality of life for employees. Results from the 2014 *Communications usage trend survey in Japan* indicate that medium-sized enterprises (1,000 to 2,000 employees) and large companies (more than 5,000 employees) improved their organisational performance through T/ICTM (MIC, 2015).

In Europe, the national studies from the Netherlands and Belgium suggest that certain features of T/ICTM can, in general, improve performance by fostering innovative behaviours. The Dutch contribution points out that while the average individual performance of T/ICTM workers is similar to that of other employees, T/ICTM workers show higher levels of innovative work when compared with other employees. Similar findings have also been reported in Belgium. These national studies also suggest that close monitoring or controlling types of supervision can obstruct such innovative behaviour.

Interestingly, the objective of reducing commuting time and its link to performance is more prominently highlighted in countries other than the EU countries. For instance, the Brazil study reported that the company Service Cobranças Curitiba found that staff turnover and tardiness (arriving late for work) could be reduced by more than 50% with the help of T/ICTM arrangements. The productivity, effectiveness and quality of life of their employees also improved, by more than ten percentage points. In the same country, the company ALGAR found that both employees and employers benefit from the reduction in commuting time and costs. The reduction in employee commuting time can result in improved organisational performance, as T/ICTM allows companies to increase the customer-serving time of these workers, many of whom are salespersons, as well as reducing their office space costs.

Other issues of relevance include teleworking for maintaining business continuity in the case of earthquakes (as occurred in Japan) or other catastrophes (such as avian flu in the US). The advantage of business continuity in times of natural disasters ranks third (23.5%) in the 2014 *Communications usage trend survey* (MIC, 2015). This reported advantage is interpreted in the national study for Japan as a reaction to the Great East Japanese Earthquake of 2011. Parallels can be found in the introduction of the Telework Enhancement Act (TEA) in the US, which was originally proposed in response to

the avian flu pandemic in 2000 (although this was only enacted in 2010; see Chapter 5 on policy responses).

Drawing on the 10 EU and the five non-European national studies, it can be concluded that the potential performance increase associated with T/ICTM is mainly related to the spatial and temporal flexibility that such work offers and its associated consequences, such as saving on commuting time and office space (and associated costs), more autonomy, greater opportunities for innovative work behaviour, lack of interruptions, and/or the possibility of working longer hours. Individual characteristics like motivation and skills seem to play a role, but so do work efficiency associated with the use of ICT. It has to be borne in mind that some of these studies are driven by organisations that support flexible forms of work, but there are other, more independent studies also supporting the finding that T/ICTM is associated with some increase in performance or productivity.

Barriers and drawbacks of T/ICTM regarding performance

Despite the potential positive effects of T/ICTM on both productivity and work-life balance, this work arrangement has not been widely adopted among the European workforce. As pointed out in Chapter 2, some aspects and contextual factors might inhibit the development of T/ICTM, such as particular work cultures or production systems in Europe and other regions of the world. For example, its effective implementation in certain work contexts might be limited by close monitoring or controlling types of supervision.

One of the barriers to using T/ICTM for improving performance is the complexity and skills needed to use ICT effectively, especially for some groups of workers. According to the Spanish contribution, 26% of SMEs report such problems. In the UK, arguments around 'flexible working' have suggested that without some sort of company policy in place, there will be ICT skills gaps that employers will struggle to fill.

In Sweden, a survey focused on individual performance was conducted by TNS Sifo on behalf of TDC, a company that provides IT solutions to corporations and organisations (TDC, 2015). The 1,027 participants were asked if they encountered any obstacles when working away from the office. The results show that many employees had experienced technical difficulties that hindered their work.

In Belgium, Walrave and De Bie (2005b) showed that teleworking is not feasible for many jobs (27% of respondents). They identified fear around the lack of supervision of employees (17%) as another barrier for implementing T/ICTM to obtain performance advantages. According to the Swedish national study, managers found coordinating telework costly, the required programmes difficult and, in particular,

controlling remote workers problematic. Issues of trust, control and power were regarded as the main obstacles constraining the implementation of teleworking programmes and favouring professionals rather than clerical workers. In the Netherlands, some barriers to improving performance with T/ICTM relate to blurred boundaries between work and family life (too little division between work and private life), as well as not having a quiet space from which to work at home and missing face-to-face contact with work colleagues.

In the US, however, the effects of informal supplemental T/ICTM on individual performance, such as responding to phone calls and emails on mobile devices outside of normal business hours, appear to range from neutral to negative. For example, a study conducted by the Boston Consulting Group in 2012 indicates that total hours of work in the company were reduced by 11% after advising employees not to send messages during their time off. Yet no effects on employee performance for those following this advice could be identified, despite the reduced working hours (see Chapter 5 for more information). Similarly, the company Vynamic (2015) reported an increase in productivity after shutting down access to its company network servers on weekends and from 22.00 to 06.00 on weekdays. This positive result was linked to employees getting better rest and having increased well-being.

Individual and organisational performance: Some conclusions

In summary, it appears that the flexibility of space and time enabled by ICT generally has positive consequences for performance in those jobs that are appropriate for T/ICTM. In fact, ICT in itself represents a technological change that helps to improve performance. Some circumstances can further improve individual and organisational performance. Factors related to the autonomy and performance of the worker can be differentiated from factors related to reducing costs for the company. Moreover, special contextual and individual circumstances (such as crises) represent an ideal terrain for the implementation of T/ICTM, and thus help to avert a decline in performance. Nevertheless, there are some issues that have to be addressed and assessed in order to make the most out of working outside the employer's premises using ICT. These include ICT skills development, managerial behaviour, and performance monitoring of policies and practices. The fact that the lack of necessary rest periods can jeopardise the potential performance-related advantages of T/ICTM should also be taken into consideration.

Work-life balance

The literature addressing the relationship between the use of ICT to perform work outside the employer's premises and reported perceptions of work-life balance

is complex. The relationship between T/ICTM and work-life balance can be either positive or negative depending upon certain factors. Some issues that have been raised by the literature include: greater time and organisational autonomy; longer working hours and the sensation of constant availability for work; role ambiguity and the 'blurring' of the boundary between paid work and personal life (see Messenger and Gschwind, 2015 for a review of this literature). In addition, whether the work performed outside the employer's premises is a substitute for office work or supplements it (as discussed in the section on working time) appears to be a key factor affecting workers' perceptions about whether telework and ICTM work improves or diminishes work-life balance.

T/ICTM and work-life balance: Some positive results

Some positive results regarding the effects of T/ICTM on work-life balance are pointed out in various national studies. A few illustrative examples are presented below.

In France, the OBERGO study suggests that T/ICTM can contribute to work-life balance, even though 61% of home-based teleworkers work longer hours (Lasfargue and Fauconnier, 2015a). For example, respondents used the time saved by not having to commute to spend with family (79%), for personal activities (66%) and/or for activities in the local community (47%). Consequently, 95% of the respondents stated that telework has had a positive impact on their quality of life both at work and outside of it; 89% reported a higher quality of family life; and 88% perceived a better work-life balance. Similarly, in Japan, as highlighted in the national study, teleworking is quite likely to reduce commuting time, which can contribute to an improved work-life balance.

Results from the Belgian national study seem to show a modest work-life balance outcome. Walrave and De Bie (2005a) showed that telework has a positive impact on the work-life balance for 56% of teleworkers. For 34%, the work-life balance remained the same and 11% reported a decrease. Teleworkers and non-teleworkers both stated that working at a distance from the (main) office reduces stress, increases the quality of one's life, makes it easier to manage domestic chores and, last but not least, improves work-life balance. In Spain, a white paper on telework in that country also shows that telework facilitates work-life balance and reduces stress, as workers have more freedom to arrange their working time (Fundación Másfamilia, 2012).

The national study for Italy, drawing on a report by Edenred, also shows the benefits of teleworking for work-life balance: 44.5% of employees viewed teleworking as an essential measure in organising and balancing their work and private life. In the Netherlands, Peters et al (2009) concluded that time-spatial flexibility positively affects the work-life balance

of workers. However, this positive effect tends to be more pronounced for those working 12–24 hours per week than for those working longer hours.

Finally, in Argentina, results from a study in Buenos Aires conducted by CENIT paint an even more positive picture. The study found that 68% of the survey respondents selected ‘more time to spend with family’ as an advantage of this form of work, while only 10% of teleworkers stated that T/ICTM complicated family life at home (Fundación CENIT, 2012).

T/ICTM and work–life balance: Ambiguous results

Both positive and negative effects of T/ICTM on work–life balance are reported by nearly all of the national studies, sometimes even by the same individuals. Most of the national studies include findings related to the ‘blurring of boundaries’ phenomenon – the overlap of the borders between the spheres of paid work and personal life. For example, a survey by the Japanese Institute of Labour Policy and Training (JILPT, 2015) of T/ICTM workers in Japan shows that the issue of the ‘ambiguity of work and [time] off’ was the highest ranked disadvantage of T/ICTM among both women (36.4%) and men (39.3%). Likewise, research by the Japanese Ministry of Health and Welfare (MHLW, 2014), covering employees in 30 Japanese companies, found that 43.5% of respondents find it ‘difficult to draw a line between work and family life’.

Results similar to those in Japan were also found in the US, Argentina, Brazil, and India. For example, in a study by Accenture Global Research (2013) of 4,100 US business executives, more than three-quarters of them (77%) said that technology enabled them to be more flexible with their schedules, and around 80% cited flexibility in their schedules as being ‘extremely’ or ‘very’ important for balancing work and personal life. Similarly, 77% of respondents in a 2011 Ipsos special report on telecommuting among US employees ‘agreed’ or ‘strongly agreed’ that employees who telecommute are better able to achieve a balance between work and family. Yet, at the same time, 70% of the respondents in this study reported that technology led to a blurring of boundaries because it brought work into their personal lives, and 48% of them also reported that telecommuting creates more work–family conflicts.

In Brazil, according to its national study, a survey of call centre agents who work from home indicated that 98% of them reported a better quality of life, including quality of family life, primarily because of time saved on commuting (93%) and having more time for their families (91%). However, half (50%) of the Brazilian respondents also reported negative effects due to domestic issues interfering in their work (Home Agent, 2015). In India, most of the survey respondents engaged in T/ICTM reported that with the help of ICT they could at least occasionally take time off for family matters

(79.3%). Moreover, 67% of these respondents reported no impact or only an occasional impact on personal life from using ICT for work outside of employer’s premises. Yet, at the same time, about half (51%) of the T/ICTM respondents to the Indian survey reported that they worked ‘all the time’; 46% stated that they were on work-related calls ‘quite often’ or ‘most of the time’; and 81% said that they are occasionally ‘on stand-by mode’ when they are at home, meaning that they could be called by their employer on their private mobile device regarding a work-related demand at any time.

The findings from the European national studies suggest that, although there is substantial scope for improved work–life balance when working in a flexible way using ICT, a relatively high share of employees carrying out T/ICTM report that they occasionally, or more often, miss or neglect family activities due to work activities interfering with personal life, i.e., work–home interference (WHI). In addition, missing or neglecting work due to family responsibilities (home–work interference) is more common among T/ICTM workers. This type of information has been reported in Netherlands as well as in Finland, Germany, Sweden and the UK.

In the UK, for instance, Harris (2003) cites the example of the lack of clear boundaries between the two spheres leading to confusion for the employee and their personal life, with the result that the working day in effect becomes spread out over a longer period. As described above in the section on working time, working time becomes more interspersed with ‘free time’, and thus becomes more elastic. Interestingly, this study notes that the issue of boundaries is difficult for managers as well as employees, as it is sometimes not clear when employees are at work and when they are not. In Sweden, the results from Unionen’s study showed that for many employees, work spills over into their free time and, in the UK, Harris’ study found that the difference between mobile and non-mobile workers was significant. Among the ICTM workers, more than four out of 10 experienced an increasingly blurred line between work and private life, compared with two out of 10 in the case of non-mobile workers. However, another Swedish study (Edenhall, 2011) concluded that ‘boundaryless’ work was mostly positive – specifically when it came to coping with work and personal life matters – and that the group of workers experiencing more difficulties in handling the ‘boundaryless’ work was actually managers, mainly because they are connected longer in their ‘non-working time’.

These results can potentially be extended to the whole phenomenon of T/ICTM, although information on this is available from fewer countries. Once more, the outcomes appear to be ambiguous: although T/ICTM workers can use working remotely to improve their work–life balance, they are also at greater risk of working in their free time (their non-paid work time)

and reported ‘blurring’ between paid work and other personal commitments, such as family responsibilities. As ‘third generation’ ICT devices such as smartphones and tablet computers enable working anywhere at any time – that is, occasional telework or occasional T/ICTM (Messenger and Gschwind, 2016) – it seems likely that the boundary between paid work and personal life will become increasingly blurred.

The issue of the work–family interface has also been studied in Finland, with findings showing, as in other cases, ambivalent outcomes. Using data from the Finnish Quality of Work Life Surveys 2003 and 2008, Ojala et al (2013) studied the effects of both telework and informal overtime work at home on the work–family interface. Positive and negative measures concerning the work–family interface were examined through logistic regression analysis. Measures used to determine a positive work–family interface were: a) parental ability to cope with children; and b) amicable resolutions of conflict about working hours, household work and personal time in the family. A negative work–family interface, on the other hand, was measured by: a) the respondents’ subjective feeling of neglecting home matters because of their job; and b) their spouse’s/partner’s opinion regarding whether the respondent works too hard.

These findings suggest that well-intentioned flexible working schedules in fact resulted in family life being infringed upon. According to this study, home-based telework is not related to an enhanced work–family interface: only weak evidence was provided for both telework and informal work at home supporting family life. In particular, working unpaid overtime at home – that is, supplemental T/ICTM – increases feelings of guilt about neglecting home issues, and employees doing informal overtime work at home are more likely to report that work disrupts family life (Ojala et al, 2013).

In another Finnish study, Pyöriä and Saari (2013) present a case study on the effects of T/ICTM in two Finnish public sector expert organisations. Through interviews they mapped the impacts on work–life balance as perceived by employees. The main findings were that employees had overall positive experiences of teleworking. According to the authors of this study, a recommended practice is that telecommuting and work at the office should be alternated.

In Germany, the BITKOM study shows that attitudes towards using ICT differ widely among employees (Pfisterer et al, 2013). While 79% of 505 employees surveyed stated that working from home helped them to reconcile work and family life, 55% stated that

working from home caused private and working life to overlap too much.

Nevertheless, in relation to blurring the work–life boundary and the resulting porosity described above, some workers actually prefer to integrate their work and personal lives. As reported in the US national study, younger employees in particular tend to operate in this manner. The table below shows just how intertwined paid work and personal life is for this age group.

Table 4: Younger US employees and ICT use, at home and at work (%)

Percentage of younger US employees carrying out the following activities	
At work	At home
60% check or send personal emails	51% check or send work emails
57% send personal text messages	43% send work-related texts
53% make personal phone calls	46% make work-related phone calls
50% check or use social media	34% conduct work-related research

Source: Gallup, 2014 cited in the US national study.

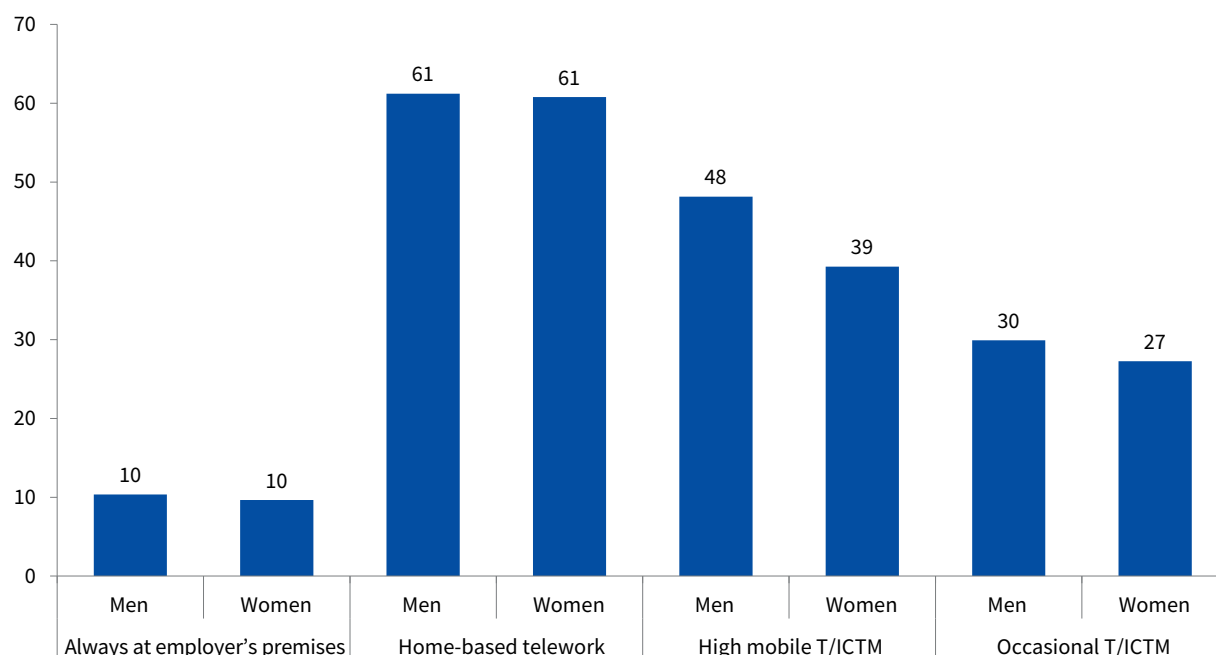
In Hungary, T/ICTM is not a widespread phenomenon. However, the Hungarian Telework Association’s web-based survey of their registered web users, alongside experience gathered by this association (both of which were shared on their website) provides some non-representative findings on the subject (Magyar Távmunka Szövetség, 2016). The reduction of commuting time and working time flexibility were reported as aspects positively influencing the work–life balance of teleworkers, though the issue of the work–family interference was also highlighted.

T/ICTM and work–life balance: Gender dimension

According to an analysis of the EWCS 2015 data, it seems that there is a higher potential for work–home interference conflict in the case of T/ICTM workers because a substantially higher percentage of them work in their free time to meet work demands (see Figure 7). This is true for both women and men, as well as for all categories of T/ICTM analysed in this report, particularly home-based telework. A multivariate analysis, after controlling for contextual variables, confirms that high mobile T/ICTM workers and home-based teleworkers are more at risk of neglecting family obligations than workers who are always working at the employer’s premises.¹⁴

¹⁴ The EWCS has two questions, one about paid work preventing workers from giving the necessary time to family-related issues and the other about family responsibilities preventing workers from giving the necessary time to work duties.

Figure 7: Employees reporting working in their free time to meet work demands daily and several times a week by type of T/ICTM and gender, EU28 (%)

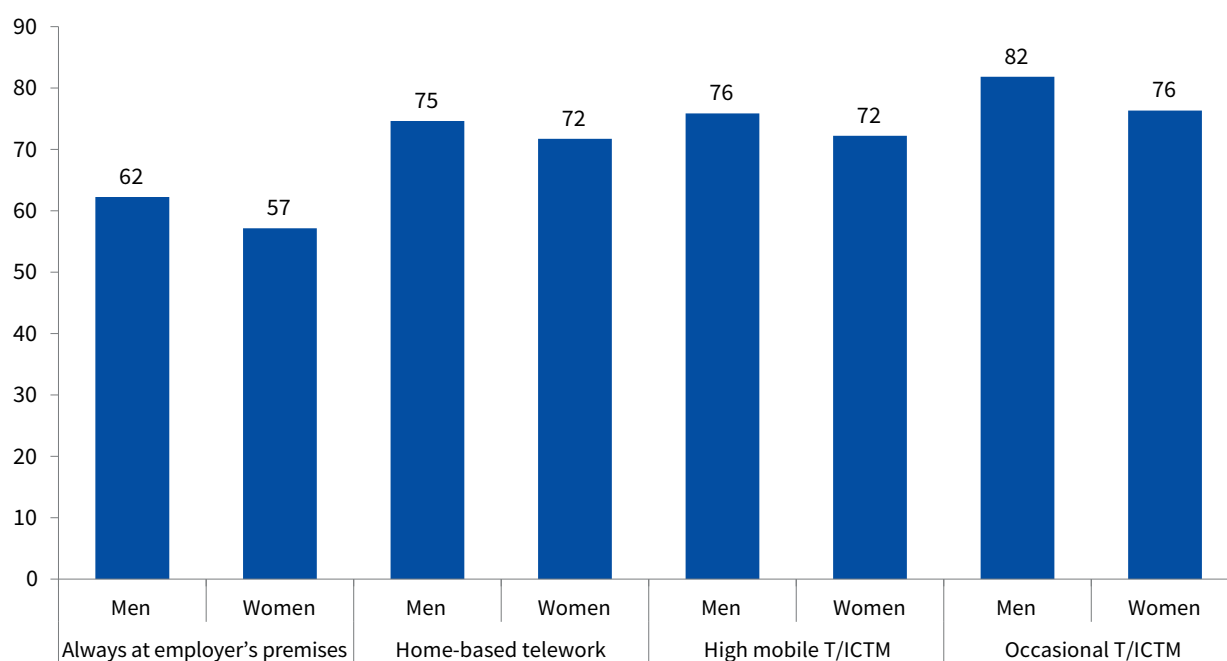


Source: EWCS 2015, based on answers to the question: 'Over the last 12 months, how often have you worked in your free time to meet work demands (at least several times a month)?'

Analysis of the EWCS 2015 data reveals that T/ICTM workers are also more likely to be able to take time off during normal working hours to take care of family or other personal responsibilities (see Figure 8 below). This is the case for all categories of T/ICTM. It is also true for

both women and men, although it appears to be slightly easier for men than for women across all categories of T/ICTM workers. Thus, it seems that the 'blurring' between paid work and family or other personal commitments can go in both directions.

Figure 8: Employees reporting that it is 'very' or 'fairly' easy to take time off during working hours to take care of personal or family matters, by type of T/ICTM and gender, EU28 (%)



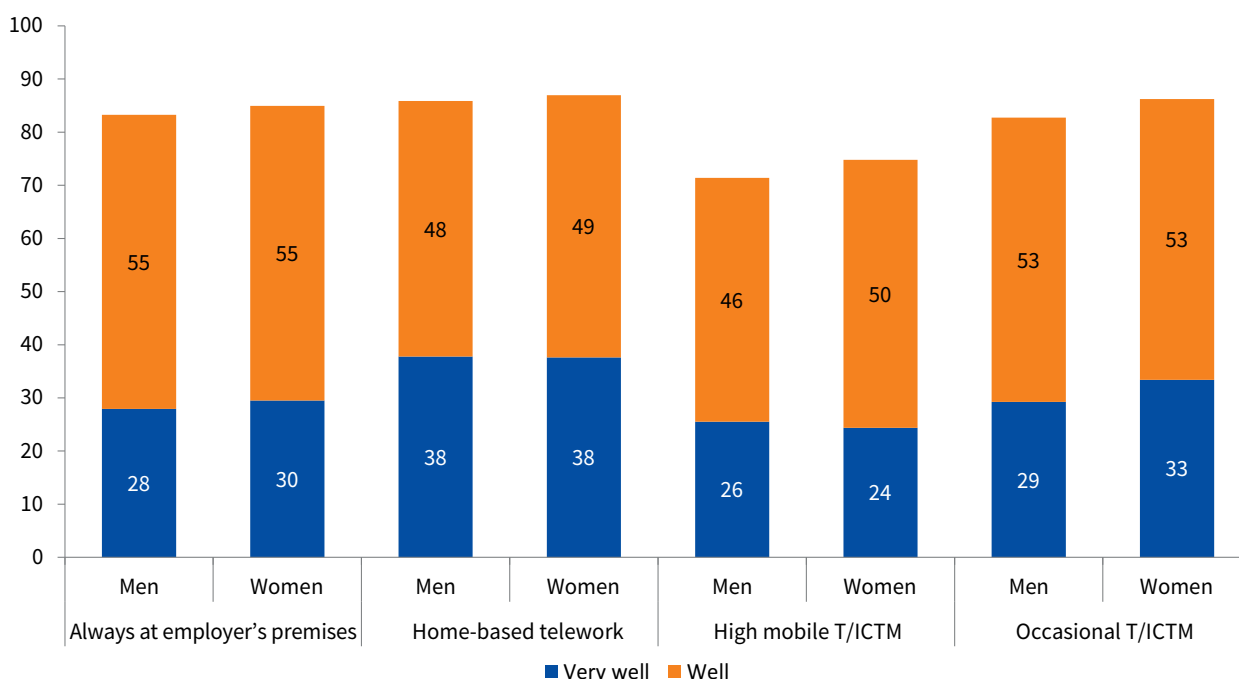
Source: EWCS 2015, based on answers to the question: 'Would you say that for you arranging to take an hour or two off during working hours to take care of personal or family matters is ... 'very easy' or 'fairly easy'?''

An interesting report from Spain, *New technologies, work and paternity*, published by the Open University of Catalonia (Universitat Oberta de Catalunya) in 2012, includes a qualitative analysis based on in-depth interviews with fathers (Miyar Cruz, 2012). Among other findings, the report shows how new possibilities offered by ICT affect work–life balance among men. According to this study, a significant number of fathers consider that use of ICT has facilitated the balance between work and private life. Some interviewees explained that when they work outside the office they prefer to do it at home; otherwise, they might encounter problems with carrying their laptop or with finding a good Wi-Fi connection. Other results show that fathers who intensively use ICT become used to mobility and flexibility, and are keen to keep these conditions when changing jobs: they value this flexibility and do not want to go back to ‘rigid’ schedules. Additionally, the report concludes that it is not possible to establish a clear ‘cause and effect’ relationship between a flexible work environment (with or without ICT) and greater parental involvement in childcare. In other words, it is not clear if the option of flexible work arrangements is a cause, or rather a consequence, of parents’ involvement with their children and their interest in work–life balance.

In the UK, Wheatley (2012b) found that female home-based teleworkers tend to perform extensive housework and are more likely to work shorter hours in their paid work. Male teleworkers, by contrast, tend to have a work pattern that is more akin to full-time hours and contribute little by way of housework. The results from the Japanese studies also show variations by gender. For example, a survey among teleworkers by the JILPT shows that 42% of all female respondents, but only 16.5% of male respondents, selected family-related issues as an advantage of T/ICTM.¹⁵ In contrast, the most widely cited advantage of T/ICTM among male respondents (58%) was the ‘improvement of business productivity/ efficiency’, although this advantage was also cited by a substantial proportion (48.4%) of all female respondents (JILPT, 2015).

Finally, the findings from the EWCS 2015 shows some nuanced results about workers’ perceptions regarding how well their working hours fit with their family or social commitments, as shown in Figure 9 below. Regular home-based teleworkers in the EU report a slightly better fit between their working hours and their family or social commitments than workers who always work at the employer’s premises. Multivariate analysis

Figure 9: Percentage of employees reporting that their working hours fit ‘well’ or ‘very well’ with family or social commitments by type of T/ICTM and sex, EU28



Source: EWCS 2015, based on answers to the question: ‘How do your working hours fit in with your family or social commitments outside work?’

¹⁵ Specifically, they selected the following: Increase in time for communication with family; increase in time for housework; increase in time for childcare/nursing care.

(see Annex 2) confirms this finding. Moreover, it suggests that when employees performing home-based telework reduce supplemental working hours or experience variations in aspects related to the organisation of work (for example intensity, autonomy and support), work–life balance can improve for them. In contrast, the occasional T/ICTM workers and especially the high mobile workers report less positive outcomes on all the survey indicators measuring work–life balance, including the fit between their working hours and their family or other social commitments. The results are quite similar for both women and men, except for high mobile and occasional T/ICTM workers; for these two groups of workers, women are somewhat more likely to report a positive work–life fit (‘well’ or ‘very well’) than men.

T/ICTM and work–life balance: Some conclusions

T/ICTM can indeed have a positive effect on work–life balance overall, mainly because of the reduction in commuting time and the autonomy to organise working time based on individual workers’ needs and preferences. However, findings from the EWCS 2015 regarding work–life ‘fit’ suggest that employees doing regular home-based telework or occasional T/ICTM appear to get better results than those engaged in high mobile T/ICTM. At the same time, there is some risk of overlap between work and personal or family life – work–home interference (and also home–work interference) – because of longer working hours and the mix of duties at the same time, which may result in blurring work–life boundaries and increased work–family conflict. The ambiguity of the ‘blurring of boundaries’ phenomenon is reported more in Finland, France, Germany, Hungary, India, the Netherlands, Sweden, the UK and the US, while, in the main, more positive aspects of improving work–life balance have been reported in Argentina, Belgium, Italy and Spain.

There are also important differences by groups of workers according to gender (for example, women tend to work shorter hours), and female workers seem to get slightly better work–life balance results than men thanks to T/ICTM. In this regard, women tend to use home-based telework more than working in other places outside the ‘office’ and they appear to do so in order to balance work and family-related tasks. In addition, managers have different motivations and more difficulties in relation to work–life balance. Finally, there is some evidence that factors such as level of work intensity, employee–employer work attitudes and relations, and the frequency of performing T/ICTM are related to either better or worse work–life balance.

All of these findings suggest that the effects of T/ICTM on work–life balance are highly ambiguous and perhaps even contradictory. On the one hand, T/ICTM workers report reduced commuting time, more time for their families and a better balance between work and personal life; on the other hand, they also report an increase in working hours, a blurring of the boundaries between paid work and personal life and more work–life interference. Moreover, the findings suggest that both positive and negative effects of T/ICTM on work–life balance can be reported by the same individuals.

Due to this ambiguity, researchers have increasingly changed their approach to analysing this topic and have started to ask how and not if T/ICTM – home-based telework in particular – can be useful for balancing paid work and personal life (Duxbury et al, 2014). Although the terms differ among studies, one key to positive work–life balance outcomes with the help of telework is an optimal individual strategy for ‘work–life management’ (Kreiner et al, 2009) or ‘boundary management’ (Duxbury et al, 2014). It is thus important to find an appropriate combination, at the individual level, of boundary management strategies between the segmentation of paid work and personal life and the integration of paid work and personal life with the help of T/ICTM.¹⁶

Occupational health and well-being

Eurofound research has shown that working time and work–life balance are associated with occupational health and well-being (Eurofound, 2012). Therefore, it is expected that performing work outside the employer’s premises with ICT will also affect health and well-being. Nevertheless, in contrast to studies reporting on the work–life interface related to T/ICTM presented in this report, few studies at national level have addressed the health and well-being aspects of such work.

Spatial and temporal flexibility and the use of ICT are key elements of the working conditions of T/ICTM. Research on the links between ICT and the intensification of work and stressful work environments show that ICT use may intensify the pace of work (Green, 2006), leading in some cases to greater employee stress and burnout (Bartley et al, 2011). Chesley (2014) points out that ICT use can have negative implications for stress levels, and that they are probably related to the space and time discretion and work occupying non-working spaces and times (blurring boundaries). However, both costs and benefits can be associated with ICT use. Eurofound research (2012) on

¹⁶ The theory on boundary management using ‘integration’ and ‘segmentation’ strategies, as applied here in the context of telework, has been established in work–life balance research by Clark (2000).

working time flexibility shows that under certain conditions such employee-oriented working time flexibility (worker choice and influence regarding working time, or ‘time sovereignty’ – see the discussion in the section on working time for more information) can have positive consequences for work–life balance and health, but that highly irregular and unpredictable work schedules normally have the opposite effect.

Ergonomic aspects, intensity at work, blurring boundaries between paid work and private life, and reduced commuting times and isolation: these aspects seem to be typical for T/ICTM, and they have different consequences for health and well-being.

Ergonomics

There are few publications and articles on the ergonomic implications of portable ICT devices for work (European Commission, 2010). In the European national studies, information on this subject has been provided by studies from Finland, the Netherlands and Spain.

In Finland, the first research on ergonomic aspects of telework (for example, posture-related aspects) was conducted in 2014, as an internet survey commissioned by the Finnish furniture company ISKU (the number of interviewees was 1,508). More than half of the respondents stated that they had not paid any attention to ergonomics while working at home, and 94% of them reported that neither had their employers shown any interest in the ergonomics related to telework. Nearly half of the respondents did not have an office chair or a working desk at home, and 53% said that they suffered from shoulder pains. Furthermore, 46% of respondents reported neck pains and one-third had experienced back pain. Overall, almost half of the respondents said that they experienced work-related pains (Turvallisusuutiset, 2014).

In the Netherlands, it has been reported that workers doing T/ICTM carry out their work with a visual display for a longer time (5.8 hours per day) than other workers and in line with typical values in the financial and insurance sector where a large proportion of workers are exposed to this type of risk (CBS and TNO, 2014).

In Spain, the Inter-professional Association of the Community of Madrid (Unión Interprofesional de la Comunidad de Madrid, UICM), a non-profit association that brings together professionals from different areas such as the sciences, economy, law, health and technology, organised a one-day conference on ‘prevention of pathologies linked to ICT’ in April 2015. The results showed that the main health concerns arising from the use of mobile technologies are neckache and tendon pain in the wrists and fingers. Ophthalmic problems and sleeping disorders may also occur.

Overall, it seems that further research is needed in relation to the actual ergonomic and other potential physical risks of the use of ICT outside the employer’s premises, especially in relation to the most recent mobile devices. More literature exists in relation to the potential influence of ICT on work intensity and psychosocial-related aspects of working outside the employer’s premises using ICT, which are discussed in the next section..

Autonomy and intensification

Literature on the use of ICT in general, both at the workplace and outside the employer’s premises, tends to indicate that while ICT enables higher autonomy, it also leads to higher levels of work intensity. Research seems to support the notion that the nature of ICT connectivity will directly affect employees’ perceived control over how and when they work, and therefore their personal flexibility in the organisation of their paid work and personal lives. However, aspects such as the possibility of being closely monitored, the potential of working longer at a higher pace with interruptions, the expectation of constant connectivity to work, and possible interference between working and non-working time indicate that some workers using ICT inside and outside the workplace for work purposes can experience high levels of demands and intensity at work. For example, Green (2006) found evidence to show that the intensification of work was associated with technological change at the beginning of the century, especially as a result of specific forms of work organisation characterised by the monitoring of work processes and the avoidance of idle time in the production process.

This section reviews some examples, highlighting elements illustrating the paradoxical nature of the working conditions of T/ICTM.

Some national studies examine whether resources such as autonomy or rewards can help to cope with potential intensification and stress. In Germany, an analysis by the Cologne Institute for Economic Research (IW Köln) investigated the stress levels of digitally networked employees (Hammermann and Stettes, 2015). Workers in internet-based workplaces do not report higher levels of stress. Some 95% are (very) satisfied with their work as long as they enjoy workplace autonomy and can plan their work themselves. Only 4% of employees at an internet-based workplace showed signs of an increased risk of stress due to high levels of deadlines and performance pressure combined with the lack of autonomy. Although this information relates to ICT workers in general, it demonstrates the potential that ICT has to enable higher levels of autonomy, at least for some groups of workers.

In the UK, Kelliher and Anderson (2010) note the apparent paradox between the high satisfaction among flexible workers (teleworkers) and work intensification. They argue that part of the reason why there is greater work intensification for teleworkers is because of the social exchange between employers and employees: in return for the ability to work flexibly, workers may respond with more effort (this is often called ‘reciprocity’). However, this seems to be just one element of the equation. A report from Grant et al (2013) confirms that there are risk factors associated with T/ICTM, resulting from intensification and lack of time to recuperate, which could go beyond the simple social exchange between the employer and the employee. The trend for workers doing T/ICTM to work longer can, at least partly, explain Grant’s finding.

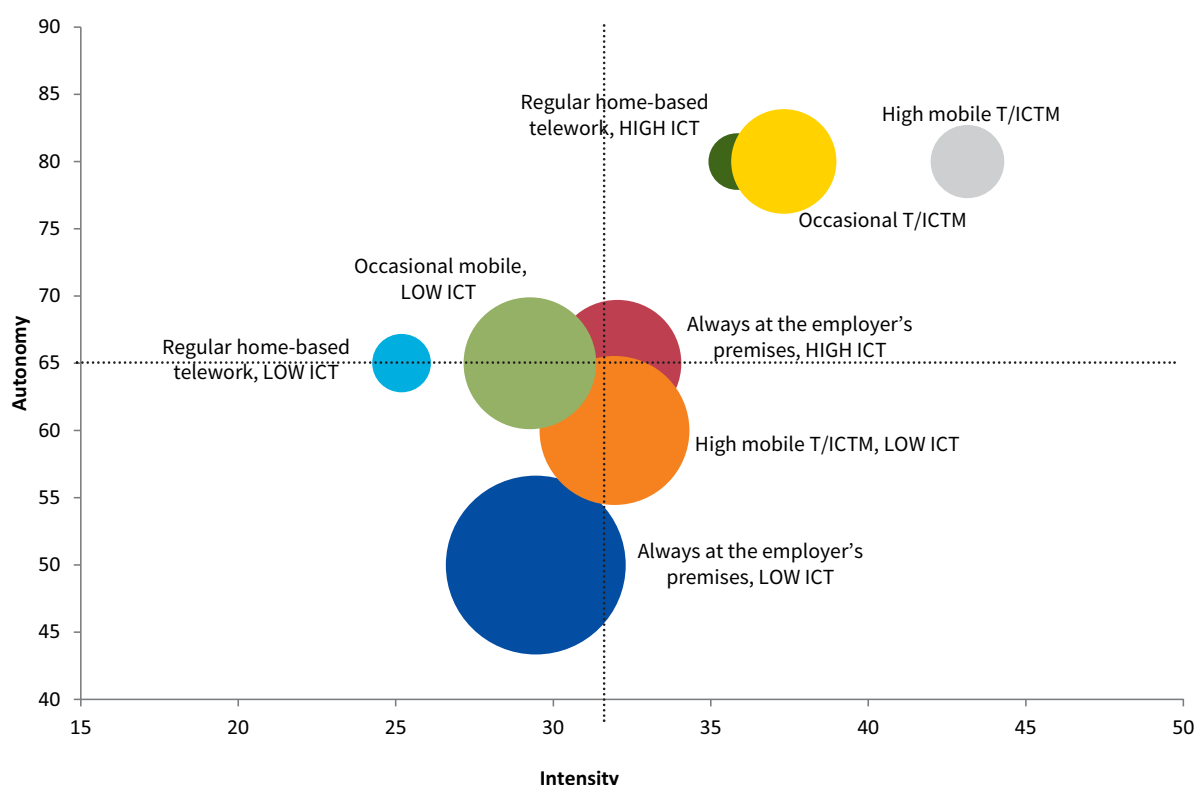
In Finland, Kandolin and Tuomivaara (2010) analysed data from the Work and Health Survey 2009 and found that flexibility regarding the time and place of work correlates with employee well-being. Employees who performed more telework experienced feelings of

strength and energy at work more often than those doing less telework. However, the Finnish national study also highlights the risk of increased stress in cases of prolonged working hours when engaged in T/ICTM, due to less time for recovery (Ojala and Pyöriä, 2013; Vesala and Tuomivaara, 2015).

Among teleworkers in Belgium, according to research by Walrave and De Bie (2005b), stress levels decreased for 43% of employees, saw no significant change for 46% and increased for 11%. The majority of teleworkers did not experience any change in work pressure.

An analysis of the EWCS 2015 data illustrates potential job strain by looking at levels of work autonomy and intensity for different groups. Karasek’s psychosocial model (‘job demand and control’ theory) is based on the notion that levels of stress are determined by both work demands and also autonomy at work.¹⁷ The first factor can increase stress while the second can help a worker to cope with those demands. Figure 10 below shows the median values of intensity and autonomy according to

Figure 10: Indexes of autonomy and intensity in relation to working outside the employer’s premises and frequency of use of ICT



Note: The categories are: regular home-based teleworker, high mobile T/ICTM worker, occasional T/ICTM worker, and ‘always at employer’s premises’. High ICT workers have a high level of ICT use. The other groups have mid to low or no ICT use.

Source: EWCS 2015

¹⁷ Karasek and Theorell (1990) hypothesised that jobs with high levels of demand (for example, a heavy workload) coupled with low levels of control or decision-making latitude were associated with increased exposure to stress and negative health effects.

each group for employees in the EU28.^{18,19} The size of the bubble represents the share of employees based on categories of the EWCS proxy for T/ICTM.

Figure 10 shows that high use of ICT seems to be associated with higher work intensity: this is mainly the case for employees who work, to varying degrees, outside the employer's premises and less so for employees who always work at the employer's premises. At the same time, the figure suggests that high use of ICT is also associated with higher levels of autonomy (or control) over work for all groups, regardless of place of work. The other aspect of T/ICTM – spatial flexibility or mobility – seems to be associated with higher levels of intensity, mainly when combined with use of ICT, though not so much with increased levels of autonomy (and only for high mobile workers when combined with ICT).

However, when looking within occupational groups, there are fewer differences in relation to job autonomy when doing any type of T/ICTM (one example is professionals, ISCO category 2). This result suggests that within the occupational group 'professionals' (which is highly represented among T/ICTM workers), variations in work intensity are associated with the level of mobility of place of work. However, it is very likely that autonomy is influenced by both the occupation of the employee and use of ICT. Interestingly, differences between occupational levels in relation to autonomy seem to be more pronounced for those employees who are always working at the employer's premises than for those employees working with ICT outside the employer's premises.

Looking at both dimensions together (autonomy and work intensity), Figure 10 shows that the only groups in the upper right quadrant (higher autonomy and higher intensity) relate to workers doing T/ICTM; the others are near the median or in the lower left. This result also holds true when looking at the different occupations (ISCO categories). Therefore, although occupation is important for variations in work intensity and autonomy (for example, managers normally have more of both), performing T/ICTM is still relevant, as it seems to be associated with both intensity and autonomy. The question remains as to whether the autonomy these workers enjoy is sufficient to cope with the high level of work intensity. Multivariate analysis of the EWCS 2010 data (Eurofound and EU-OSHA, 2014) shows that work

intensity, as defined in the EWCS index, is more strongly associated with stress than autonomy. In this sense, within the T/ICTM group, regular home-based teleworkers are in a better situation than high mobile workers. For that reason, it is expected that the probability of those workers reporting stress will be lower.²⁰ Furthermore, the EWCS confirms that those who work outside the employer's premises with high levels of ICT use report more stress than those who always work at the employer's premises and, within that group, higher levels of stress are reported by high mobile T/ICTM workers.

Blurring boundaries

Workers doing T/ICTM have the potential to enjoy a good work–life balance: this is related to working time flexibility, already mentioned, and the higher level of self-organisation that ICT can enable. However, as discussed in Chapter 4, this work arrangement could potentially lead to a blurring of the boundary between paid work and personal life, leading to problems for the health and well-being of these workers. In addition, '24/7' availability for work can result in family conflict and stress. The higher intensity reported by employees doing T/ICTM also relates to the blurring of boundaries between work and non-work spaces and times.

An interesting finding from the Finnish national study is that those in high-level occupations doing T/ICTM report more stress and feelings of neglecting household tasks, whereas those in low-level occupations report positive feelings because of being able to progress professionally. Analysis of the EWCS 2015 data also indicates that T/ICTM is associated with neglecting household tasks.

Most of the 10 EU countries point to one potential source of stress for workers doing T/ICTM: the difficulty in separating paid work from their private life. This was defined in the earlier section about work–life balance as 'work–home interference' or 'home–work interference' (depending on which is disturbing the other), both of which blur the frontiers between paid work and other aspects of life. The risk of this happening is increased by longer working hours – which according to the EWCS 2015 is experienced by a larger proportion of high mobile T/ICTM workers than regular home-based teleworkers and occasional teleworkers (see the section on working time).

18 Intensity was based on EWCS questions about working at high speed and to tight deadlines, the number of work pressure sources, having enough time to get the job done, value conflicts at work and having frequent disruptive interruptions. This index is called the Job quality intensity index (Eurofound, 2016).

19 Autonomy was based on EWCS questions about the ability to choose or change tasks, methods and speed of work, as well as having a say in the choice of one's work colleagues and the ability to take a break when desired.

20 Following job autonomy-control models, levels of stress experienced by individuals at work can be related to variations of work intensity and autonomy. However, other psychosocial approaches refer to other elements influencing stress and potential negative effects for health (such as the effort–reward imbalance model). Therefore, levels of stress are not only determined by intensity and autonomy but also by other contextual and individual variables not included in the EWCS 2015 analysis in this chapter.

Commuting and stress reduction

Commuting between home and the workplace can be very stressful because of traffic congestion and can expose workers to a range of health and safety hazards. For T/ICTM workers, these issues could be minimised or avoided. The Brazil national study notes that the average commuting time between home and work in the São Paulo metropolitan area is approximately one hour and 40 minutes, due to massive traffic congestion. In addition, commuters in São Paulo are exposed to concentrations of pollutants (such as fine particulate matter and ozone) that far exceed World Health Organization (WHO) standards. In this context, an expansion of T/ICTM would not only provide health benefits to those individuals who telecommute, but would also have a broader positive impact on traffic congestion and on the healthiness of the environment.

Surveys from France (Lasfargue and Fauconnier, 2015a) and Germany (Zok and Dammasch, 2012) point out that reduced commuting as a consequence of teleworking can be a source of diminished levels of stress and can also lower levels of fatigue. This has also been reported in a number of countries included in this study (for example, Hungary and the UK).

The EWCS 2015 seems to confirm that workers doing T/ICTM report longer commuting times when they are working in their employer's premises. In the case of regular home-based telework, these workers might be engaged in such work in order to address such long commuting hours. In the case of the more mobile workers, it is very likely that the high level of mobility is also a cause of longer commuting times.

Isolation

Isolation due to T/ICTM can have potential negative effects on occupational health and well-being. According to the Eurofound report, New forms of employment, one of the most problematic aspects of mobile work seems to be isolation and lack of access to the informal information sharing that takes place in a fixed place of work (Eurofound, 2015). For example, the three highest ranking disadvantages of T/ICTM in a study of teleworkers in Buenos Aires, cited in the Argentina national study, are 'less interaction with friends' (62%), 'working while being sick' (50%) and 'being more isolated' (36%) (Fundación CENIT, 2012).

Similar results were found in a study carried out by the company Home Agent (2015), cited in the Brazil report. In a survey, a majority of the workers in this company identified being isolated from their colleagues as the key disadvantage of telework (63%); half of them also

said that when working from home, personal matters can distract them from their work. In contrast, the JILPT data presented in the national report for Japan indicates that, in comparison with other disadvantages, a feeling of solitude or alienation was selected by only 5.4% of respondents; increased problems with health was selected by only 5.3%; and disruption caused by noise was reported to be a disadvantage for only 5.7%. In addition, the JILPT results indicate that 4.2% of T/ICTM workers perform night work (between the hours of 24.00 and 05.00) and this was found to be likely to increase workers' physical fatigue (JILPT, 2015).

In the UK, Beauregard's study of Acas employees (Beauregard et al, 2013) found that social isolation is associated with home-based telework (as evidenced by employees reporting missing informal contact with and emotional support from co-workers).²¹ While this in itself may not be a problem, it could suggest that teleworkers are more at risk of certain psychological issues associated with feelings of isolation. The findings show that those teleworkers who work from home only some of the time do not experience the same degree of isolation as those who work exclusively from home. Similar findings are reported from Italy. According to Manager Italia (2011), based on a survey of managers of companies in the services sector, a serious threat to workers' well-being arises from the lack of social interaction and loneliness (42%), as well as the lack of help from colleagues when working (30%). In Hungary, a web-based survey among teleworkers shows that they report a weakening of social ties and support, as well as diminished company loyalty and motivation.

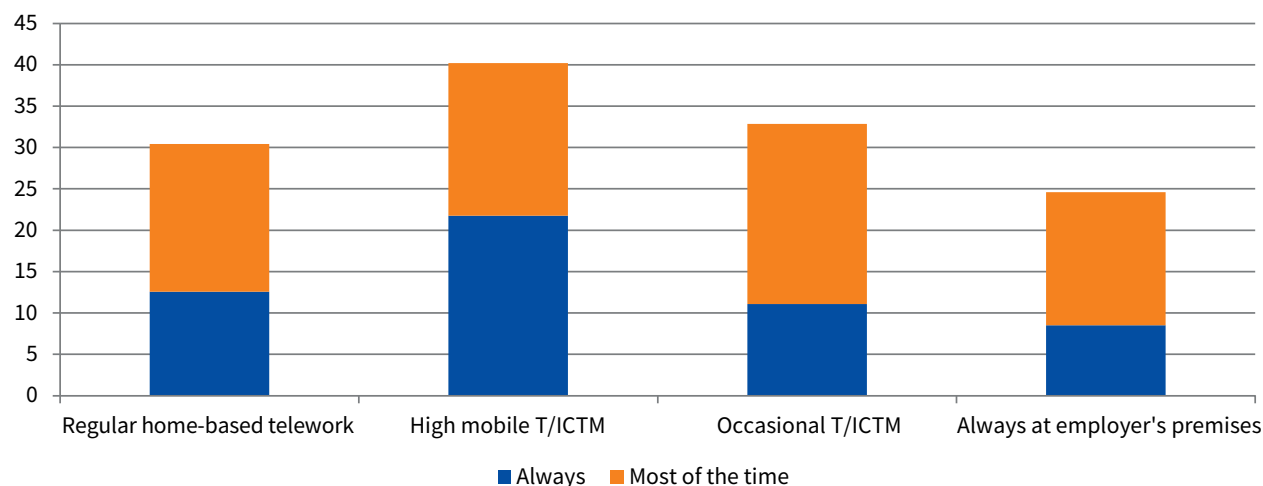
Finally, some of the risks related to T/ICTM can manifest in burnout symptoms. In the Netherlands, while workers doing T/ICTM report better health than other employees, they also experience slightly higher levels of burnout. The risk of burnout increased when working long hours remotely (Delagrangé, 2014). Research from Finland suggests that this risk is linked to the isolation of employees (Ojala and Pyöriä, 2013; Vesala and Tuomivaara, 2015).

T/ICTM, stress and occupational health and well-being outcomes

Both high levels of intensity and work-family conflict can be associated with stress at work and negative health and well-being outcomes (Eurofound and EU-OSHA, 2014). This section investigates the associations between some of the working conditions of T/ICTM and occupational health and well-being outcomes in the EU. Detailed results of this analysis are provided in Annex 2.

21 Acas is the Advisory, Conciliation and Arbitration Service in the UK.

Figure 11: Percentage of employees reporting they feel stress at work ‘always or most of the time’ by type of T/ICTM, EU28



Note: Based on proxy of T/ICTM EWCS.

Source: EWCS 2015

Considering that, in general, workers performing T/ICTM report higher levels of work intensity compared to those always working at the employer's premises, and that high mobile T/ICTM workers report greater problems in achieving work–life balance, the latter group are expected to have a higher share of workers reporting stress ‘always or most of the time’. Figure 11 confirms this: 41% of employees doing high mobile T/ICTM report high levels of stress, compared to just 25% among those always working at the employer's premises.

These figures are the percentages for each group. At individual level, there can be many differences. The literature on psychosocial risks and specifically job stress highlights the importance of individual differences (for example, due to boundary management). In addition, some of the differences between T/ICTM workers and workers who always work at the employer's premises might be related to other factors, such as occupation. Multivariate analysis allows these effects to be controlled for (see Annex 2). The results indicate that T/ICTM workers show higher levels of self-reported stress after controlling for gender, age, country, occupation, household type and working hours. After controlling for job intensity, it is evident that high mobile T/ICTM workers experience more stress than workers who always work at the employer's premises, but the stress levels of regular home-based

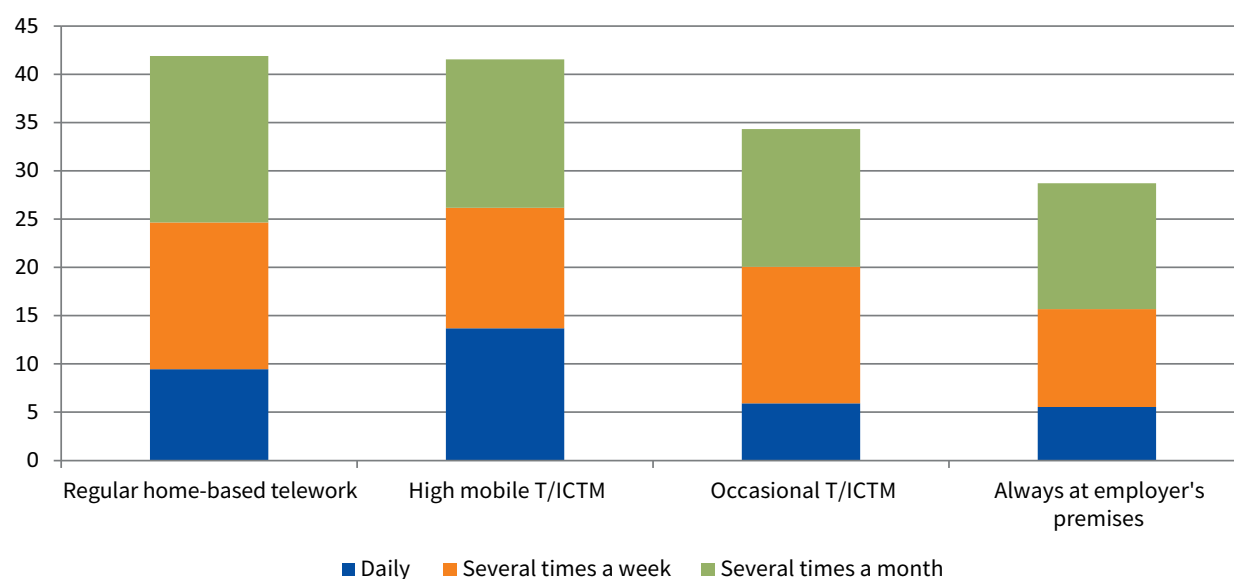
teleworkers or occasional T/ICTM workers do not differ significantly from those always working at the office.²² The higher stress levels for high mobile T/ICTM workers seem to be related to supplemental work, because when this factor is controlled for, there is no difference in the self-reported stress levels between high mobile T/ICTM workers and workers who always work at the employer's premises.²³ Therefore, T/ICTM workers, particularly high mobile workers, are more likely to report stress. The multivariate analysis shows that the higher self-reported stress of these T/ICTM workers is partly related to the characteristics of the job (such as working hours, occupation), job intensity and the extent to which workers are obliged to work at home beyond normal working hours (supplemental telework).

Problems with sleeping, a specific symptom related to stress, has been highlighted in a European Commission (2010) study as a potential consequence of T/ICTM. Figure 12 shows that a higher proportion of both regular home-based teleworkers (42%) and those doing high mobile T/ICTM (42%) report that they wake up repeatedly during the night, whereas only 29% of those always working at the employer's premises report this.

The multivariate analysis (see Annex 2) shows that, after applying the control variables cited above, regular home-based teleworkers tend to be more likely to report sleeping problems in general, when compared to

²² These findings are derived from the job quality intensity index that was constructed for the EWCS, based on questions about working at high speed and tight deadlines, the number of work pressure sources, having enough time to get the job done, value conflict at work and having frequent disruptive interruptions (Eurofound, 2016).

²³ The question in the EWCS is ‘how often have you worked in your free time to meet work demands?’

Figure 12: Percentage of employees waking up repeatedly during the sleep by type of T/ICTM, EU28

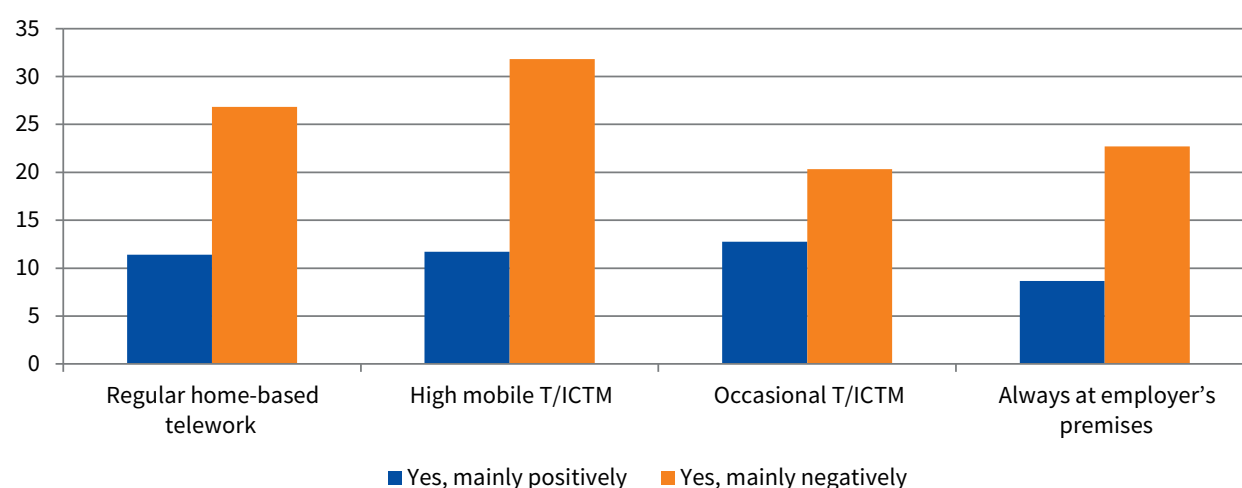
Note: Based on proxy of T/ICTM EWCS.

Source: EWCS 2015

those always work at the employer's premises.²⁴ For high mobile T/ICTM workers and occasional T/ICTM workers, this effect is related to higher levels of work intensity (which may or may not be associated with ICT use), but this is only partly the case for home-based teleworkers. For them, supplemental telework is most strongly associated with a higher level of sleeping problems, indicating the potential risks of this type of work. Although the multivariate analysis has controlled

for several contextual variables, it is necessary to treat these results with caution because sleep quality might be related to factors that cannot be controlled for with the EWCS.

Both sleeping disorders and experiencing stress at work for long periods of time can have a negative effect on the health of employees. Interestingly, a higher share of employees doing T/ICTM report both positive and

Figure 13: Percentage of employees reporting work affects health (positively or negatively) by T/ICTM, EU28

Note: EWCS 2015, based on proxy of T/ICTM EWCS.

Source: EWCS 2016

²⁴ The variable in the multivariate analysis was a scale based on answers to the question from the EWCS questionnaire: How often did you have any of the following sleep-related problems: (1) difficulty falling asleep, (2) waking up repeatedly during the sleep and (3) waking up with a feeling of exhaustion and fatigue?

negative consequences of work on health compared to employees working only at the employer's premises. However, the share of those experiencing negative outcomes is higher among high mobile T/ICTM workers (32%) and regular home-based teleworkers (27%). In contrast, an even lower percentage of occasional T/ICTM workers (20%) report that work affects their health negatively than those always working at the employer's premises (23%).

The multivariate analysis shows that the association between T/ICTM and occupational health is ambiguous. High mobile T/ICTM workers are more likely to report that work affects their health negatively, but when controlling for job intensity this association disappears. Work done occasionally outside the employer's premises with ICT actually seems to have a rather positive influence on reported health after controlling for the variables cited above, including supplemental T/ICTM. An important caveat, in addition to those mentioned previously, is that, especially with health, the direction of causality is not clear. Job characteristics, such as work intensity, ICT use or spatial mobility may drive health outcomes, but the reverse may also apply – that is, employees with health conditions might be using ICT more often as a means not to discontinue paid work.

Occupational health and well-being: Some conclusions

The advantages and disadvantages of T/ICTM in the context of occupational health and well-being, as identified in the research literature reviewed in the national studies, more or less balance each other out. It is difficult to determine whether the variations among these results occur due to ambiguities in the effects of T/ICTM, differences in work culture in the different countries, or because of different populations observed using data collection items that do not match with sufficient accuracy. According to a range of research studies and company cases reviewed in the national studies, those employees engaged in T/ICTM are happier, healthier and experience less work–life conflict and stress if they are given a substantial degree of control over where and when they work. However, a few of them point to the risk of work intensification and other potential well-being risks derived from the use of ICT at work in general and T/ICTM in particular.

The EWCS analysis shows that although autonomy plays a role in some well-being outcomes, it seems that such autonomy cannot always act to fully eliminate the potential negative effect on various aspects of health and well-being. The reality is that stress and perceptions of negative impacts of work on health occur more often among high T/ICTM workers, and that those working with ICT outside the employer's premises occasionally seem to report better levels of well-being. However, with the exception of occasional T/ICTM,

overall a higher share of T/ICTM workers reported poorer outcomes related to well-being than those workers who always work at the employer's premises. The results suggest that the health and well-being of these workers could be improved by tackling work intensity, ensuring there is support from colleagues and managers and eliminating the need for employees to frequently work in their free time. Working during free time is also a symptom of longer working hours (in the form of supplemental telework) and the source of the poor work–life balance of some T/ICTM workers.

Improving the health and well-being of workers doing T/ICTM

Based on findings from the countries where information is available, several aspects have been identified that can pose a risk for workers' health and well-being: long working hours; work–life interference associated with the blurring of the boundary between paid work and personal life; intensification of work; isolation; and burnout. Addressing these issues is critical, especially in view of the fact that T/ICTM workers seem to be equally or more satisfied with their working conditions as those employees working only at the employer's premises.

One of the issues that should be considered is that adequate regulations regarding the working conditions of work with ICT performed outside the employer's premises have not been developed in all countries. Therefore, limits and rules in relation to work with ICT outside the employer's premises, such as those concerning working time or health and safety, may not be well developed. Although the European Framework Agreement on Telework (2002) states that the employer is responsible for preventative measures according to the health and safety directive (89/391), the application of this principle remains questionable when working from home and is certainly impossible when working from public places. Therefore, it is important that regulations take account of this aspect.

Some of the risks mentioned above can be tackled if the frequency of T/ICTM is limited in some way. The EWCS 2015 analysis shows that, for most of the working conditions analysed, those doing T/ICTM on a less frequent basis report better outcomes than other T/ICTM workers. Findings from the sections on drivers and performance, work–life balance and health and well-being all point to the fact that 'partial' and 'occasional' T/ICTM, if well implemented, can have benefits in terms of work–life balance and performance, while limiting negative effects on health or potentially even improving workers' well-being. Such arrangements, together with improving and augmenting face-to-face contacts, could probably improve the situation of workers doing T/ICTM. In relation to this point, although no differences in such measures have been found between T/ICTM workers and those always working at the employer's premises,

the analysis suggests that support from colleagues and managers can play an important role in improving health and well-being outcomes. There is also some evidence that a reduction in work intensity and supplemental telework can improve the well-being of workers performing T/ICTM.

The reality is very complex and quite ambiguous. The findings presented in this chapter suggest that there are different work environments in which workers perform

T/ICTM, and that it is also very likely that different occupations experience such work arrangements in different ways. For this reason, further analysis of the main occupations and forms of employment working with ICT outside the employer's premises is needed. The next chapter presents examples of national, sectoral and company policies from the 10 EU countries and five countries in other regions of the world analysed in this report, addressing issues related to working time, work-life balance and health and well-being.

5 Policy responses to T/ICTM

In recent years, policies have been formulated in relation to the promotion and organisation of telework/ICT-mobile work (T/ICTM), aimed both at fostering the positive effects of T/ICTM and at reducing the negative effects. These policy responses come from various actors and at various levels: national governments, national and sectoral social dialogue, and at company or workplace level. However, at an international level the topic has hardly been addressed, with the notable exception of the 2002 European Framework Agreement on Telework in the EU.

The workplace is typically the central domain for policies regarding T/ICTM. Private companies and other organisations organise work according to their business or organisational objectives and other requirements, including policies that permit or encourage work arrangements allowing or encouraging employees to work outside the employer's premises, often with the help of ICT. This is typically done through human resource management (HRM) policies, often in consultation with workers and/or via collective agreements at company level. Furthermore, within the frameworks provided by these company policies, sometimes the modalities for T/ICTM arrangements are formalised in a written agreement between the employer and the teleworker. Such arrangements can also be included in national, sectoral, and/or enterprise-level collective agreements. Last but not least, government measures and legislation can also shape the conditions for T/ICTM, as well as regulate certain responsibilities in the context of occupational health and well-being (including mental health). In addition, governments may also encourage the development of T/ICTM in companies/organisations through ad hoc policies designed to facilitate the achievement of specific goals, such as the ones related to work–life balance, work–family reconciliation or inclusion policies. Sometimes such policies are designed to increase the labour force participation of specific groups (such as older workers, women with young children or individuals with disabilities).

Relevant EU directives and international labour standards

Although there are no EU directives specifically focused on T/ICTM, several have particular relevance for workers subject to these types of work arrangements. For example, the EU Working Time Directive specifies a number of provisions designed to protect the health and safety of workers across the EU, including those performing T/ICTM.²⁵ These provisions set up a legal framework determining a maximum of 48 working hours per week including overtime. The reference period should not exceed four months, but may be extended up to six months. Under certain conditions (for example, in the case of a collective agreement), it may be extended up to a maximum of one year. The Working Time Directive also provides for minimum periods of consecutive hours of daily rest (11 hours) and weekly rest (35 hours); the latter can be averaged over a two-week period.²⁶

Other relevant EU directives in the field of occupational health and safety are related to the use of ICT to work outside the employer's premises.²⁷ Directive 89/391 – the OSH 'Framework Directive' – does not differentiate between different work locations and, in addition, the European Framework Agreement on Telework specifies that:

The employer is responsible for the protection of the occupational health and safety of the teleworker in accordance with Directive 89/391 and relevant daughter directives, national legislation and collective agreements.

In terms of specific arrangements related to T/ICTM at European level, the European Framework Agreement on Telework, concluded in 2002 among the European social partners, is of paramount importance. This framework agreement provides some broad guidelines regarding the principles that should be adhered to when developing telework arrangements in private companies and other organisations. This EU social partner agreement is discussed in more detail in the next section.

25 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.

26 Under certain conditions, the period of weekly rest can be set at 24 consecutive hours.

27 Directive 89/391, OSH 'Framework Directive'; Directive 2009/104/EC – use of work equipment; Directive 92/58/EEC – safety and/or health signs; Directive 89/654/EEC – workplace requirements; Directive 89/656/EEC – use of personal protective equipment; Directive 90/270/EEC – display screen equipment; Directive 2003/88/EC – working time

Outside of Europe, there are no international-level agreements specifically focused on any of the T/ICTM arrangements. The same can be said with regard to international labour standards; there is no legal instrument with an exclusive focus on telework and/or ICT-mobile work. However, some ILO standards are relevant for those types of work, including some of those related to working time, weekly rest and workers with family responsibilities.²⁸

European Framework Agreement on Telework

The European Framework Agreement on Telework was concluded between the social partners (ETUC, BusinessEurope, CEEP and UEAPME) in July 2002. This framework agreement was ground-breaking because it was the first time an agreement, which had to be implemented directly within Member States' different industrial relations systems, was concluded in an autonomous social partnership.²⁹ The agreement provides a general European framework for people doing telework, which is to be implemented in accordance with national procedures and practices. In this agreement, telework is defined as follows.

Telework is a form of organising and/or performing work, using information technology, in the context of an employment contract/relationship, where work, which could also be performed at the employer's premises, is carried out away from those premises on a regular basis.

European Framework Agreement on Telework, Article 2

Most of the EU Member States have implemented the European Framework Agreement on Telework by way of national social partnership agreements. Ireland and the UK, which do not have a national system of collective bargaining, have introduced guides and codes of good practice. Some other countries, such as Hungary, have transposed the agreement into their national labour laws.

The European Framework Agreement on Telework covers the following elements:

- the voluntary character of telework for both the worker and the employer concerned;
 - the guarantee that teleworkers benefit from the same rights as regards employment conditions as comparable workers working at the employer's premises;
- measures to be taken by the employer to ensure that data used and processed by the teleworker are subject to appropriate data protection standards and that the teleworker's privacy is respected (the teleworker must comply with these rules);
- provision for installation and maintenance of equipment for telework, which is the employers' responsibility unless the teleworker chooses to use his/her own equipment;
- protection of the teleworker's occupational health and safety, for which the employer is responsible in accordance with applicable legislation at EU and national levels, and with collective agreements;
- the organisation of work, and in particular that the teleworker manages the organisation of their own working time within applicable legislation, collective agreements, and company rules and also applying an equivalent workload and performance standards applicable to comparable workers at the employer's premises;
- measures to prevent the teleworker from being isolated from the rest of the working community of the company;
- access to training and career development opportunities, which must be the same as for comparable workers at the employer's premises;
- teleworkers' collective rights, which must be the same as for those employees at the employer's premises (in particular, there should not be any obstacles to communicating with workers' representatives) and;
- implementation and follow-up.

An evaluation of this agreement took place in 2006 (ETUC et al, 2006).

It is interesting to note that recent growth in use of ICT outside the workplace on an occasional and/or an informal basis might not be covered by the above framework agreement, as it refers only to work carried out on a 'regular basis', most of which is home-based telework. However, the definition of telework in the framework agreement is intentionally broad, as it was designed to cover 'a wide and fast evolving spectrum of circumstances and practices' (European Framework Agreement on Telework, General Considerations). Nowadays, however, teleworking not only takes place at home; other spaces are becoming increasingly relevant (for example, cafés and airports), hence the use of the term 'T/ICTM' in this report. The changing

²⁸ Relevant international labour standards include the Hours of Work (Commerce and Offices) Convention, 1930 (No. 30), the Weekly Rest (Commerce and Offices) Convention, 1956 (No. 106) and the Workers with Family Responsibilities Convention, 1981 (No. 156). However, it is important to note that the Home Work Convention, 1996 (No. 177) does not apply to T/ICTM workers who work from home; rather it focuses on workers who produce products or provide services in their homes, typically for piece-rate remuneration.

²⁹ Under such framework agreements, which are called 'autonomous agreements', the social partners take direct responsibility for implementing measures at the national, sectoral and enterprise levels. For further information, see <https://www.etuc.org/social-partners-framework-agreements>.

circumstances and practices of T/ICTM could potentially lead to the need to reformulate this agreement in the future.

National legislation and other governmental measures regarding T/ICTM

National governments have been both promoting and, to a lesser degree, regulating T/ICTM arrangements, in the first instance as a measure to promote work–life balance or other national priorities (for example, continuity of government operations in crisis periods), but also in the context of occupational health and well-being related initiatives. Policy responses to T/ICTM include various objectives and conditions across countries and organisations. In this context, a rough separation can be made between regular T/ICTM, mainly work-from-home policies (that is, home-based telework) and the occasional, usually informal, use of ICT for work outside the employer’s premises.

Several commonalities among the examples of national policy responses to regular T/ICTM, which, as we have seen, is often home-based telework, can be identified across the countries studied. Examples include *Guidelines for appropriate adoption and execution of telecommuting with ICT equipment* in Japan and the Telework Enhancement Act of 2010 in the US, which is applicable to all US federal government employees, making it the largest teleworking programme in the world (see Box 1 below). The legislative approach seems to be more common in some EU countries (for example Hungary, Italy and Spain), often adopting provisions of the framework agreement.

In Japan, in recent decades the government and some of its central ministries have been striving to promote telework. For example, a statement issued in 2013 by the Cabinet asserts that the promulgation of telework could facilitate the promotion of work–life balance among workers and the revitalisation of provincial areas. Furthermore, it states that the growing popularity of this model will promote the following features: female workers’ engagement with society; the security

Box 1: US federal government law on telework by federal employees

Since 2000, US federal law has required that every US government employee work from home to the maximum extent possible. The original impetus was fear of a government shutdown due to the avian flu pandemic. Since that time, acts of terrorism, extreme weather events and other pandemic threats have repeatedly reminded government leaders of the need for telework as a cornerstone in its continuity of operations strategy.

In 2010 President Obama, referring to himself as the ‘Teleworker-in-Chief’ (because he works at his home, the White House) pushed for enactment of federal telework legislation. President Obama also moved the conversation about telework beyond continuity of operations, framing it as a strategy for improving work–life balance, attracting and retaining talent, and measuring employee performance by results rather than presence.

In December 2010, the Telework Enhancement Act (TEA) passed both houses of Congress with bipartisan support and was signed into law by the president. This law mandated US Federal agencies to:

- establish a policy under which eligible employees would be allowed to telework;
- designate a telework managing officer;
- determine the eligibility of employees and notify them of their eligibility status;
- designate a senior manager to coordinate each agency’s telework programme;
- require a written agreement between an agency manager and each of his or her employees authorised to telework;
- develop and implement telework training programmes for managers and employees;
- ensure that interactive training be provided to eligible employees and their managers and that training is successfully completed prior to entering into a telework agreement;
- adopt telework as a part of the agency’s continuity of operations plan.

While the TEA and the US Office of Personnel Management offered federal government agencies guidance for the development of their telework programmes, each agency is left to develop its own policies, training and procedures. Since the signing of the TEA, regular telework of one day a week or more has grown from 4% of federal government employees in 2011 to 14% in 2014.

Sources: US Office of Personnel Management (2011); US Office of Personnel Management (2014); Section 359 of Public Law 106-346 (cited in the US national study).

of the workforce in a society with a declining birth rate and an ageing population; male workers' childcare responsibilities; and the combination of paid work and nursing care (Cabinet Secretariat, 2015, p.16). However, it appears that the primary objective of promoting telework is addressing the issue of the declining size of the workforce: the Japanese labour force reached its record size of 67.93 million persons in 1998, and since then has gradually fallen by over two million in subsequent decades. For this reason, the government endorses the creation of teleworking models that provide for 'whole-day own-home teleworking', in cooperation with industrial organisations for workers who find it difficult to commute to work (for example, those who have young children or nursing responsibilities). To promote telework, the Japanese Ministry of Internal Affairs and Communications (MIC) has been undertaking the Nationwide Development Project for Teleworking (*Telewaku Zenkoku Tenkai Purojekuto*) since 2012, and organising seminars for the promotion of telecommuting, presenting the benefits of adopting this work arrangement. The Ministry of Health, Labour and Welfare (MHLW) has established the Telework Consultation Centre (*Telewaku Sodan Senta*) in Tokyo and has been providing subsidies to small and medium-sized enterprises that introduce a 'whole-day own-home teleworking' system or a satellite office system. The Ministry of Economy, Trade and Industry (METI) has organised many seminars to promote telecommuting, presenting the benefits to companies of adopting this work arrangement. The Ministry of Land, Infrastructure, Transport and Tourism (MLIT) is continuously researching telework in Japan and publishes annual reports on this subject (JTA, 2013, pp. 99–100).

Similarly, in Argentina, the Ministry for Work, Employment and Security (Ministerio de Trabajo, Empleo y Seguridad Social, MTESS) has been actively promoting telework for several years. They created the teleworking network (*la red de teletrabajo*); developed a manual of best practices in telework; and launched a tripartite observatory to follow the development of telework programmes in companies and promote best practices.^{30,31,32} The MTESS' telework coordinator shows on its website a number of programmes related to certification of telework skills, promotion of telework in private enterprises and the public sector, and telework for several specific groups of workers (such as young people, older workers and people with disabilities).

In Finland, teleworking has been on the national agenda and in several government programmes since the 2000s. The motivation was initially related to regional policy and work–life balance, but has gradually changed to also include worker well-being, the sustainability of work (in light of longer working careers), as well as environmental reasons (to tackle challenges stemming from climate change). In 2006, the Finnish government made the decision to promote teleworking, based on tripartite preparatory work. The main objectives were to improve the quality of working life, increase productivity and promote ecological and sustainable ways of working. In 2007, an 'employer guide for teleworking' was published by the Finnish Ministry of Employment, financed by the European Social Fund, to support the development of management and working arrangements towards better productivity and quality of work (Pekkola and Uskelin, 2007). In 2009, the Finnish Ministry of Employment and the Economy published a report on teleworking, providing practical recommendations and measures to facilitate the introduction of teleworking in companies and organisations. From 2011, a national teleworking day was established by the Finnish Environment Institute, in collaboration with Microsoft and, from 2014 onwards, the Finnish Institute of Occupational Health. The campaign is organised by a network of 22 executing organisations, representing a wide range of public and private stakeholders, as well as the social partners (EECN, 2011; Heinonen and Saarimaa, 2009), including an award for the teleworking manager of the year.

Hungary was the first country to incorporate the European social partner agreement on telework into the national regulatory framework, in consultation with and involving social partners. The legal recognition at national level was officialised through a law (Act XXVIII of 2004 concerning the modification of certain employment related acts) whose provisions on telework were later incorporated into the labour code (Act XXII of 1992) as a separate chapter. In 2003, the Hungarian government developed a comprehensive mid-term strategy on the Hungarian information society (*Magyar Információs Társadalom Stratégia*). In the same year, the Minister of Labour entrusted the newly established Telework Board to develop a roadmap for the introduction of telework in Hungary. While a number of institutions were subsequently created, such as a telework centre in the Budapest Labour Market Intervention Centre (dealing with the training of potential teleworkers), it lost its emphasis in 2011 when it was renamed the Turr Istvan Training and Research Centre. In fact, telework was mainly a component of an

30 For information on the teleworking network (*la red de teletrabajo*), see: http://www.trabajo.gob.ar/downloads/teletrabajo/100922_redteletrabajo.pdf.

31 For information on the manual of best practices in telework, see: http://www.trabajo.gob.ar/downloads/teletrabajo/manual_buenas_practicas_2011.pdf.

32 For information on the telework programmes in companies, see <http://www.trabajo.gob.ar/ott/?cat=18&subc=2>.

active labour market inclusion programme all along, with a focus on supporting people in disadvantaged situations (such as women returning to work after maternity leave, new entrants and older workers).

In Italy, the law of 16 June 1998 sets out the rules for teleworking in the public sector in Italy. The decree of 18 October 2012 stipulates that public administrations submit their respective plans for teleworking by 31 March every year. In the city of Milan, in 2014, 2015 and 2016, a 'day of agile work' (*giornata di lavoro agile*) was organised, which involved 100 public and private companies, on a voluntary basis. Hundreds of employees teleworked or 'worked flexibly' for a day. This had several positive impacts, such as time savings of up to two hours in commuting, as well as a reduction in pollution. Although telework is not very popular in Italy, nevertheless, a draft law on 'agile work' (*lavoro agile*) was drawn up in January 2016, aimed at increasing productivity and facilitating work-life balance. Specifically, it defines agile work as a type of employment contract with the following characteristics: the possibility to fulfil some work duties outside the employer's premises within the working time limits set in legislation and collective agreements; the possibility to use technological tools in order to carry out the work; and the absence of a fixed work station during those times when work is being done outside the employer's premises. Furthermore, the draft law establishes employer responsibility for employee safety and health as well as for the correct functioning of the technological tools provided to accomplish work tasks outside the employer's premises. Every enterprise must sign an ad hoc agreement for the introduction of agile work: such agreements regulate the ways through which the employer exercises its managerial power as well as establishing rest days and the guarantee of the right to disconnect. The draft also points to the principle of equality of treatment (economic and legislative) between the 'agile worker' and one working at the employer's premises in the same company.

In Spain, there is hardly any legislation concerning telework. However, Law 3/2012 regarding urgent measures for the reform of the labour market (*Ley 3/2012 de 6 de Julio, de medidas urgentes para la reforma del Mercado laboral en España*) regulates some aspects of distance work (telework). Telework agreements need to be formulated in writing, and the teleworker has the same rights as the other workers concerning health and safety, wages, training and representation. This provision was included because of the introduction of new forms of employment relationships based on the use of ICT. The objective is to promote innovations in work organisation, improve work-life balance and increase employment opportunities. It is only a preliminary and approximate legal framework, with many aspects to be further regulated later. For instance, employment conditions regarding working time, wages and the boundary

between work and personal life require further legal development, as detailed in the white paper on telework in Spain (Fundación Másfamilia, 2012). The trade unions, as outlined in their guide to labour reform (*Guía sindical para la reforma laboral*) also indicated that the concepts need to be clarified further (Fundación SIMA, 2012). However, at the local level there are some interesting examples, such as the community of Madrid, which created an intermediation service for psychosocial risks (*servicio de intermediación en riesgos psicosociales*). This service deals with, for instance, mental health issues, such as increasing stress due to higher uncertainty or lack of boundaries between work and private life.

In Sweden, while rules and regulations related to the labour market are almost exclusively decided by the social partners (who do not consider T/ICTM to be a particularly important issue for negotiation or regulation, see above), the Swedish Work Environment Agency deals with issues related to work environment and workers' rights. In relationship to teleworking, the authority has highlighted the issue on its website by publishing articles related to computer work in the home and IT stress, for example the overwhelming amount of information available and the feeling that one should be constantly available to respond to work demands via mobile phone or email. The main message of this agency is that telework is a joint responsibility and that the employer is partly responsible, whether there is a written agreement for telework or not.

In the UK, the government has drafted a guide for teleworking in the wake of the European Agreement on Telework. More broadly, in the UK all employees have (since 2014) the right to request flexible work (including working from home), subject to a qualification period of two years. Previously, this 'right to request' was only available to carers including the parents of young children. However, an employee does not have the right to demand flexible working: rather, employers are only required to give due consideration to requests for flexible work made by their employees. Many larger companies in the country had similar procedures, including extension to all employees, even before the new legislation came into force.

In the Netherlands, the Working Conditions Act was revised on 1 July 2012 to broaden the definition of telework and working from home to 'locally independent work'. 'Performing paid work in the living quarters or another place chosen by the employee, outside the employer's premises' falls under the Working Conditions Decree (*Arbowet*), including all health and well-being legislation. According to this decree, the employer has a duty to care, which includes when an employee works from home or elsewhere, outside the employer's premises, and they should check whether the employee is working according to the Working Conditions Act. The nature of this check is not

specified, but it may include the provision of information, registering working hours, and having discussions about performance and appraisal interviews for the employee. Ultimately, the employer is liable. If an employee refuses to follow an instruction of the employer, then the employer may refuse them the option to telework.

Overall, policy responses to occasional, informal T/ICTM are generally much more restrictive (and less frequent) than the ones discussed above for regular, albeit part-time, T/ICTM. This difference undoubtedly arises because much of this informal, occasional type of T/ICTM appears to supplement, rather than substitute, work in the office – effectively resulting in unpaid overtime work. However, as ICT use outside the workplace has expanded, the question of overtime pay for T/ICTM outside of normal business hours is becoming an issue, for example in Finland and the US. In the latter, several cases have already resulted in litigation, and a number of American firms have recently established company policies banning work-related messages outside of regular business hours, either by simple advice or by shutting down their servers on weekends, evenings and nights – a type of company policy that originated in Germany. According to the Brazil study, nationwide regulations of this kind were recently put in place by the Labour High Tribunal in Brazil. Employees now have the right to be paid one-third of their regular hourly wage during times when they are required by their companies to be available to be called for work outside normal business hours ('stand-by mode'). These types of policies are explained further in the section on the right to disconnect below.

National and sectoral social dialogue

A series of national and sectoral social dialogue agreements across the EU Member States include either references to telework or clauses that can be implemented at the enterprise level.³³ Out of the countries included in this report, only in Belgium, France, Italy, the Netherlands and Spain is the issue of telework addressed through national social dialogue. In Finland, France, Italy, Spain and the UK, the issue is addressed in sectoral-level dialogue. In the other countries, neither sectoral nor national social dialogue on this topic has been reported, reflecting that in some countries the agreements reached through social dialogue processes have only been concluded at local level. In some cases, there are also social partners' initiatives.

This is the case, for example, with the trade union UNISON in the UK, which has elaborated a negotiating guide for teleworking in local administration, with reference to a number of agreements already in place. The issues covered in the agreements are documented in the guide: regular review of home-based telework policies; the types of work eligible for home-based telework; the types of positions suitable for home-base teleworking; the impact on work colleagues (for example, there should not be a negative impact on work colleagues, such as an increase in their workload); the implications of data protection for working remotely; expenses for home-based telework such as electricity, phone costs and heating; and procedures to terminate the agreement. The guide also states that one of the key elements to examine, in order to determine whether the type of work is suitable for telework or not, is whether one can establish clear objectives for it.

It is fairly common in Finland for sectoral-level collective agreements to include an appendix with a template for a contract to be used locally by the employer and employee if they agree on teleworking. Such agreements normally refer to the peak-level organisations' guidance on issues that should be taken into consideration when agreeing locally on teleworking, based on the elements included in the EU Framework Agreement for Telework. While in Finland teleworking has generally been considered to be a win-win arrangement if properly organised, white-collar unions have recently started to focus on the issues of work-life balance and health and well-being for those workers who use ICT outside the employer's premises on a regular basis, particularly the issue of unpaid overtime, as illustrated by a campaign of the Federation of Professional and Managerial Staff YTN (see webpage at 8tuntia.fi).

Practices concerning T/ICTM in Spain are usually included in collective agreements. The Second Agreement for Employment and Social Dialogue 2012–2014 (*II Acuerdo para el Empleo y la Negociación Colectiva 2012–2014*) acknowledges that telework is an innovative work organisation form, based on the use of ICT, which makes it possible to work outside the employer's premises. It also states that telework should be voluntary and reversible and should involve the same rights as those for workers who do not work outside the employer's premises. The agreement points to the need to further regulate aspects such as privacy, confidentiality, training and health and safety. Furthermore, in Spain a number of collective agreements refer to these aspects, particularly health and safety. An example is the sectoral collective agreement for the chemical industry (*convenio colectivo general de la industria química*) setting out the

33 For information on the definition and scope of national and regional social dialogue, please refer to ILO, 2013 (pp 177 and following).

conditions for telework in that sector, which explicitly states that the employer has the responsibility for the health and safety of the employee and the duty to inform the employee of health and safety policies and risk prevention. According to the agreement, telework can only be permitted when the work environment of the teleworker meets all the health and safety requirements. The employer can access the teleworker's domicile to verify that these standards are met, with the prior notice and consent of the employee. The employer must also cover the costs of the equipment needed for telework. The latter is an example of how, in some countries, policies in general still understand telework to mainly mean home-based telework.

In Italy, the inter-confederal agreement of June 2004 implemented the European Framework Agreement on Telework in the private sector. In addition to the general principles already mentioned (such as the voluntary nature of telework and its reversibility), it refers to the right of workers to get appropriate training in the necessary ICT equipment, in relation to the characteristics of this type of work arrangement. It also establishes that costs for communication, purchase and maintenance of ICT devices are the responsibility of the employer, who is also responsible for the health and safety of the workers. At national level, the 2011 agreement on work–life balance policies explicitly mentions teleworking as a ‘family-friendly’ measure that could be considered by companies in terms of promoting flexibility. Moreover, several social partner agreements established at industry level in Italy contain clauses governing telework, such as telecommunications, chemistry, commerce, electricity, services and distribution, bread-making and food processing for SMEs, ceramics, insurance, social and third sector companies, and the textile and clothing industry. The rationale behind these agreements is primarily to promote work–life balance.

In Belgium, the social partners concluded collective agreement no. 85 on telework on 9 November 2005 (*CAO 85 telewerk / CCE 85 télétravail*). The agreement includes provisions modelled on the European Framework Agreement on Telework. Within the context of the number of working hours, the teleworker has the right to organise their work themselves. This collective agreement can be supplemented by a sectoral or company-level agreement.

In 2010, 16% of employees in the Netherlands already had a collective agreement containing provisions regarding flexible working time arrangements, working at home and/or teleworking (with some sort of formal definition, often including the use of ICT). Nevertheless, flexible working is not embraced in all sectors. While sectors such as private and public services as well as healthcare are quite convinced of the opportunities provided by T/ICTM, others, such as cultural services,

entertainment and recreation, are much more sceptical. Examples of sectoral-level collective agreements include the sectoral agreement for childcare in children's centres and childminding (*AAV CAO 2013 kinderopvang voor kindercentra en gastouderschap*), which establishes an allowance for teleworking, both for teleworking and also for the use of space or a room at home, in cases where the worker works more than 70% from home, and the employer has to provide them with a computer, modem and software. The sectoral social agreement in welfare and social services (*AVV 2015/16 welzijn en maatschappelijke dienstverlening*) is a specific collective agreement that includes an allowance for teleworking. The sectoral agreement for books and magazines and publishing companies also includes a clause specifying that those companies who want to make a telework agreement can seek support from the sectoral organisation.

T/ICTM does not seem to be a burning issue for the social partners in Sweden, even though issues related to working conditions are usually dealt with by them. Apart from the implementation of the European Framework Agreement on Telework, the topic has been somewhat dormant in Sweden, even though the incidence of telework in the country has increased dramatically in recent years (Vilhelmson and Thulin, 2016). T/ICTM is also not a very important topic for company-level social dialogue; rather, it is usually dealt with through reasonable HRM based on unwritten guidelines and a work culture that organises availability and work demands for both office-based and T/ICTM workers similarly.

To sum up, most European national or sectoral agreements regarding regular T/ICTM tend to follow the European Framework Agreement on Telework. In some of the countries analysed in this report, there is no national or sectoral-level social partner agreement that includes telework: for example, in Hungary and all of the countries outside of Europe.

‘Right to be disconnected’ and related policies

A new policy approach, known as the ‘right to be disconnected’, attempts to limit the negative effects of T/ICTM by protecting employees’ non-working time to address these work–life balance conflict and well-being issues.

The ‘right to be disconnected’ and related policies have emerged in response to some common issues that have recently arisen due to the diverse and new shape of the world of work. One of them, recently termed ‘work without end’, is commonly addressed by different studies and national policies, and is linked to the growing importance of new technologies in our professional lives. The potential for ‘work without end’ appears to be more likely to occur with T/ICTM. Indeed,

while work that is independent of time and place has the advantage that, thanks to ICT, workers can organise their work (including their working time) themselves based on their individual situation, there is also an inherent danger that there will no longer be respect for the boundaries between paid work and private life. Recently, the subject of T/ICTM has been linked in the media and in policy discussions with the lack of respect for rest period and holidays, stress and even burnout (see Chapter 4). As noted above, this issue is starting to be addressed in a few countries through a policy response called ‘the right to be disconnected’ from work: examples can be found in company practices, collective agreements and even some national initiatives and legislation.

The policy issue of constant availability for work due to ICT is an emerging one, for which only a few initiatives at national or sectoral level, in a handful of countries, have been undertaken thus far. The majority of such policy responses have taken place at company/workplace level, most prominently in France and Germany. In the majority of cases, different agreements – both at sectoral or company level – have tried to grant a sort of ‘right to be disconnected’ by limiting the functioning of email servers after normal working hours, as well as during those periods that should be considered as rest times for workers (such as weekends and holiday periods).

Concerning company-level agreements related to the ‘right to be disconnected’, some examples from major automobile companies in Europe have been developed and implemented in recent years. For example, the national study on France reports how Renault included, in its inter-professional agreement on equality, a limitation on sending emails in the evenings and on weekends; however, this prohibition can be lifted in exceptional circumstances, which still leaves a certain margin of manoeuvre regarding the right to be disconnected from work. In January 2014, German car manufacturer BMW reached an agreement about T/ICTM with its works council (BMW Group, 2014). The agreement stipulates that all employees are allowed to register time spent working outside the employer’s premises as working time, which opens up the possibility of overtime compensation for the time employees spend responding to emails after the end of their normal working day. Moreover, employees are encouraged to agree fixed ‘times of reachability’ with their supervisors. Both policies are designed to reduce irregular, informal T/ICTM (which they call ‘wild mobile work’), in order to help reconcile paid work with personal life. Likewise, German car manufacturer

Daimler introduced a new policy allowing employees to set their email inbox to ‘holiday mode’ while on leave; this software allows the automatic deletion of all incoming emails during the leave period. The sender will receive an auto-response stating that, during a given time period, emails will be deleted, and they will be invited to contact another employee during this period. This policy targets all employees who have a company-based email inbox; hence, it covers around half of all employees.

Concerning sectoral-level agreements, several such agreements related to the right to disconnection (*droit à la déconnexion*) have been signed in France. For example, the telework collective agreement in the French telecommunications sector (*Accord relatif au télétravail dans la branche des télécommunications*) of 6 October 2006 specifies that the employment contract must include a provision specifying the time periods during which the teleworker can be contacted. The right to switch off has also been introduced in the oil sector agreement, in which the minimum of 11 hours of daily rest between working days are protected. There is also a national inter-professional agreement of 19 June 2013 in France, focused on improving the quality of working life and professional equality, which invites the social partners to look at the ways in which technology allows work to intrude into the private life of employees via laptops and smartphones.

The ‘right to disconnect’ has also been addressed by a few legislative initiatives, as well as by centralised tripartite actions led by national governments. Such is the case in Germany and France. France recently introduced a specific article on the right to be disconnected (*le droit à la déconnexion*) in the most recent revision of the French labour code, in 2016.³⁴ The new legislation in France, to be implemented from 2017, includes an obligation on employers and employees in every company with 50 employees or more to negotiate ‘the use of ICT’, with a view to ensuring respect for the rest and holiday periods of workers and their personal and family lives. If no agreement is concluded, then the employer needs to adopt a charter after consultation with worker representatives. It is up to the employer to define the modalities to be developed to guarantee the right to be disconnected. Possible means of ensuring that such times are respected include blocking email access at certain times and mutual engagements between employees and their superiors regarding respecting such time periods. In addition, the French Minister of Labour, Myriam El Khomri, received a report (which had been requested by the former Minister of Labour) from Bruno Mettling, HR manager of the group

34 Article L2242-8, modified by Law no. 2016-1088 of 8 August 2016, article 55 (V).

Orange, on the impacts of digital transformation (including the extension of telework) on work (Mettling, 2015). The report included proposals to make digitalisation an opportunity to improve work quality.

In Germany, the social partners and government addressed the issue of permanent availability and mobile work in a joint declaration on mental health in the workplace in September 2013. The aim of this agreement is to work collaboratively on the prevention of work-related mental health issues and the reintegration of affected workers into the workplace upon their return from sickness leave. In 2013, the Ministry of Employment introduced a 'minimum intervention in leisure time' policy, whereby managers can contact employees outside of their normal working hours only to deal with exceptional situations requiring action that cannot be postponed until the start of the next working period. Furthermore, employees cannot be put at a disadvantage for turning off their mobile phone or not picking up messages outside of normal working hours (Spiegel Online, 2013). In addition, in the context of the development of a new anti-stress regulation, in 2014 the German Minister of Labour, Andrea Nahles, expressed her intention to tackle the issue of permanent availability for work, for which, according to her, there is already sufficient evidence regarding its negative effects on mental health. The national study for Germany also notes that the German Federal Institute of Occupational Safety and Health (BauA) was invited to explore the feasibility of designing and implementing such regulations.

Company and organisation examples of T/ICTM

In addition to recent examples of company initiatives related to the right to disconnect, national studies also include other company policies and practices, most of which relate to home-based telework rather than other T/ICTM arrangements. Depending on the country, these are based on social partner agreements (most of the EU countries) or are unilateral company practices.

Most of the examples are from larger or medium-sized companies, in which home-based telework policies and programmes are formally developed and implemented. While telework has been introduced in many companies, most of the larger companies that are presented as examples in this section have addressed the issue in a formal way: the practice was discussed or negotiated with workers; and often the introduction of telework included a pilot phase, as well as an evaluation. This does not mean that telework does not exist in smaller companies, although it may be present in a more informal and ad hoc manner. In some countries, telework is also common practice in public administration, as demonstrated by the example of the US federal government discussed earlier in this chapter.

In general, EU national studies also reflect the fact that telework is prevalent in public administration.

For both private enterprises and other organisations, T/ICTM is used as a strategy for promoting various objectives, and often multiple objectives at the same time. These objectives include:

- promoting the reconciliation of paid work and private life (which typically includes benefits to the organisation as well, such as increased motivation and reduced turnover);
- reducing commuting time;
- organising work based on results, with greater autonomy for employees coupled with responsibility for achieving agreed-upon outcomes;
- working more productively and efficiently (with fewer interruptions);
- saving on office space and associated costs.

In some companies, telework is reserved for only a limited number of workers, while in others it is available to a broader range of workers. There are some interesting differences, often related to the reasons for introducing telework and which categories of workers are eligible. While in some companies this option is reserved for workers with care responsibilities (telework as a work–family reconciliation measure) or health or mobility impairments (telework as a labour market inclusion measure), other companies offer telework to workers with the greatest need to carry out concentrated work without disturbances or to those who have specific ICT skills. In other companies, eligibility for telework has been extended to nearly all workers, with a few exceptions for work that can only be done at the company's premises or very specific work locations (such as reception work or cleaning).

The proportion of workers who are eligible to telework varies substantially from one company to another, from a small percentage to almost all workers. Telework in nearly all of the cases is limited and granted under certain conditions. The purpose of such limits is to maintain the link with the organisation and with colleagues. Where the amount of time for telework per worker and the proportion of teleworkers is higher, the need to ensure a common 'company premises time' becomes even more important.

In the examples that follow, selected from the national studies, it is clear that companies often decide to introduce T/ICTM in order to address employee needs for work–life balance, including the reconciliation of work and family responsibilities.

In DRV Braunschweig Hannover, a statutory retirement insurance company in Germany employing 2000 employees (65% women), an establishment-level social partner agreement on work–family reconciliation policies has been in place since the 1990s. In this company, employees have the right to work from home

(home-based telework) if they have care responsibilities for children (under 18 years) or other family members. The company provides the hardware and software needed for working from home. Rules were introduced to establish when teleworkers needed to be available for working at home, with a view to facilitating cooperation between office-based workers and teleworkers. Working hours are fixed between the employee and direct superior (between 06.00 and 20.00) and once a month the teleworker and their supervisor meet to discuss working time and other issues. In addition, employees can participate in stress or time management seminars. This practice has been introduced together with other working time arrangements that could better enhance reconciliation of work and private life, such as flexible part-time work, job sharing, sabbaticals and a parent-child room. Around 135 employees participate in the teleworking options, the majority of whom choose designated times for working in the office (to ensure good coordination with colleagues and management) and for working at home. As a result of this initiative, absenteeism was reduced by 20%, and the average number of months spent on parental leave fell from 19 to 14 months. Staff surveys show that employees appreciate the freedom to adapt their working hours to their private needs, as well as the reduction in commuting time.

In Belgium, KBC Bank provides another example of how telework company practices can have a positive impact on work-life balance. The company introduced a new work organisation plan in 2010, in which three possibilities were offered: working in a more decentralised manner by creating satellite offices in administrative buildings of the bank closer to employees' homes; facilitating telework by providing laptops and mobile phones; and introducing flex desks. The number of home-based teleworkers in the bank is increasing year by year. One of the conditions, however, is to be at the employer's premises for at least three days a week. Telework is not possible for those who work less than 70% of a full-time job. The results of an employee satisfaction survey show the work-life balance has increased for 87% of workers there. In addition, 83% said that they can work with greater concentration, 72% feel less stress at work, 68% are more motivated and 62% can better organise their work.

In France, the same aim of achieving a better work-life balance for workers was behind the choice of Thales Group, where a group-level agreement on telework was concluded on 26 April 2013 for a two-year trial period. This is detailed in a company-level agreement of 24 April 2015, which provides practical guidelines to help social partners introduce and manage telework at local level. This agreement initially provided for telework one day a week, which was later extended to two days a week. Eligible employees have been in their position for six months and in the Group one year. They must work

either full time or a minimum of 80% full-time hours. In each Thales company, 8% of the workforce telework for two days a week and 10% telework for one day a week. The agreement also contains a provision regarding the right to disconnect outside normal company opening hours or at least during the minimum rest period between two consecutive working days (11 hours), in accordance with minimum legislative standards (See the earlier section on the Working Time Directive).

Similarly, PSA Peugeot Citroën introduced home-based telework in 2011 for a trial period after consultation with the social partners. It was introduced and evaluated as a 'new social contract', whereby employees and employers evaluated it positively, as leading to a reduction in stress related to commuting, better work-life balance, a gain in efficiency for employees, and higher motivation and efficiency for employers. Telework is possible for all kinds of employees who have been in the company with a permanent contract or have at least one year of seniority in the group. Six criteria need to be fulfilled: sufficient autonomy, mastery of skills, mutual trust, compatible work organisation, a telework-compatible position and equipped work space. Telework is voluntary for both employees and their supervisors. This case reflects the fact that in some companies, the right to telework is limited to certain workers, according to criteria like employment status.

In Italy, company examples can be found across a range of different sectors, each with their own motivation and modalities. Most have involved consultation with social partners or have been included in a collective agreement. The University of Palermo introduced the possibility of teleworking for three days a week maximum to increase workers' well-being and motivation, improve their work-life balance, and to adapt to a different work culture (with a focus on goals for workers, rather than physical presence in the company). A company-level collective agreement was concluded in Telecom Italy, whereby workers can work up to a maximum of four days a week at home. Another driver there was improving the company's capacity to cope with difficult economic situations and reducing absenteeism rates and labour costs.

Along these lines, Indra, a Spanish consulting and technology multinational company, introduced telework in 2002 (first via pilot) to improve workers' motivation and satisfaction and increase performance. It has a dual objective: to facilitate work-life balance and working time flexibility; and to increase competitiveness, while reducing absenteeism and turnover. Telework is voluntary but needs to be approved by the employee's supervisor. One of the requirements is that the tasks need to be 'teleworkable'; the telework period can be between 25% and 80% of the total working time. The same employment conditions are maintained, and the employer pays for any necessary investments in ICT infrastructure.

Box 2: The ‘new way of working’ or ‘new world of work’

The ‘new way of working’ (*het nieuwe werken*), also called the ‘new world of work’ (or ‘new WoW’), comprises of a number of features (Delagrangé, 2014). It is linked to the new possibilities offered by ICT to work in a smarter and more mobile way, involving a new relationship (or social contract) between employer and employee (den Dulk, 2015). It refers to work that is independent of time and space (and machine), with the emphasis on worker performance over working time and/or presence at the employer’s premises. It requires a different approach to management, based on greater autonomy and self-responsibility for employees. It is based on good access to information, knowledge and experience and trust-based employment relations. Eight dimensions of the new way of working are identified: exemplary behaviour by management; autonomy; flexibility in terms of time and place of work; availability of information (less hierarchical organisation and access to information at all places), with frequent communication (both bottom up and top down); accountability for results rather than for working time; sharing knowledge with colleagues; online cooperation with colleagues; and development possibilities (Baane et al, 2010). The aim is to improve workers’ quality of work and their work–life balance, as well as increase productivity and innovation.

More innovative approaches have been developed in Finland and the Netherlands with apparent positive consequences for both companies and employees. The Finnish Transport Agency conducted a one-year experiment with telework. They wanted to find out if work efficiency could be improved by giving employees more freedom with regard to the time and location of their work. Positive consequences included: improved work–life balance for workers, reduced commuting time for workers, greater efficiency regarding work tasks that require a high degree of concentration, and a change in organisational culture, whereby trust and responsibility have become central.

KPN, a telephone company in the Netherlands, has implemented a so-called ‘new way of working’ or ‘new world of work’ (*het nieuwe werken*). This refers to work that is independent of time and place and largely based on T/ICTM (see Box 2 below). The works council in the company was involved throughout the process. The aim is to share the benefits derived from this way of working with employees. It involves greater time and space flexibility for work, more efficient use of resources, and productivity optimisation by stimulating communication and collaboration. This process started with a pilot in 2009 and was later extended, through a series of implementation stages. A corporate programme manager was employed to coordinate the introduction of this new way of working, and guidance was provided by an external consultant, for all employees seeking to reach an optimal way of working and collaborating. All employees received equipment needed to work from home and there was a reduction in office space, which has been reorganised into four types: open work spaces; closed work spaces (for work requiring concentration); open work and meeting spaces; and closed meeting spaces. Quantitative and qualitative tests that were carried out before and after the pilot process, indicated that the initiative resulted in lower rates of sickness absenteeism, better work

satisfaction, reduced commuting times, and an increase in working from home. Some unexpected issues arose. For example, the workplace became quite untidy, probably because each individual felt less responsible for keeping the shared spaces clean. Employees who did not start work early in the morning could find themselves without a workstation when they arrived at the office.

In Sweden, at the computer giant Hewlett Packard, the senior safety representative, together with the HR department, put a teleworking policy in place. This policy prescribes that telework should take place for a maximum of three days a week; on the remaining days, employees must work at one of the company’s premises. The rationale behind this relates to the social aspect of work and the importance of colleagues seeing each other, not only for improved efficiency but also for employee well-being. In fact, it is interesting that this type of ‘partial teleworking’ policy seems to be common in many different organisations, both public and private, in a wide range of countries. As presented in Chapter 4, this seems to be an arrangement with positive results for both companies and employees.

Outside Europe, medium-sized and large companies in Japan achieved the greatest improvements to their organisational performance through enterprise policies promoting telecommuting (home-based telework). According to the national study for Japan, at Nissan Motor Company Limited, a large automobile and ship manufacturer, all employees except those in the manufacturing departments are eligible for telecommuting. The number of people registered on the telecommuting system is 2,400. A maximum of five days per week are allowed to telecommute on the condition that workers apply for it the day before they intend to work from home. Telecommuters must work at their own homes, and the working time of a telecommuting day must be eight or less hours. Employees who work from home must send an email to their superiors about

when they started work and when they finished. The company reports that their telecommuting system contributes to the improvement of employees' work-life balance.

Compuware, a global software company, established a home-based telework policy for the Brazilian branch of the company. Telework was initiated in the company as a pilot project. As in the other examples presented, the objectives were as follows: improve employees' productivity; enhance employees' life quality and create opportunities to reduce expenses associated with their commuting to the workplace; save on office space and associated costs; improve the retention of employees; and contribute to urban mobility and the environment. The company defines the functions that are eligible for telework, and the decision regarding whether to adopt telework is then made by employees, with the formal approval of their managers. The workspace where telework activity is performed is subject to compliance with standards, especially occupational safety and health requirements. All costs related to ICT devices and communications to support telework are the company's responsibility. The length of the working day is the same as that which applies to office-based work, but due to the remote nature of the work, employees have flexibility regarding starting and ending times, lunch breaks and rest periods. However, those employees assigned to customers must follow the customer's schedule. Telework can be practiced one day or more per week, depending on the employee's functional category, at home or any other alternative location. To preserve connections among employees, all employees must work at their office at least once a week. Activities subject to telework are controlled via outcomes and indicators negotiated between workers and management and monitored by managers. An additional collective agreement was developed for those functions eligible for telework, containing these and other required conditions (Compuware and SINPD, the union that represents IT workers in the state of São Paulo, signed the agreement for 2013–2014).

The outcomes of the company's telework pilot were: cost savings, higher individual perceived performance, reduction of commuting time and resulting pollution, and improvements in family life quality. Based on these results, the final recommendation was to expand the company's telework policy in terms of the number of days, functions and participants.

Company or organisational policies regarding informal, occasional T/ICTM outside of normal business hours are, once again, rather scarce. Several examples of such policies from France and Germany were discussed earlier in the section on the 'right to be disconnected'. One example providing insight into the outcomes of such measures is the Boston Consulting Group (cited in the US national study). This company advised its employees not to send any messages outside of working

hours. Employees following this advice reported improved well-being: specifically, higher job satisfaction (72% compared to 49% among those who did not participate), greater satisfaction with work-life balance (54% compared to 38%), and greater motivation to go to work (51% compared to 27%) in an evaluation done following the implementation of the policy.

Policy responses: Some conclusions

The increase in T/ICTM across the countries analysed in this report and awareness of the positive and negative effects for both workers and employers are encouraging policymakers to include provisions in national laws related to this work arrangement. This process was fostered in the EU by the Framework Agreement on Telework (2002), and it is still evolving in some countries to incorporate new potential benefits and rights, as well as to protect workers from potential negative side-effects. Such developments are mainly related to the improvement of work-life balance and, to a lesser extent, occupational health and well-being (for example, mental well-being). Initiatives are being considered and/or developed to monitor the amount of time a worker is available for work and actually working, with a view to safeguarding their rest periods. In this regard, Finland's sustainable work and well-being approach is interesting. In most countries, legislation tries to ensure equal rights in relation to working and employment conditions across T/ICTM and work at the employer's premises. Issues like labour market participation, business continuity and organisational performance seem to be more relevant outside Europe, for example in Japan and the US.

Tripartite approaches at national level have taken place in Finland and Sweden, but not in any of the other countries included in the study. Among the countries analysed in this report, national and/or sectoral social dialogue to address T/ICTM has been developed in Finland, Belgium, Italy, the Netherlands, Spain and Sweden, incorporating in different ways the provisions included in the EU Framework Agreement on Telework. However, in the countries analysed, recent national legislation regulating telework is not so widespread. Social dialogue seems to play a relevant role in many of the company examples from Europe. In general, home-based telework is more common than other T/ICTM arrangements.

In Europe and the countries from other regions of the world analysed in this report, the factors that typically drive company agreements or initiatives to implement T/ICTM seem to be linked mainly to two objectives: facilitating employees' work-life balance and improving productivity, efficiency and competitiveness. For example, in order to maintain the link between employees and the company and its culture, as well as

to protect their bond with work colleagues, the duration of regular, formalised telework is often limited to two to three days per week. Moreover, companies tend to develop eligibility criteria based on employment status and job content.

The most challenging initiatives to date have been developed in relation to the principle of the ‘right to disconnect’ in order to limit the potentially negative consequences of T/ICTM on the health and well-being of workers, mainly due to work–home interference, intensification of work and supplemental telework.

These policy responses are focused on informal, supplemental T/ICTM, and they generally aim at restricting the use of ICT devices for work outside of regular business hours. Such policies include ‘the right to be disconnected’ (*le droit à la déconnexion*) in the most recent revision of the French labour code in 2016; the German Ministry of Employment’s ‘minimum intervention in leisure time’ policy; some of the sectoral agreements in France; and some company policies in Germany and other countries (such as the US). This stark contrast in policy responses between formal home-based telework and informal, supplemental T/ICTM reflects the varying effects of different forms of T/ICTM, as discussed in Chapter 4.

6 Conclusions and policy orientations

Advances in digital technology have led to an expansion in the use of ICT to enable working anytime and anywhere. In this context, the phenomenon of telework/ICT-mobile work (T/ICTM) has been increasing, driven by the need of companies for higher productivity and improved performance, as well as by employees' needs for spatial and temporal flexibility, in order to help them to balance work demands with their family and other personal responsibilities. It seems that the phenomenon is also being driven by societal issues, such as pollution in major cities being addressed by attempts to reduce commuting traffic, and by the need to increase the participation and inclusion of some groups in the labour market.

Incidence and intensity of T/ICTM

The incidence of T/ICTM seems to be related to the level of technological development in various countries, but the actual adoption of such work arrangements is also closely linked to economic structures and cultures of work. Countries analysed in this study with relatively high shares of workers using ICT to perform work outside the employer's premises are Finland, Japan, the Netherlands, Sweden and the US. Different forms of T/ICTM can be expected to continue to develop on different paths. While working regularly with ICT from outside the employer's premises is still comparatively rare in most of the countries analysed, the findings of this study suggest that important changes are taking place for a growing part of the workforce; the number of employees working flexibly in relation to space and time is growing – and will likely continue to grow – enabled by ICT. T/ICTM will probably not grow across all occupations and in all sectors. Rather, it is more likely to become an established work arrangement for those whose tasks are already ICT-enabled. However, current trends suggest that larger shares of workers will have ICT-enabled jobs (EWCS, 2015).

The incidence of T/ICTM varies substantially, ranging from 2% to 40% of all employees, depending on the particular country and the frequency with which employees carry out T/ICTM. Across the EU, it has been estimated that at least a total of about 17% of employees do T/ICTM (EWCS, 2015). When occasional T/ICTM is included, such as phone calls or emails outside the office, the figure rises to an estimated 40% of all employees in Japan and the US.

There are important differences in the incidence of T/ICTM for different groups of workers. T/ICTM is more common among professionals and managers, but is

also relevant for clerical support and sales workers. Regarding gender, in general men are more likely to perform T/ICTM than women in all of the countries analysed in this report. However, women tend to use more regular home-based telework (rather than working in other places outside the office) and in most contexts they appear to do so mainly to balance work and family related tasks. This suggests that gender matters in relation to T/ICTM, and that country-specific gender roles and models of work and family life are likely shaping the use of ICT for work outside the employer's premises.

Effects of T/ICTM

The results presented in this report demonstrate that the working hours of T/ICTM workers, and particularly high mobile T/ICTM workers, are typically longer than of those who always work at the employer's premises. T/ICTM workers in general are also more likely to perform paid work in the evenings and on weekends than those workers who always work in the office, although they are less likely to work at night. Finally, a substantially higher share of T/ICTM workers enjoy a significant degree of working time autonomy than their office-based counterparts, which is important in relation to the reported work–life balance of workers. The findings also show differences among countries, which seem to be related to country-specific working time patterns, cultures and gender roles. How workers experience their working time qualitatively and the implications of these new time patterns for working time regulation need to be further explored.

The studies referred to in the national studies indicate generally positive effects of T/ICTM on individual performance. The potential for an increase in productivity with T/ICTM is mainly related to the spatial and time flexibility that such work offers and the associated consequences, such as reduced commuting time, savings on office space, increased working time autonomy, innovative work behaviour, as well as the possibility of working longer and with fewer interruptions. Individual characteristics like motivation and skills seem to play a role, but so too does work efficiency associated with the use of ICT. Other issues of relevance include the use of teleworking for maintaining business continuity in the case of natural disaster or other crises, and companies addressing mobility issues among employees.

Regarding the effects of T/ICTM on work–life balance, it can be concluded that T/ICTM, particularly working

from home (home-based telework), appears to have a positive effect on overall work–life balance, mainly because of the reduction in commuting time and increased autonomy to organise working time based on individual workers’ needs and preferences. At the same time, there is some risk of overlap between work and private or family life – that is, work–home interference – because of longer hours of work and the combination of paid work and other responsibilities, which may result in increased work–family conflict.

Although it appears that T/ICTM can help facilitate a better work–life balance for workers, it seems that a significant part of this work arrangement has a supplemental character – that is, it leads to working beyond normal/contractual working hours, which often appears to be unpaid. Therefore, this arrangement does not always reduce work–family conflict. On the contrary, the findings of this study show that a high level of use of ICT outside the employer’s premises can jeopardise work–life balance. In fact, in all types of T/ICTM there is a clear risk of working time impinging on non-working time. This is a consequence of the longer working days and weeks of employees doing T/ICTM, but seems also to be related to a lack of ‘boundary management’. Thus, it seems that the higher working time autonomy of employees doing T/ICTM can only contribute to improved work–life balance for regular home-based teleworkers and those working only occasionally outside the employer’s premises; it does not seem to have this effect for those doing high mobile T/ICTM or T/ICTM with high intensity.

There are also important differences in these effects according to gender: Women tend to work shorter hours in T/ICTM, and female workers seem to get slightly better work–life balance results than men when they do T/ICTM. In this regard, women tend to use more regular home-based telework (rather than working in other places outside the ‘office’), and in most contexts they appear to do so mainly to balance work and family-related tasks. In addition, it is worth noting that managers generally have different motives for T/ICTM and are more likely to encounter difficulties regarding work–life balance.

Employees doing T/ICTM also seem to be exposed to risks to their health and well-being. While a higher share of workers among those doing T/ICTM report a positive effect of this type of work on their health than other workers, there is also conversely a higher percentage of workers reporting a negative effect of such work on their health. Apart from specific job characteristics in the various occupations, the health and well-being risks faced by these employees are associated with ergonomic issues that arise while they are working outside the employer’s premises. More importantly, T/ICTM is associated with psychosocial risk factors related to work intensity, supplemental hours of work

and longer working hours overall, which seem to have a negative impact on stress, sleeping problems and the perceived impact of work on health. Autonomy and support from colleagues can play a role, but the findings suggest that these factors alone will not fully prevent some of the negative consequences. Reducing the intensity of work for the high mobile employees and reducing the supplemental hours for home-based teleworkers could potentially have greater impact.

All of these findings suggest that the effects of T/ICTM are highly ambiguous and perhaps even contradictory. Specifically, it appears that T/ICTM is not unequivocally advantageous compared to traditional office work at the employer’s premises. Neither does it seem to result in mainly negative effects. On the positive side, workers report a reduction in commuting time, greater autonomy in working time organisation, better overall work–life balance and higher productivity. The disadvantages of T/ICTM with which workers seem to struggle the most are its tendency to extend working hours, create an overlap between paid work and personal life due to a blurring of work–life boundaries, and also lead to the intensification of work. It appears that many of these ambiguous or paradoxical effects have to do with the interactions among ICT use, the place of work in specific work environments and the characteristics of different occupations. Moreover, whether T/ICTM substitutes for work in the office, or instead supplements it, appears to be an important factor affecting whether the reported outcomes are positive or negative.

Policy responses to T/ICTM

Governments in various countries have promoted and/or regulated T/ICTM, in order to improve work–life balance and company performance, and to also promote a range of other objectives, such as operational continuity in times of crisis and the inclusion of specific groups in the labour market (such as older workers, women with young children and people with disabilities). In some countries, they have introduced provisions in legislation related mainly to home-based telework, such as establishing minimum standards. In Europe, these developments have to a large extent followed the European Framework Agreement on Telework (2002). Through collective bargaining, the social partners are addressing the issue in countries such as Belgium, Finland, France, Italy, the Netherlands and Spain.

Recent company initiatives have also been taking into account more recent developments in relation to greater spatial and temporal flexibility. This is clearer at company level with examples of companies, normally by social dialogue (or by employers only in some cases) establishing limitations on the frequency of regular T/ICTM.

In contrast to formal T/ICTM arrangements, informal and occasional T/ICTM will probably grow much faster than both regular home-based telework and ICT-mobile work. Less research has been done so far on this form of T/ICTM, but the findings of this report suggest that this form of T/ICTM is far more likely to be problematic because it appears to supplement, rather than substitute, work in the office. The rise of restrictive policy responses to this form of T/ICTM further indicate that the growth of such informal T/ICTM may be much more controversial than the rise of regular home-based telework. Examples include the 'right to be disconnected' in France, enterprise policies restricting phone calls and emails outside normal business hours among some companies mainly in Germany, France and the US and the requirement that employees be compensated for occasional T/ICTM in Brazil and the Netherlands.

Policy suggestions

It is necessary to go beyond a focus on whether T/ICTM arrangements are 'good' or 'bad': clearly, they can be either or even both at the same time. Rather, given the highly ambiguous effects of T/ICTM, we need to understand under what specific conditions both employees and employers can benefit from such work arrangements. In this regard, this report tries to shed some light on this topic for policymakers, social partners, scholars and all those interested in the future of work, in order to understand the technology-driven changes that are occurring, and help shape such changes in a way that can benefit societies, while addressing the potentially negative side-effects. In light of this objective, this section presents some policy suggestions designed to promote such beneficial T/ICTM.

- Because the use of ICT outside the employer's premises, overall, brings benefits for both employees and companies, policymakers – including governments and social partners – should try to address the issue in such a way that the positive effects are accentuated and the negative effects diminished. For example, this could be done by promoting 'partial' (part-time) T/ICTM and occasional T/ICTM, while restricting informal, supplemental T/ICTM, excessively long working hours, and high levels of mobility and work intensity. In terms of the latter, a more rational use of ICT is necessary, as is the creation of conditions that make that possible.
- In practical terms, the organisation of working time is changing and working time regulation needs to take this reality into account. Working time and non-working time have to be treated differently according to the type of T/ICTM that employees are doing. Regulations have to be clear in this respect. In this context, it is particularly important to address the issue of supplemental T/ICTM, which may well be unpaid overtime. Moreover, it is necessary to consider how the organisation of working time is changing in connection with ICT developments and, more broadly, what that means for limitations on working hours and particularly for the need to ensure that minimum rest periods are respected.
- A major challenge of T/ICTM for the application of OSH prevention principles and of workers' health and safety legislation is related to the difficulties faced by employers regarding the supervision of the working environment and the working conditions of their employees' place of work when it is outside the employer's premises. EU-OSHA's project 'Foresight on new and emerging risks in occupational safety and health associated with ICT and work location by 2025' will produce scenarios that will help policymakers exploring strategic and policy options to address the challenges to workers' safety and health associated with T/ICTM (EU-OSHA, 2016).
- In order to fully harness the potential of T/ICTM and improve the working conditions of employees performing such work, there is a need for training for both the employees affected and their managers on the effective use of ICT when working remotely, the potential risks, and how to effectively manage the flexibility that this work arrangement provides. The blurring of boundaries is not necessarily negative if it is well managed. In relation to this aspect, it is important to work on building trust between employees and managers and to consider that those negative effects could be effectively cushioned with more appropriate managerial guidance. In this context, it appears that a higher degree of employee autonomy can enhance both work-life balance and individual performance.
- In the context of policies aimed at increasing participation in the labour market of certain groups, including older workers, women with young children and people with disabilities, T/ICTM can play a relevant role, especially in the context of the ageing population. Examples from some countries show that T/ICTM forms part of policies for social inclusion and increasing participation in the labour market.

- The social partners are generally well positioned to address the topic of T/ICTM, particularly in a number of EU countries, and especially in companies where employee representation exists. Governmental initiatives and national or sectoral collective agreements are important for providing the overall framework for T/ICTM arrangements. Of course, in the end practical application of T/ICTM will take place at company level, and thus it is also important to take into account the variety of contexts, which depend on job type and how ICT is being used.
- Policies regarding T/ICTM at the national, sectoral and organisational levels need to be adapted dynamically to technological advancements, as well as the needs and preferences of workers and employers. Therefore, it is important that these frameworks provide sufficient space to develop company-specific T/ICTM arrangements that meet both workers' and employers' needs and preferences. For example, the European Framework Agreement on Telework could be adapted to take account of the non-regular, informal aspect of teleworking and the mobile aspect of the phenomenon.
- Finally, findings of this study regarding differences in the conditions of work associated with different types of T/ICTM, for example between home-based telework and high mobile T/ICTM, have to be considered. Measures should tackle the specific reasons underlying negative effects on working conditions identified by the study. For example, to protect workers' health, measures are needed to restrict informal, supplemental T/ICTM by limiting the availability for work during those times typically reserved for personal life and rest periods.

The future expansion of T/ICTM is likely to manifest itself as a long series of tremors rather than as a sudden earthquake. Ultimately, it will lead to potentially profound consequences for working and living conditions. The policy suggestions presented above point to the importance of informing all parties – workers, employers and public authorities – about the advantages and disadvantages of different forms of T/ICTM, and how to implement such work arrangements effectively. More research is needed on the subject, as is a closer cooperation between policymakers, employers, workers and scholars, to pave the way for an adaption of T/ICTM to the rapidly changing world of work in the 21st century.

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Annexes

Annex 1 National studies

This table provides full reference details for each of the national studies used in this report.

Country	Reference details
Argentina	Boiarov, S. (2015), <i>T/ICTM and its effects in Argentina</i> (unpublished ILO report).
Belgium	Vermandere, C. (2015), <i>T/ICTM and its effects in Belgium</i> (unpublished Eurofound contribution).
Brazil	Mello, A. (2015), <i>T/ICTM and its effects in Brazil</i> (unpublished ILO report).
Finland	Lönnroos, L. T. and Tuomivaara, S. (Oxford Research AB and Finnish Institute of Occupational Health) (2015), <i>T/ICTM and its effects in Finland</i> (unpublished Eurofound contribution).
France	Schulze-Marmeling, S., Turlan, F. (IR Share) (2015), <i>T/ICTM and its effects in France</i> (unpublished Eurofound contribution).
Germany	Vogel, S. (2015), <i>T/ICTM and its effects in Germany</i> (unpublished Eurofound contribution).
Hungary	Belyo, P. <i>T/ICTM and its effects in Hungary</i> (unpublished Eurofound contribution).
India	Noronha, E. and D'Cruz, P. (IIM Ahmedabad) (2015), <i>T/ICTM and its effects in India</i> (unpublished ILO report).
Italy	Fondazione Giacomo Brodolini Moncini (2015), <i>T/ICTM and its effects in Italy</i> (unpublished Eurofound contribution).
Japan	Sato, A. (2015), <i>T/ICTM and its effects in Japan</i> (unpublished ILO report).
Netherlands	Kraan, K. and Houtman, I. (TNO) (2015), <i>T/ICTM and its effects in the Netherlands</i> (unpublished Eurofound contribution).
Spain	Duran, J. and IKEI (2015), <i>T/ICTM and its effects in Spain</i> (unpublished Eurofound contribution).
Sweden	Gustafsson, A.-K and Johanson, E. (Oxford Research), <i>T/ICTM and its effects in Spain</i> (unpublished Eurofound contribution).
UK	Adam, D. (2015), <i>T/ICTM and its effects in the UK</i> (unpublished Eurofound contribution).
US	Lister, K. and Harnish, T. (Global Workplace Analytics) (2015), <i>T/ICTM and its effects in the US</i> (unpublished ILO report).

Annex 2: Regression analysis based on the EWCS

The following tables show the results of a series of regression analyses based on European Working Conditions Survey (EWCS) data. Only employees were selected and only the EU28 is included. Depending on

the endogenous variable, an ordered logit, OLS or logit was used in the estimation. To see the effect on the association of T/ICTM, seven models were estimated for each variable.

You experience stress in your work (1=never, 2= rarely, 3= sometimes, 4=most of the time, 5=always)

Results of ordered logit. Employees only, EU28.	(1)	(2)	(3)	(4)	(5)	(6)	(7)
T/ICTM groups							
High mobile T/ICTM	0.825	0.748	0.620	0.304	0.307	0.253	ns
Occasional T/ICTM	0.492	0.351	0.282	ns	ns	ns	ns
Home-based telework	0.493	0.316	0.234	ns	ns	ns	ns
Other	ns	ns	ns	0.117	0.117	0.102	ns
Always at employer's premises (ref)							

Working hours

20 or less			-0.615	-0.378	-0.376	-0.353	-0.380
21–34			-0.215	-0.159	-0.6–161	-0.195	-0.203
35–40 (ref)							
41–47			0.297	ns	ns	ns	ns
48 or more			0.685	0.453	0.453	0.463	0.353
Job intensity ^(a)				0.060	0.060	0.060	0.058
Job autonomy ^(b)					ns	ns	ns

Job insecurity ^(c)

Strongly agree						0.085	0.071
Tend to agree						0.035	0.019
Neither agree / disagree (ref)							
Tend to disagree						-0.152	-0.167
Strongly disagree						-0.158	-0.170

Supplemental telework ^(d)

Daily							0.925
Several times a week							0.576
Several times a month							0.407
Less often							0.186
Never (ref)							

Controls for sex, age, country, occupation and household type	No	Yes	Yes	Yes	Yes	Yes	Yes
N	29,738	28,848	28,278	28,232	28,189	25,699	25,463
(pseudo) R2	0.01	0.02	0.03	0.13	0.13	0.13	0.13

^(a) Based on EWCS questions about working at high speed and tight deadlines, the number of work pressure sources, having enough time to get the job done, value conflict at work and having frequent disruptive interruptions.

^(b) Based on EWCS questions about the ability to choose or change tasks, methods and speed of work, as well as having a say in the choice of your work colleagues and the ability to take a break when you wish.

^(c) 'I might lose my job in the next 6 months.'

^(d) 'Over the last 12 months, how often have you worked in your free time to meet work demands?'

Sleep scale (higher score denotes fewer problems) ^(a)							
Results of OLS. Employees only, EU28.	(1)	(2)	(3)	(4)	(5)	(6)	(7)
T/ICTM groups							
High mobile T/ICTM	-0.296	-0.238	-0.199	ns	ns	-0.083	ns
Occasional T/ICTM	-0.140	-0.128	-0.109	ns	ns	0.047	ns
Home-based telework	-0.329	-0.249	-0.212	-0.178	-0.178	-0.180	ns
Other	ns	-0.067	-0.049	-0.070	-0.069	-0.055	ns
Always at employer's premises (ref)							
Working hours							
20 or less			ns	-0.143	-0.145	-0.147	-0.134
21–34			-0.068	-0.094	-0.094	-0.095	-0.091
35–40 (ref)							
41–47			-0.139	ns	ns	ns	ns
48 or more			-0.229	-0.135	-0.134	-0.127	-0.090
Job intensity ^(b)				-0.016	-0.016	-0.016	-0.015
Job autonomy ^(c)					ns	ns	ns
Job insecurity ^(d)							
Strongly agree						ns	ns
Tend to agree						ns	ns
Neither agree / disagree (ref)							
Tend to disagree						ns	ns
Strongly disagree						0.097	0.095
Supplemental telework ^(e)							
Daily							-0.255
Several times a week							-0.252
Several times a month							-0.158
Less often							-0.096
Never (ref)							
Controls for sex, age, country, occupation and household type	No	Yes	Yes	Yes	Yes	Yes	Yes
N	29,935	29,009	28,384	28,337	28,290	25,745	25,505
(pseudo) R ²	0.01	0.08	0.08	0.17	0.17	0.17	0.17

^(a) Based on three questions of the EWCS: how often did you have (1) difficulty falling asleep, (2) waking up repeatedly during the sleep and (3) waking up with a feeling of exhaustion and fatigue.

^(b) Based on EWCS questions about working at high speed and tight deadlines, the number of work pressure sources, having enough time to get the job done, value conflict at work and having frequent disruptive interruptions.

^(c) Based on EWCS questions about the ability to choose or change tasks, methods and speed of work, as well as having a say in the choice of your work colleagues and the ability to take a break when you wish.

^(d) 'I might lose my job in the next 6 months.'

^(e) 'Over the last 12 months, how often have you worked in your free time to meet work demands?'

Work affects health negatively (1=Yes, 2=No)

Results of logit. Employees only, EU28.	(1)	(2)	(3)	(4)	(5)	(6)	(7)
T/ICTM groups							
High mobile T/ICTM	0.434	0.366	0.260	ns	ns	ns	ns
Occasional T/ICTM	-0.190			-0.293	-0.236	-0.246	-0.270
Home-based telework	ns	0.312	ns	ns	ns	ns	ns
Other	0.284	0.171	0.152	0.226	0.252	0.250	0.208
Always at employer's premises (ref)							

Working hours

20 or less			-0.531	-0.337	-0.337	-0.340	-0.376
21–34			ns	ns	ns	ns	ns
35–40 (ref)							
41–47			0.342	ns	ns	ns	ns
48 or more			0.500	0.294	0.308	0.304	0.224
Job intensity ^(a)				0.042	0.041	0.041	0.039
Job autonomy ^(b)					-0.004	-0.004	-0.004

Job insecurity ^(c)

Strongly agree						0.329	0.322
Tend to agree						ns	ns
Neither agree / disagree (ref)							
Tend to disagree						-0.209	-0.205
Strongly disagree						ns	ns

Supplemental telework ^(d)

Daily							0.520
Several times a week							0.449
Several times a month							0.235
Less often							ns
Never (ref)							

Controls for sex, age, country, occupation and household type	No	Yes	Yes	Yes	Yes	Yes	Yes
N	30,021	29,086	28,457	28,407	28,358	25,797	25,553
(pseudo) R ²	0.01	0.05	0.06	0.15	0.15	0.15	0.15

^(a) Based on EWCS questions about working at high speed and tight deadlines, the number of work pressure sources, having enough time to get the job done, value conflict at work and having frequent disruptive interruptions.

^(b) Based on EWCS questions about working at high speed and tight deadlines, the number of work pressure sources, having enough time to get the job done, value conflict at work and having frequent disruptive interruptions.

^(c) 'I might lose my job in the next 6 months.'

^(d) 'Over the last 12 months, how often have you worked in your free time to meet work demands?'

How do your working hours fit in with your family or social commitments outside work? (1=not at all well, 2=not very well, 3=well, 4=very well)

Results of ordered logit. Employees only, EU28.	(1)	(2)	(3)	(4)	(5)	(6)	(7)
T/ICTM groups							
High mobile T/ICTM	0.442	0.495	0.226	ns	ns	ns	ns
Occasional T/ICTM	ns	ns	ns	-0.225	ns	ns	-0.187
Home-based telework	-0.289	ns	-0.301	-0.388	-0.297	-0.287	-0.466
Other	0.146	0.139	ns	0.107	0.156	0.132	ns
Always at employer's premises (ref)							
Working hours							
20 or less			-0.860	-0.697	-0.701	-0.696	-0.720
21–34			-0.407	-0.359	-0.368	-0.385	-0.401
35–40 (ref)							
41–47			0.656	0.500	0.517	0.517	0.453
48 or more			1.284	1.162	1.194	1.204	1.104
Job intensity ^(a)				0.033	0.032	0.031	0.029
Job autonomy ^(b)					-0.008	-0.008	-0.008
Job insecurity ^(c)							
Strongly agree						ns	ns
Tend to agree						ns	ns
Neither agree / disagree (ref)							
Tend to disagree						ns	ns
Strongly disagree						-0.275	-0.277
Supplemental telework ^(d)							
Daily							0.829
Several times a week							0.674
Several times a month							0.466
Less often							0.218
Never (ref)							
Controls for sex, age, country, occupation and household type	No	Yes	Yes	Yes	Yes	Yes	Yes
N	30,021	29,086	28,457	28,407	28,358	25,797	25,553
(pseudo) R2	0.00	0.02	0.05	0.09	0.10	0.10	0.10

^(a) Based on EWCS questions about working at high speed and tight deadlines, the number of work pressure sources, having enough time to get the job done, value conflict at work and having frequent disruptive interruptions.

^(b) Based on EWCS questions about working at high speed and tight deadlines, the number of work pressure sources, having enough time to get the job done, value conflict at work and having frequent disruptive interruptions.

^(c) 'I might lose my job in the next 6 months.'

^(d) 'Over the last 12 months, how often have you worked in your free time to meet work demands?'

New information and communications technologies have revolutionised work and life in the 21st century. The constant connectivity enabled by these devices allows work to be performed at any time and from almost anywhere. This joint report by the ILO and Eurofound synthesises the findings of national studies from 15 countries, plus the European Working Conditions Survey, to consider the effects of telework and ICT-mobile work (T/ICTM) on the world of work. The report shows that this work arrangement is growing in most countries. Positive effects of T/ICTM usually include a shortening of commuting time, greater working time autonomy, better overall work–life balance, and higher productivity. At the same time, disadvantages include its tendency to lengthen working hours, to create interference between work and personal life, and to result in work intensification, which can lead to high levels of stress with negative consequences for workers' health and well-being. The ambiguous and even contradictory effects of T/ICTM on working conditions represent a current, real-world example about the challenges of the future of work. A range of policy suggestions to improve T/ICTM are made on the basis of the findings.

Established in 1919, and since 1946 a specialised agency of the United Nations, the International Labour Organization (ILO) has focused on workplace issues, actively seeking to create decent work for all – work which is freely chosen and performed in an environment of equity and human dignity. While promoting individual and collective rights at work, special protection and occupational safety and health, the ILO encourages social dialogue and supports open and constructive industrial relations between governments, employers and workers.

The European Foundation for the Improvement of Living and Working Conditions (Eurofound) is a tripartite European Union Agency, whose role is to provide knowledge in the area of social, employment and work-related policies. Eurofound was established in 1975 by Council Regulation (EEC) No. 1365/75, to contribute to the planning and design of better living and working conditions in Europe.

