7. Conclusions and recommendations for policy and practice

Jon C. Messenger

1. INTRODUCTION

New information and communications technologies (ICTs) such as smartphones and tablet computers have revolutionized everyday work and life in the 21st century. On the one hand, they enable us to constantly connect with friends and family as well as with work colleagues and supervisors; on the other hand, paid work becomes increasingly intrusive into the time and space normally reserved for personal life. Crucial to this development is the detachment of paid work from traditional office spaces. Office work and, more broadly, knowledge work is now largely supported by Internet connections, and can thus be carried out almost anywhere and at any time. This new spatial independence dramatically changes the role of technology in the work environment, offering both new opportunities and new challenges. Scholars are increasingly concerned with the advantages and drawbacks of new ICTs for aspects such as working time, work–life balance, occupational safety and health and individual and organizational performance. Policymakers and those involved in industrial relations have started to become aware of the implications of the anytime, anywhere nature of work with new ICTs, and while a few initiatives have been established at national level in some countries, most policies and programs are at the organizational level.

2. DRIVERS FOR, AND BARRIERS TO, THE EXPANSION OF TELEWORK

There are a variety of drivers promoting the expansion of telework around the world. For example, digitalization of the workplace and increasing demands for work–life balance are common drivers of telework across the European Union (EU) member states. However, the impact of these factors varies substantially from one country to another: they are much stronger

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in Northern European/Nordic countries, such as Denmark, Finland and Sweden, as well as the Netherlands, than in Southern European countries such as Greece, Italy, Portugal and Spain.

In Japan, particular attention is paid to telework by the public authorities, who promote it as a tool to combat the erosion in the size of the labor force. Declining birthrates paired with an aging population and low employment rates among women have led to a decline in labor force participation since the beginning of the 21st century. In response, public agencies such as the Ministry of Internal Affairs and Communications (MIC), the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) and the Ministry of Health, Labor and Welfare (MHLW) strongly promote telework in order to encourage increased labor force participation, particularly among women with young children.

Telework/telecommuting originated in the United States in the 1970s and 1980s, beginning in the information industry in California, and has gradually expanded over the decades. The Telework Enhancement Act (TEA) of 2010 even charges that United States Federal Government agencies enable telework for all federal government employees. Unlike in Japan, however, in the United States this work arrangement is not seen as a means to handle the effects of demographic change. Instead, interest in telework grew out of the fear of a government shutdown owing to the avian flu pandemic in 2000, when employees of United States Federal Government agencies were encouraged to avoid public spaces and crowded offices by working from home. Currently this work arrangement is increasingly promoted in the United States as a business model that attracts top talent and reduces both the time spent commuting and the cost of office space.

Attention to telework in Argentina has been channeled by a range of efforts to create policies and public institutions for this work arrangement on a national level. A Commission on Telework initiated by the Ministry of Work, Employment and National Security (MWEN) presented a legislative project in 2007 which aimed at regulating the standards for occupational health and safety for teleworkers. Experts on the commission came from the Center for Telework and Teleinformation (CTT) at the University of Buenos Aires, which was created in 2000 as a response to the severe economic crises that struck Argentina in the 1990s. Scholars of the CTT evaluate the capacity of job creation through telework in the information age and work closely with public agencies, labor unions and employers' organizations.

Public interest in telework in Brazil and India is growing more slowly than in the countries discussed thus far. National debates about the merits and limitations of the work arrangement have been encouraged only

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recently through, for example, a seminar on the topic in Brazil held by the Commission on Participative Legislation (CLP) in June 2013 and a new law regarding telework enacted in 2017 (for details, see Chapter 5 in this volume). A central driver for this debate has been the growing concern about air pollution and traffic congestion in major urban areas such as São Paulo – where, according to the Brazil study, annual average concentrations of pollutants (for example, fine particulate matter and ozone) are very high and average commuting time is very long (an average commuting time of 1 hour and 40 minutes between home and the workplace). Telework is, thus, as in the other cases, seen as a form of work that matches the public interest, but attention to this topic began to grow only in the past decade. Similarly in India, even though severe traffic congestion and the resulting pollution is also a very important issue, public debate about telework does not take place on a large scale and no official data sources on telework could be found.

Country-specific drivers of telework foster the promotion of this work arrangement to varying degrees and in various forms. Support for ICT-enabled work from outside the employer's premises is formed around the effects of demographic change, work–life balance, air pollution, traffic congestion and/or economic growth. Nonetheless, according to all of the country chapters in this volume, there appears to be a considerable degree of management resistance to permitting telework in many organizations – including those that already have teleworking/telecommuting polices in place. All the studies also agree that this resistance is due mainly to the fact that the traditional 'command and control' style of management is not possible with telework, and many managers fear this loss of control. For example, Chapter 3 (on the United States) in this volume notes that: 'Managers are often mistrustful of teleworkers. Out of sight, they assume teleworkers are slacking off' (p. 146, n. 4). Among the countries studied for this report, management resistance to telework is perhaps the strongest in India, as indicated by the following statement from Chapter 6 in this volume:

> Managers may resist teleworking – especially in high power distance countries such as India – because of their inability to control or monitor physically dispersed subordinates, who by telecommuting also reduce their dependence on the organizations. To reclaim their power, the supervisors may increase direction and control of work procedures or even increase the surveillance of subordinates. (p. 277)

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3. INCIDENCE AND INTENSITY OF TELEWORK IN DIFFERENT COUNTRIES

Any effort to grasp and compare the incidence and intensity of telework across countries needs to address some important conceptual challenges, as well as substantial limitations in the available data. A translation of the English term telework into the country's first official language is the most commonly used term to express the phenomenon that is the focus of this volume, including all three generations of telework described in the Introduction. The term telecommuting is also used in the United States, as well as India and Japan, to refer to work which substitutes for commuter travel. Operational definitions for data collection fall into either of two overlapping categories: work performed with ICTs from outside the employer's premises, that is, telework (A), and work performed from home (AB). Figure 7.1 illustrates the relationship between the two.

As was discussed in the Introduction, this volume provides for a very broad definition of telework, which is as follows: work performed with ICTs from outside the employer's premises. This broad definition covers all forms of telework, including its traditional form (work from home), but *excludes work at home that is performed without ICTs*. It includes telework that supplements, as well as substitute*s* for, work in the office (purely substitutional telework is telecommuting, as discussed above). This definition also includes mobile forms of telework, which involve working from various alternative locations outside of the employer's central office (see also, Eurofound and ILO 2017). However, this definition, in line with most of the telework literature, excludes self-employed home-based workers – the notable exception being Japan where they are included (for details, see Chapter 2 in this volume).

While this same definition was used by all of the country experts participating in this study, the available data varies substantially across countries.

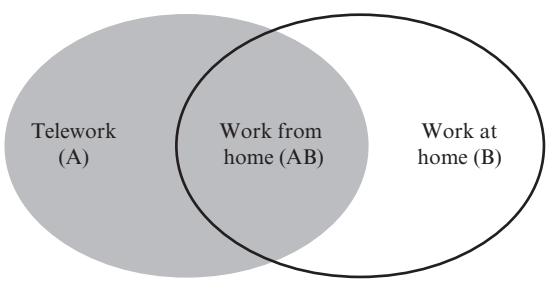

Figure 7.1 Work arrangements covered in the country reports upon which the chapters in this volume are based

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This means that the conceptual framework presented in the Introduction cannot be fully realized in most of the countries analyzed in our volume. Perhaps the most comprehensive data on all the forms of telework in our model is Japan. Data sources for the report from Japan cover A and AB separately, hence both telework in a general sense and its intersection with B, work at home. The Sixth European Working Conditions Survey (EWCS), in 2015, provides comparable figures for A across the EU-28; for this reason, this chapter presents the EWCS estimates rather than estimates from the European national studies synthesized in the EU chapter in this volume (Chapter 1). The surveys referred to in the report from the United States cover either telework (A) or work from home using ICTs (AB) depending on the specific survey. The very limited data available from Brazil covers only work *at* home (B), and therefore it may include work performed in the home without the use of ICTs (that is, traditional homework), which is problematic for the purposes of this study. The data for India originates from a new employee survey conducted for this study that applies the definition of telework as shown in category A. The operational definition used in the Argentina study (Chapter 4 in this volume) covers only those teleworkers who work from home (AB). An overview of the variation in the operational definitions and data sources by country is shown in Table 7.1.

At first glance, the overview of scholarly terms and the operational definitions for country-level data collection regarding telework appears to reveal a mismatch among the country studies included in this volume. Nonetheless, what needs to be emphasized in this context is that the categories A and B in Table 7.1 overlap to a large extent in the real world of work. All studies differentiate between what could be called work carried out 'from home' and work carried out 'at home', with the possible exception of the estimates derived for Brazil. While the first indicates that a worker remains in contact with colleagues at the employer's premises, the latter may also include work carried out at home for an employer without using ICTs or self-employment. Work *from* home is, by its conditions, enabled by ICTs, which means that areas A and B in Figure 7.1 overlap to a large extent – even if the use of ICTs is not specifically covered by a particular survey item. Therefore, the incidence and intensity or extent of telework (that is, the number of days or hours of telework performed in a particular period) will be compared across countries based on the assumption that the concept of telework is basically comparable across data sources. Nevertheless, it is essential to keep in mind that the figures presented in this chapter are only very roughly comparable. Indeed, foreshadowing a recommendation presented later in this chapter, the process of putting together this study has made it very clear that internationally

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Table 7.1 Operationalization and data sources for research on telework

Country	Term used by scholars	Operational definition	Data source	Year
Japan	Telework	Telework + work from home	Teleworking Population Research (TPR)	2014
European Union (EU-28)	Telework and ICT mobile work (mobile telework)	Use of ICTs to work from outside the employer's premises from any location including home	European Working Conditions Survey (EWCS)	2015
United States	Telecommuting/ telework	Work from home	American Community Survey (ACS)	2014
		Work from home	General Social Survey (GSS)	2012
		Telework	Federal Employee Viewpoint Survey (FEVS)	2014
		Work from home	American Time Use Survey (ATUS)	2014
		Telework	IPSOS Global Telecommuting Survey (GTS)	2011
Argentina	Telework	Work from home	Encuesta Nacional de Tecnologias de la Información y la Communication (ENTIC)	2011
Brazil	Telework	Work at home	Estimated based on percentages from SAP Annual Research on Home Office	2012
India	Telecommuting	Telework	Own survey conducted (Own)	2015

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comparable data on telework is non-existent outside the EU, and that there is a real need for such data.

Two benchmarks are set in order to compare estimations for the incidence of telework across countries. First, survey results are compared for the population of all employees in the national workforce (with some caveats, see below). Telework among self-employed workers is not covered in all of the surveys. Moreover, self-employment (that is, own-account work) can be considered conceptually challenging in the context of telework owing to overlapping boundaries between 'work from home' and 'work at home'. Secondly, telework is compared for a similar level of intensity. Employees are considered teleworkers for the analysis presented below if they do work from outside the employer's premises with help of ICTs for at least one day per week or the approximate equivalent (that is, eight hours per week or several times per month). An overview of the match between these slightly different benchmarks and the various surveys used to provide the data is presented in Table 7.2.

Estimates for the incidence of telework in the observed population can be realized using the TPR in Japan, the EWCS for the EU-28, the Encuesta Nacional de Tecnologias de la Información y la Communication (ENTIC; English translation – National Survey of Information and Communication Technologies, NSICT) in Argentina, either the ACS or the GSS in the United States, the SAP survey in Brazil and the own survey conducted by the national experts in India. All other surveys in the United States refer to a different population and are therefore disregarded. The TPR in Japan includes only employees in a full-time job, and the benchmark intensity of at least eight hours per week refers to 'teleworker in a narrow sense' in Chapter 2 in this volume. The survey conducted by the experts from India roughly matches this benchmark with an estimation of telework for at least one day per week, as does the EWCS benchmark for regular home-based telework of several times per month.[1] The ACS only allows for an estimation of telework with a much higher benchmark level of intensity, 2.5 or more days per week; however, the benchmark used in the GSS is one day per week, which is more comparable with the other countries analyzed in this volume. The incidence of telework in Brazil can be roughly estimated for the share of employees who are offered the option to work at least once per week from or at home (see Chapter 5 in this volume); however, given that this estimate likely includes work performed at home without the use of ICTs, these estimates are not presented here. Finally, it should be noted that the estimations for telework in Argentina are not provided by level of intensity. All of these limitations need to be kept in mind for interpreting the comparisons in this section. Table 7.3 summarizes the incidence of regular telework in the different countries based on the benchmarks discussed above.

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Table 7.2 Benchmarks for telework intensity and observed populations

Country	Population	Intensity of ICT/mobile work	Survey
Japan	All employees in the workforce with a full-time job	At least eight hours/week	TPR
European Union (EU-28)	Regular home-based telework Regular mobile telework	At least several times a month (regular home-based telework) or At least several times per week in two other locations (regular mobile telework)	EWCS
United States	All employees in the workforce	At least 2.5 days/week	ACS
	All employees and own-account workers in the workforce	At least once/week	GSS
	All employees in federal agencies	At least one day/week	FEVS
	All individuals in working age (18–64 years)	At least once/week	GTS
Argentina	All employees in the workforce	Not available	ENTIC
Brazil	All employees in the workforce	At least once/week	SAP
India	All employees in the 'organized sector' (formal economy)*	At least 1 day/week	Own survey

Note: * The non-agricultural 'organized sector' in India is estimated to represent between 14 and 16 percent of the total Indian economy (Institute of Applied Manpower Research, Planning Commission and Government of India 2012).

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Table 7.3 Incidence of regular telework among all employees in the workforce

	Japan	EU-28	US	Argentina	India
Data source	TPR	EWCS	GSS	ENTIC	Own
Intensity of telework	≥8 hours/ week	At least several times per month	≥1 day/ week	N/A	≥1 day/ week
Population in the national workforce	Employees	Employees	Employees	All workers	Employees
Estimated % share of regular teleworkers (including mobile workers)	16*	8	20	2	19**

Notes:
N/A = not available.
* The figure for Japan is for employees only. It differs from the overall figure presented in the chapter on Japan (14.2 percent), which is for all workers including the self-employed.
** The figure for India is taken from the employee survey conducted by the India country experts, and this figure is for employees in the non-agricultural 'organized sector' (formal economy) only.

The incidence of regular telework given the above requirements varies substantially across countries – from 20 percent in the United States and 16 percent in Japan, down to only 2 percent in Argentina. Recognizing that 'organized sector' (formal economy) employment in India represents a relatively small portion (14–16 percent) of total employment in the country,[2] the incidence of regular telework is really only substantial in the EU-28 (albeit with a wide variation across countries, ranging from 18 percent in Denmark to 2 percent in Italy; for details, see Chapter 1 in this volume), Japan and the United States. The main reason for this relatively low incidence is that the benchmark for telework intensity needs to be set relatively high (one day per week or the approximate equivalent, that is, eight hours per week or several times per month) in order to allow for a reasonable comparison across countries.

Survey items for occasional telework with lower intensity are still very rare in research on the topic. Japan is a notable exception, most likely owing to the extensive efforts of the Japanese Government to promote telework.

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The TPR survey in Japan includes items for 'teleworker in a wide sense', defined as telework 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 telephone call or responding to an email from home or from places other than the office or home (for example, cafés and trains). The share of teleworkers among all employees under this low level of intensity is estimated to be high: approximately 32 percent of all employees in Japan. As of 2015, similar data for 'occasional telework' of lesser frequency was also available for the EU-28, based on the EWCS. The results showed high figures (more than 30 percent) for the Nordic countries and the Netherlands, and relatively low figures (less than 10 percent) in a number of Southern and Eastern European countries (for example, the Czech Republic, Greece, Italy and Poland).

Figures similar to those for telework in Japan can be identified for the United States if the benchmark level of telework intensity is reduced. For example, results of the FEVS indicate that telework is undertaken by 29 percent of all federal government employees when including the categories 'very infrequently' and 'one or two days a month'. A comparable share of employees who occasionally do telework can be identified for the total United States workforce (40 percent) using GSS data and for all respondents of working age in the IPSOS data (32 percent).

Table 7.4 provides an overview of the findings regarding the incidence of telework by gender, for all employees in the workforce (or in the case of

Table 7.4 Incidence of regular telework by gender

	Japan	EU	US	Argentina	India
Data source	TPR	EWCS	GSS	ENTIC	Own
Intensity of telework	≥8 hours/ week	At least several times per month	≥1 day/ week	–	1 day/week
Population in the national workforce	Employees	Employees	Employees	All workers	Employees
Gender:					
Women	14%	7%	18%	2%	18%
Men	21%	9%	22%	2%	19%

Notes: The gender breakdown of telework in Argentina is only available for all workers, including the self-employed; this contrasts with the figures in Table 7.3, which are for employees only. The figures for India are taken from the employee survey conducted by the India country experts, which covered employees in the non-agricultural 'organized sector' (formal economy) only.

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India, those employees in the 'organized sector'). No data is available for Brazil.

Looking at the results by gender in Table 7.4, the incidence of regular telework is similar among women and men in Argentina, India and the United States. Based on EWCS data, the situation in the EU-28 is similar, except that women are more likely than men to work from home (57 versus 43 percent), while men are much more likely to perform regular mobile telework than women (67 versus 33 percent). Hence, telework can neither be called a typically female nor a typically male work arrangement in these countries.

In contrast, only 14 percent of female employees in Japan are teleworkers, compared with 21 percent among all male employees; most of the latter are mobile teleworkers (for details, see Chapter 2 in this volume). This substantial gender difference in telework in Japan appears to contradict the proclaimed purpose of telework as a means of enhancing female labor force participation in that country. This suggests that country-specific gender roles and models of work and family life are probably shaping the incidence of telework.

From an occupational perspective, the highest shares of teleworkers by occupation can be found for clerical support workers in Japan, India and the United States, among science and engineering workers in Japan and India, and among highly qualified knowledge workers, such as managers and professionals, and sales workers in all of the countries reviewed in this volume. Each of these occupations offers unique conditions for telework. The tasks of clerical support workers are commonly enabled by ICTs, and therefore can be carried out remotely for some share of the workweek; the proportion of such workers who are regularly performing telework appears to be particularly high in Japan. Sales workers are frequently at their clients' premises while using ICTs to maintain contact with their colleagues remotely, and thus they are more likely to be mobile teleworkers. The work of managers and many professionals allows for a relatively high degree of autonomy, which enables work outside of direct supervision at the employer's premises. By contrast, low shares of teleworkers can be found in those occupations that are characterized by the need for physical presence at the employer's premises, low ICT use and/or low autonomy. These conditions are typically found, for example, among shop assistants and in the elementary occupations, where the shares of teleworkers appear to be low in all of these countries.

Cross-country patterns comparable to those across occupations, discussed previously, are less common when breaking down the incidence of telework by economic sector across these same countries. The highest shares of teleworkers in Japan can be found in the manufacturing sector

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(for example, management and support services within the sector) and in the other service activities sector. In the EU, the service sector is dominant, particularly information and communication, finance and insurance, professional, scientific and technical (PST) activities, and public administration. The main telework sectors in the United States are human health and social work activities and PST activities; the latter sector also has the highest incidence of teleworkers in Argentina and a relatively high level in India. However, the highest shares of telework in India are in the public administration and defense sector and the electricity, gas, steam and air conditioning supply sector, while this work form is also prominent in the public administration and defense sector in Argentina.

Large variations in the incidence and intensity of telework across economic sectors could have different causes. One reason may be the differences in business structures or managerial models across countries. The variation could, however, also simply be produced by a mismatch in the categorization of economic sectors or by the variation in the operational definitions of telework across countries. It is not possible to disentangle the causes based on the information available from the country reports upon which the chapters in this volume are based.

Findings from the comparative analysis regarding the incidence of telework across the countries analyzed in this volume indicate that regular ICT-enabled work from outside of the employer's premises is most common among those employees whose jobs are enabled by ICTs in the first place, such as science and engineering workers and clerical support workers; those who work with ICTs at their clients' premises, particularly sales workers; and those who are granted a degree of autonomy in their work, such as managers and highly qualified professionals. The breakdown by gender reveals country-specific variations which can be traced back to the prevailing gender roles and models of work and family life, such as in Japan. Moreover, occupation appears (at least on the surface) to matter more than economic sector in terms of the incidence of regular telework. Regular telework is still relatively rare in the countries analyzed in this volume, with the notable exceptions of some EU countries (for example, Nordic countries and the Netherlands), Japan and the United States, even among those occupations that are most prone to telework. The findings regarding telework at lower intensity, in contrast, indicate that occasional telework may be on the rise: an estimated share of 30 to 40 percent of employees in these same EU countries, Japan and the United States uses ICTs at least occasionally and/or for short periods of time, in order to perform work away from their employer's premises. Comparable data for this form of occasional telework is not yet available in the other countries reviewed in this volume.

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4. EFFECTS OF TELEWORK

As reported by the national experts, it is difficult to reach definitive conclusions regarding the effects of telework on the world of work based on the current state of research on this topic. This is the case either because studies have not been undertaken on a scale that could provide a sufficient basis for general, nationwide conclusions, or because the operational definitions for data collection do not match those used for this chapter. Substantial results are, in consequence, not available for all countries, and country-specific variations regarding the effects of telework are particularly difficult to detect. Nonetheless, the results drawn from the country studies and summarized in this section can provide some initial comparative evidence on the effects of telework and pave the way for more in-depth comparative research in the future. Key findings regarding the effects of telework are synthesized from the country studies and presented in this section for the following dimensions of the world of work: working time, work–life balance, occupational health and well-being, and individual and organizational performance.

4.1 Effects on Working Time: Working Hours and the Organization of Working Time (Work Schedules)

The effects of telework on working time are the only effects that appear to be unambiguous, according to the results from the country studies. All of the country chapters report the same basic pattern: longer hours of work combined with much greater discretion for workers regarding the organization of their working time, often referred to as time sovereignty. The latter is perhaps the most sought-after benefit of telework, together with the ability to avoid commuting to work. This is because telework allows workers to structure their working days in accordance with their individual needs. For example, they can take their children to school and pick them up after school, run errands and take care of other personal business (for example, medical appointments) during the normal working day when offices and stores are typically open, and then work at other times. As we see in this section, all of these factors dramatically change the nature of working time.

First, all the country studies included in this volume report that telework tends to lengthen hours of work. For example, the MLIT survey referred to in Chapter 2 (on Japan) in this volume indicates that employed teleworkers spend on average 46.2 hours per week on paid work. This figure compares to an average of only 39.3 hours of work per week for Japanese employees as a whole. Results for those who do telework with lower intensity provide

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further clarification regarding these figures. Employees who state that they use ICTs for paid work between one minute and eight hours per week report an even lower average of 37.6 hours of work. That is, the higher the intensity of telework, the more time is spent on paid work per week. Unsurprisingly, 63 percent of teleworkers in wage and salary employment in the Japan Institute for Labor Policy and Training (JILPT) study referred to in Chapter 2 in this volume state that the lengthening of working time is the largest disadvantage of this form of work.

Results comparable to those for Japan are also reported for Argentina, the EU, India and the United States. For example, findings from the United States country study (Chapter 3 in this volume) based on American Time Use Survey (ATUS) data indicate that 78 percent of the increase in working hours from 2007 to 2014 among male workers is time spent working from home rather than in the office. Telework as a supplement to, rather than as a substitute for, work at the employer's premises is also reported in the GSS. Forty-one percent of the respondents in the 2014 survey reported that they work from home to catch up on work. Slightly more teleworkers are also found among those who work more than 60 hours a week (34 percent) than among those working between 50 and 59 hours a week (30 percent). For the EU-28, the incidence of employees working long hours (defined as more than 48 hours per week) is higher for all teleworker groups than for those employees who always work at their employer's premises, especially the regular mobile teleworkers (see Figure 1.4 in Chapter 1 in this volume). Similarly, a study by the Centro de Estudios para la Transformación (CENIT) Foundation in Buenos Aires found that 30 percent of respondents to their survey reported that they work longer hours when they telework. In India, the survey results indicate that a higher proportion of teleworkers worked long hours (again defined as more than 48 hours per week) than office-based workers (66 versus 59 percent).

As these results suggest, it appears that telework often leads to an extension of working hours. What makes this extension of working hours particularly difficult to estimate is that much of the telework seems to be spent beyond regular working hours and also outside formal arrangements – which means that it may supplement rather than substitute for working hours spent at the employer's premises. For example, only 10 percent of the respondents to the survey conducted for the India country study (Chapter 6 in this volume) reported that they were paid for work beyond regular office hours, and the share among teleworkers is even lower (4 percent), even though they work more overtime. The use of ICTs for work during breaks was reported by 57 percent of those who always work at their employer's premises, compared with 83 percent among teleworkers. A share of 65

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percent of the respondents to the Indian survey stated that work-related mobile devices made them work beyond normal business hours. Similarly, a study among teleworkers in Buenos Aires cited in Chapter 4 in this volume showed that 56 percent of the respondents experienced a change in their work routines through the introduction of telework, and 75 percent of this subgroup stated that they had to learn how to restrain themselves from working beyond their contractual working hours.

It is interesting that telework outside formal agreements is reported by a majority of the respondents in the MLIT study from Japan. Indeed, 68 percent of these teleworkers stated that they are explicitly not allowed to work away from their employer's premises. Unfortunately, no quantitative data on such informal unauthorized telework is available for the other countries analyzed in this volume. Hence, it is not possible to say whether this large share of informal unauthorized telework is unique to the Japanese workforce or not.

In addition to its effect on the length or volume of working hours, telework also impacts on the organization or arrangement of working time, mainly because of the employee-orientated working time flexibility or time sovereignty that is inherent in most teleworking arrangements. Chapter 1 in this volume provides a vivid illustration of this phenomenon, noting that:

> [T]he planning of a workday looks quite different in comparison to a regular eight-hour office day. Almost half of the teleworkers (45 percent) run little errands in between, gear the working hours to family needs or do odd jobs or domestic chores when having a break. Just a minority of the home-based teleworkers (9 percent) keep to the timetable of the office, whereas others start working earlier or later or quit working earlier or later (36 percent). Thus, while the working day of teleworkers is typically longer than those of office workers, it is also has more 'porosity' (see Genin 2016). (p. 49)

As a result of the porosity of a typical teleworking day, teleworkers are more likely than their office-based colleagues to work during the evenings and sometimes on the weekends as well. For example, Chapter 1 in this volume reports that teleworkers in several countries, such as Belgium, Finland, Spain and the Netherlands, are more likely to work during the evenings and on Sundays than their colleagues who always work at the employer's premises. Similarly, according to Chapters 2 and 6 in this volume, teleworkers in Japan and India, respectively, are also more likely to work evenings and weekends than are their office-based counterparts. Thus, it appears that, while telework allows individuals to better organize their working days in line with their personal needs, it also results in them performing more paid work during time periods that are normally reserved

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for personal life. The result is that the boundary between paid work and personal life has the potential to become very blurred – a topic discussed at length in the next section, which focuses on work–life balance.

4.2 Effects on Work–Life Balance

One of the driving forces behind the expansion of telework is workers' belief – as revealed in all of the country chapters – that it can help them to achieve a better work–life balance, as well as employers' realization that helping workers to do so can provide business benefits such as higher productivity, greater loyalty to the organization and reduced staff turnover. While there is a great deal of potential for such win-win reciprocity, the reality is often more complex – and much more ambiguous.

Indeed both positive and negative effects of telework on work–life balance are reported by all of the country studies, sometimes even by the same individuals. First, as highlighted in all the country chapters, teleworking (at least home-based teleworking, that is, telecommuting) is likely to reduce commuting time. It is not by chance that telework/telecommuting originated in Southern California, as traffic congestion in that region was already a serious problem by the mid-1970s (Nilles 1975, 1988). The health benefits of avoiding a long and stressful commute between home and the office, and back again, emerge as a key advantage of telework in all the country chapters, particularly Brazil and the United States, probably because the authors of these chapters live in São Paulo and Southern California, respectively, where two-hour one-way commutes are not uncommon.

This does not necessarily mean that telework will reduce working hours; the net effect on a worker's disposable time depends on a variety of factors, and the lengthening of working time is reported to be one of the largest disadvantages of this work arrangement. Second, while telework can improve work–life balance in general, it can also lead to a blurring of the boundaries between the typically separate domains of paid work and personal life. A survey of teleworkers in Japan by the JILPT, referenced in Chapter 2 in this volume, shows that the issue of the ambiguity of work and time off was the highest ranked disadvantage of telework among both women (36.4 percent) and men (39.3 percent). Similarly, research by the MHLW covering employees in 30 Japanese firms finds that 43.5 percent of respondents find it difficult to draw a line between work and family life. Such mixed results are also reported for EU countries in Chapter 1 of this volume: better overall work–life balance, but also a blurring of work–life boundaries and a higher risk of work–life conflict, particularly for regular mobile workers.

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The work–life balance results in several of the country studies in this volume also vary by gender. For example, Chapter 1 in this volume reports that women in the EU who telework typically report more positive work–life balance results than men, and this result appears to be because they work fewer hours than male teleworkers. Likewise, a survey among teleworkers by the JILPT cited in Chapter 2 in this volume shows that 42 percent of female respondents, but only 16.5 percent of male respondents, selected family-related issues[3] as being an advantage of telework. In contrast, the most widely cited advantage of telework among male respondents (58 percent) was improvement of business productivity/efficiency, although this factor was also cited by 48.4 percent of female respondents.

Results regarding work–life balance similar to those in the EU and Japan can also be identified for the United States, Argentina, Brazil and India. For example, a study by Accenture global research of 4100 United States business executives (cited in Chapter 3 in this volume) found that more than three-quarters of them (77 percent) said that technology enabled them to be more flexible with their schedules, and around 80 percent of the respondents named flexibility in their schedules as being extremely or very important for balancing work and personal life. In similar vein, 77 percent of respondents in a 2011 IPSOS special report on telecommuting among United States employees agreed or strongly agreed that employees who telecommute are better able to achieve balance between work and family. Yet 70 percent of the respondents in the IPSOS study reported that technology led to a blurring of boundaries because it brings work into their personal lives, and 48 percent of them also reported that telecommuting creates more work–family conflicts.

Results from a study in Buenos Aires conducted by CENIT and presented in Chapter 4 of this volume indicated that 68 percent of the respondents selected more time to spend with the family as an advantage of this work form, while only 10 percent of teleworkers stated that telework complicated routines with the family at home. In Brazil, a survey of call center agents who work from home indicated that 98 percent of them reported a better quality of life, including the family's life quality, primarily because of saving time on commuting (93 percent of respondents) and having more time for their families (91 percent of respondents). However, one-half (50 percent) of the Brazilian respondents also reported disadvantages from interference around their homes. In India, most of the survey respondents engaging in telework reported that with the help of ICTs they could at least occasionally take time off for family matters (79.3 percent); moreover, 67 percent of these respondents reported no impact or only an occasional impact on personal life from using ICTs for work away from the employer's premises. However, about half (51 percent) of the respondents

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to the Indian survey who telework reported that they worked all the time; 46 percent stated that they were on work-related calls quite often or most of the time; and 81 percent said that they are occasionally in 'stand-by mode' when they are at home, meaning that they could be called by their employer with a work-related demand at any time on their mobile device.

All of these findings suggest that the effects of telework on work–life balance are highly ambiguous and perhaps even contradictory. On the one hand, teleworkers report reduced commuting time, more time for their families and a better overall balance between work and personal life; on the other, they report an increase in working hours, a blurring of the boundaries between paid work and personal life, and more work–life conflicts. How can these seemingly contradictory results be reconciled? An important clue has to do with the nature of the telework that they perform. Specifically, it appears that whether telework substitutes for work in the office (for example, telecommuting), or instead supplements that work, has an important impact on whether teleworkers report that their work–life balance is positive or negative (see also Eurofound and ILO 2017).

4.3 Effects on Occupational Health and Well-Being

Some seemingly contradictory effects of telework on occupational health and well-being can be also identified across the countries reviewed in this volume. Owing to the nature of work with ICTs, ergonomic issues (for example, eyestrain, neck pain, and tendon pain in the wrists and fingers) are important, but there are other concerns as well. For example, the three highest ranking disadvantages of telework in the CENIT study of teleworkers in Buenos Aires cited in Chapter 4 in this volume are less interaction with friends (62 percent), working while being sick (50 percent) and being more isolated (36 percent). Similar results were found in a study by the company Home Agent cited in Chapter 5 of this volume, the Brazil study. In a survey a majority of the workers in this company state that being isolated from their colleagues is the key disadvantage of telework (63 percent); half of them also say that they are distracted owing to interference with their personal life. In contrast, the JILPT data presented in Chapter 2 of this volume indicates that in Japan, in comparison to other disadvantages, a feeling of isolation/alienation was selected by only 5.4 percent of respondents; increased problems with health was selected by only 5.3 percent; and disruption by noise was reported to be a disadvantage for only 5.7 percent. In addition, the JILPT results indicate that 4.2 percent of teleworkers perform night work (between midnight and 5 a.m.), and night work of any kind is likely to increase workers' physical fatigue and potentially lead to sleeping disorders. Moreover, as discussed

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in Chapter 1 of this volume, in the EU telework in general and particularly regular mobile telework from multiple locations appears to lead to work intensification, which can result in an increased level of reported stress (see also Eurofound and ILO 2017).

Commuting between home and the workplace can be very stressful because of traffic congestion and expose workers to a range of health and safety hazards, which can be minimized or completely avoided via telework, at least in its telecommuting form. As is described in Chapter 5 of this volume, in the São Paulo metropolitan area the average one-way commuting time between home and work is approximately 1 hour and 40 minutes, with massive traffic congestion. In addition, commuters in São Paulo are exposed to concentrations of pollutants (for example, fine particulate matter and ozone) that far exceed World Health Organization (WHO) standards. In this case, an expansion of telework/telecommuting would not only provide health benefits to those individuals who telecommute, but would also have a broader positive impact on traffic congestion, greenhouse gas emissions and the healthiness of the environment more broadly. In Chapter 3 in this volume, the United States study comes to a similar conclusion, arguing that the 'greenest' commute is no commute at all; indeed, it is difficult to argue with that logic given the serious threat posed by global climate change.

Research findings regarding the effects of informal supplemental telework (for example, checking e-mails outside of normal business hours) are, once again, scarce. An example of its effects can be given with a policy introduced by the Boston Consulting Group, as cited in Chapter 3 of this volume. This company advised its employees not to send any messages during their time off. Employees following this advice reported higher job satisfaction (72 percent compared with 49 percent among those who did not participate), greater satisfaction with work–life balance (54 percent versus 38 percent) and increased motivation (51 percent versus 27 percent) in an evaluation following the implementation of the policy.

The advantages and disadvantages of telework for occupational health and well-being are found to be roughly in balance in the studies reviewed by the country chapters. It is difficult to determine whether the variations among these results occur owing to ambiguities in the effects of telework, 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. However, one possible clue for interpreting these differences is provided in Chapter 3 of this volume, which suggests that in the Unites States the key ingredient for strengthening the positive effects and reducing the negative effects of telework on occupational health and well-being appears to be autonomy. According to a range of research studies

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and company cases reviewed in the country chapters, those employees who are engaged in telework are happier, healthier and experience less stress if they are given a substantial degree of autonomy regarding where, when and how they work.

4.4 Effects on Individual and Organizational Performance

The various studies referred to by the country chapters all indicate generally positive effects of telework on individual performance; that is, teleworkers typically perform better than their counterparts working only in the office. While many of the studies and articles in the various chapters in this volume are based on self-reported performance, and thus subject to bias, there are also many studies and articles in the chapters based on more objective measures, such as supervisor-rated performance.

Chapter 3 in the volume, on the United States, provides a particularly comprehensive review of the effects of telework on organizational outcomes. Based on their own client work and a meta-analysis of American and Canadian studies, they conclude that telework generally has positive effects on the productivity of individual employees. They credit this increased productivity to a number of factors, including working for part of the time that they would have spent commuting, fewer interruptions, being able to work when they are most productive, and even being able to work on days when they would have had to call in sick. The same chapter also finds that telework provides a number of other benefits to organizations, including increased employee engagement, reduced absenteeism and improved employee recruitment and retention, thanks to the appeal of remote working and flexible schedules based on individual needs. These findings are also confirmed by the seminal meta-analysis by Allen et al. (2015, p. 49), which asserts that, 'meta-analytical research . . . has suggested that telecommuting is positively associated with supervisor-rated or objectively measured performance'.

The United States finding is backed by results from the Indian employee survey, which found that 96 percent of the respondents stated that telework enhances their productivity. Similarly, a study of teleworkers in Buenos Aires found that 61 percent of the 106 teleworkers interviewed reported that they improved their performance and 53 percent said that they improved their concentration and dedication to work. In Japan, employees cited the improvement of business productivity/efficiency and the improvement of customer service as the top two advantages of telework. The number three advantage of telework is the reduction of the physical/mental burden of commuting; this also benefits organizations because, as all the country chapters agree, teleworkers typically use part of the commuting

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time saved to extend their working hours (see also the results of the French and UK studies in Chapter 1 in this volume).

However, the effects of informal, supplemental telework, such as responding to telephone calls and e-mails on mobile devices, on individual performance appear to be neutral to negative when considering the company cases presented in Chapter 3 of this volume, on the United States. For example, a study conducted by the Boston Consulting Group indicates that total hours of work in the company were reduced by 11 percent after advising employees not to send messages during their time off. Effects of any kind on the performance of employees following this advice could not be identified. In a similar vein, the company Vynamic reported an increase in productivity after shutting down access to its company network servers on weekends and from 10 p.m. to 6 a.m. on weekdays. This positive result was linked with better rest and increased employee well-being.

Several company case examples discussed in Chapter 5 in this volume also show how, in Brazil, improved individual performance through regular telework can result in enhanced organizational performance as well. The company Service Cobranças Curitiba found that staff turnover and tardiness (arriving late for work) could be reduced by more than 50 percent with the help of telework arrangements. The productivity, effectiveness and life quality of their employees each improved by more than 10 percentage points. The company Algar reported to the Brazilian experts that both employees and employers benefit from the reduction of commuting time and costs and from the improved concentration of employees when working from home. Evaluations of a telework pilot project for the Brazilian Federal Data Processing Company, SERPRO, showed that introducing work from home policies resulted in net benefits of US$60 000 for the company, owing to a combination of improved productivity, reduced costs and improved quality of life for employees.

Results of the Communications Usage Trend Survey (2016) presented for Japan in Chapter 2 of this volume indicate that medium-sized enterprises (1000 to 2000 employees) and large companies (more than 5000 employees) improved their organizational performance through telework policies. Benefits for organizations are reported in the company survey of the MIC referred to in Chapter 2 of this volume. Improvement of efficiency is the highest ranking response among the 11 answer categories for the advantages of telework listed in the survey (51.3 percent), closely followed by the reduction of commuting time for employees (45 percent). However, it is important to note that not only the improvement of efficiency, but also the reduction of employees' commuting time, can result in improved organizational performance. This is because the majority of teleworkers in Japan (66.8 percent) are mobile teleworkers, and mobile telework allows

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companies to increase the customer-serving time of these workers, many of whom are sales persons, and to reduce office space costs.

Another organizational advantage of telework is that of business continuity in times of natural disasters. For, example, business continuity ranks third (23.5 percent) in the Japanese survey. Results for the latter are interpreted in Chapter 2 of this volume as a reaction to the Great East Japanese Earthquake of 2011. Parallels in the United States can be seen with the introduction of the Telework Enhancement Act, which was originally proposed in response to the avian flu pandemic in 2000. In contrast, the primary reasons for public authorities such as the Japanese MIC to promote telework are not given priority by enterprises. Only 10.7 percent of companies surveyed named promoting the work–life balance of their employees as an advantage of telework, and only 8.7 percent named the employment of commuting-disadvantaged persons, such as senior citizens or individuals with disabilities, as an advantage. In contrast, in both Argentina and Brazil, companies specifically use telework as a vehicle to provide employment opportunities for individuals with mobility issues. In Brazil there is even a specific legal requirement that companies with more than 100 employees must meet a hiring quota for individuals with disabilities of 2–5 percent of their workforce, and telework helps companies to be able to meet this hiring quota.

5. POLICY RESPONSES TO TELEWORK AT NATIONAL, SECTORAL, AND COMPANY LEVELS

Policy responses to telework at the national, sectoral and company levels include various conditions and goals across organizations and countries. A rough separation can be made in this context between work from home policies and the occasional use of ICTs for work away from the employer's premises. Companies improved their organizational performance most through telework policies of the former kind. These findings match with the examples provided by the national experts across the countries studied for this volume, and all of the companies with formal telework policies appear to fall into one of these two categories, stretching across a variety of sectors and business models.

Several commonalities among the examples of policy responses to regular telework (which as we have seen, is often, although not always, work from home) can be identified across the countries reviewed in this volume. First, many policies aim at promoting rather than regulating telework because it is seen as a mode of work that improves the work–life

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balance of employees and reduces commuting costs while simultaneously improving productivity and reducing office space costs. Examples include the Telework Enhancement Act in the United States and the guidelines for the implementation of telework in the Brazilian branch of the firm, Compuware. The second set of goals that appears to be common across countries is that of eligibility, formalization and direct communication between employees and their supervisors. Specifically, the intensity (or extent of) telework is often limited by requiring a minimum number of days at the employer's premises each week. Most employees, except for those in manufacturing operations and assembly-line jobs, are potentially eligible to work from home for at least some of their working time. Specific conditions for regular telework are then set in direct agreements between employees and their supervisors. Telework promotion and regulation of this type appears to be very common among companies specialized in the use of ICTs as part of their business models. Those mentioned in the country chapters are Compuware and Cisco in Brazil, the branches of IBM, The RainMaker Group and American Express in India and NTT Data Corporation in Japan. Additional examples can be found in manufacturing, business consulting and public administration.

The most comprehensive framework for policies and practices is the European Framework Agreement on Telework (ETUC-UNICE-UEAPME-CEEP 2002) – which is of paramount importance in EU member states. Chapter 1 in this volume provides a more detailed description of this framework agreement; nonetheless, it is essential to summarize that information here because this agreement is the most comprehensive regulation on telework that exists, and it can potentially serve as a model that can be adapted to other countries as well. This agreement was concluded among the European social partners (that is, the European Trade Union Confederation, Business Europe, the European Centre of Employers and Enterprises providing Public Services and the European Association of Craft, Small and Medium-Sized Enterprises) in 2002. It was ground-breaking because this was the first time that an agreement which needed to be implemented in all EU member states was concluded in an autonomous social partnership between workers' and employers' representatives. This agreement provides for a general EU-wide framework covering those employees who telework that is designed to be implemented in accordance with national procedures and practices in different countries. That is, it is a type of best practice: a flexible, customized regulation designed to balance the needs of workers and employers.

In this agreement, telework is defined as follows: 'Telework is a form of organizing and/or performing work, using information technology, in the context of an employment contract/relationship, where work, which could

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also be performed at the employer's premises, is carried out away from those premises on a regular basis' (ETUC-UNICE-UEAPME-CEEP 2002, art. 2). This definition was kept intentionally broad, in order to cover both home-based and mobile telework. This means that it can potentially also be adapted to new technological developments and new forms of telework. Core elements of the framework agreement are the voluntary character of telework, equal treatment between teleworkers and regular employees, the provision of a safe and secure workspace despite the difference in location, and respect of the employee's collective rights. Most of the EU member states have translated the European Framework Agreement on Telework into national-level social partner agreements. Some EU countries have even transposed the agreement into their national labor laws (for example, Hungary). In addition, Ireland and the UK, which do not have national systems of collective bargaining, have introduced national guides and codes of good practice.

Policy responses to occasional, informal telework are generally much more restrictive than those for regular telework. This situation probably arises because much of this work appears to supplement rather than substitute for work in the office – effectively leading to unpaid overtime work, as with the informal, unauthorized telework reported in Japan, in Chapter 2 of this volume. Again, Europe is a pioneer in terms of policy responses: most prominently, a right to disconnect from work was enacted into French law at the national level and a number of German companies, led by the automotive industry, have established an effective right to disconnect in company practice by shutting down company e-mail servers at night and on weekends (see Chapter 1 in this volume for additional information).

Similarly, in the United States an employee who occasionally answers e-mails outside normal business hours rarely reports that time in their working hours; however, as ICT use away from the workplace has expanded, the question of overtime pay for telework outside of normal business hours is becoming an issue, and several cases have already resulted in litigation. A number of American firms have established company polices banning work-related messages outside of regular business hours, either by simple advice or by shutting down their servers on weekends and during evenings and nights – a type of company policy which originated in Germany. The examples of the Boston Consulting Group and Vynamic have been mentioned previously in this chapter, and other companies in the United States with similar policies are also mentioned in Chapter 3 in this volume. Moreover, according to Chapter 5 in this volume, the Labor High Tribunal in Brazil has put nationwide regulations of this kind in place, which specify that employees have the right to be paid one-third of their

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regular hourly wage during those times when they are required by their companies to be available to take calls outside of normal business hours (termed 'stand-by mode').

These examples of policy responses across countries indicate that the balance between the promotion and restriction of telework varies depending on the specific form of telework. Regular telework from outside the employer's premises, such as work from home or another location such as a client's premises for several hours or days per week, is often enhanced and formalized through agreements which set the conditions for this form of work, as well as its balance with traditional work at the employer's premises. In contrast, policy responses to informal, supplemental telework typically aim at restricting the use of mobile devices for work outside of regular business hours. Formal agreements for this latter form of telework are rare. This contrast reflects the different effects of these two forms of telework on working time, work–life balance, occupational health and well-being, and individual and organizational performance.

6. RECOMMENDATIONS FOR POLICY AND PRACTICE

The country experiences reviewed and analyzed in this volume indicate national policies and company or organizational practices that can both promote the spread of telework and help to ensure that it is implemented in a manner that maximizes its advantages and limits its potential downsides. This section attempts to synthesize the key recommendations from the country chapters in this volume for both a national policy on telework and company or organizational and individual practices.

First, adequate data is a necessary component of any national strategy designed to promote telework and ensure its quality. The difficulties of assembling this volume were compounded enormously by the fact that available country data was inadequate to fully implement our common definition and conceptual framework of telework in the 21st century (see the Introduction for a detailed discussion of this framework). Despite the use of different terms in different countries, we applied a common, broad definition of telework across all of them (see the Introduction in this volume for details); however, the available data in most countries was limited to the most traditional form of telework, work from home, that is, the home office. In most cases, data on mobile telework is not available, much less data on occasional forms of telework that are common in today's digitally connected world, such as checking e-mails outside of normal business hours.

Second, an adequate national framework is important for both

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expanding the availability of telework and also ensuring its quality. This framework has to be both well-structured and flexible at the same time. It has to be structured enough that it clearly specifies the 'rules of the game' for those companies/organizations interested in adopting telework. However, it also has to be flexible enough that it can be adapted to a variety of different circumstances in different companies/organizations. The European Framework Agreement on Telework (ETUC-UNICE-UEAPME-CEEP 2002) provides a good example of such a flexible framework. Its key elements include:

- the voluntary character of telework for both the worker and the employer concerned;
- a guarantee that teleworkers benefit from the same rights regarding 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 the installation and maintenance of equipment for telework, which is the employers' responsibility unless the teleworker chooses to use his or 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;
- an understanding that the organization of work, and particularly the organization of working time, is managed by the teleworker within applicable legislation, collective agreements and company rules, based on 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 or organization;
- access to training and career development opportunities, which must be the same as those for comparable workers at the employer's premises;
- teleworkers' collective rights, which must be the same as those of employees who are working at the employer's premises (in particular, there should not be any obstacles to communicating with workers' representatives) and;
- implementation and follow-up.

Third, at the company or organizational level, the support of top management is essential for a properly functioning telework program or

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option. Similarly, a results-based management (RBM) or management by objectives (MBO) or similar program is also necessary: it is not possible to effectively manage teleworkers using traditional management approaches, and managers – especially frontline (first level) supervisors – will need to manage teleworkers based solely on the results they produce, rather than (partly) based on their presence in the office at specified times.

This leads us to our fourth recommendation, which is that a special effort is crucial for overcoming resistance to telework by frontline supervisors. They fear the loss of direct control over their subordinates, and with good reason as they are the ones who are ultimately accountable for the results produced by the unit under their supervision. Allaying these fears requires the establishment of some type of RBM, MBO or similar program in the company or organization, so that managers – especially frontline supervisors – can feel comfortable that teleworkers are being held accountable for achieving concrete, measurable results. Specific training for frontline supervisors regarding how to manage teleworkers by results is also strongly advisable.

Finally, teleworkers themselves need to learn how to practice telework effectively. First and foremost, they need an effective individual strategy for managing the boundary between paid work and personal life, otherwise the blurring of the work–life boundary may lead to serious problems and conflicts. In addition, specific training regarding how to telework effectively (something which seems very basic, but is not provided in many companies and organizations) can help teleworkers to maximize the benefits of teleworking, while avoiding many of its common pitfalls (for example, poor ergonomic design of workstations in home offices).

7. OUTLOOK FOR THE FUTURE

The country experiences reviewed in this volume suggest that the use of ICTs for work away from the employer's premises is on the rise around the world. Particular advantages of telework, such as reduced commuting time and office space costs, less traffic congestion and pollution, better individual and organizational performance, business continuity in times of natural disasters, as well as perceptions of improved work–life balance for workers, have led employers, politicians and public authorities to promote and facilitate this form of work to a large extent. However, telework has neither grown rapidly where it was specifically promoted, nor can such a development be expected to unfold in the near future. One reason for this is that telework requires particular standards of ICT infrastructure, data security, confidentiality and workplace mobility. Moreover, and probably

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even more importantly, it can only be introduced successfully where workers are given a substantial degree of autonomy in their work. Therefore, telework will probably not grow across all occupations and in all sectors. More likely, it will become an established form of work for those workers whose tasks are already ICT-enabled, as well as for certain positions and models of management that allow a substantial degree of work autonomy.

Different forms of telework can be expected to further develop along different paths. Working regularly with ICTs away from the employer's premises is still comparatively rare, with the notable exceptions of some EU countries (for example, the Nordic countries and the Netherlands), Japan and the United States. The incidence of regular telework varies widely, between 2 percent and 20 percent depending on the country, occupation and sector. In contrast, there is occasional, often informal telework, such as telephone calls or e-mails, which is performed by an estimated share of between 30 and 40 percent of employees in Japan and the United States. Far less research has been undertaken so far on this form of telework, but the findings of the country chapters indicate that it will probably continue to grow much faster than regular telework at a higher level of intensity, and its effects are far more likely to be problematic because it is more likely to supplement, rather than substitute for, work in the office. The rise of restrictive policy responses to this form of telework, including the right to disconnect, company policies regarding 'off hours' calls and e-mails among some companies in Germany and a few in the United States, and the requirement that employees be compensated for occasional standby work in Brazil, further indicate that the growth of this form of telework may be more controversial than the rise of other forms of telework.

8. CONCLUSION

The country experiences reviewed in this volume are largely in line with the current state of international research on ICT-enabled work away from the employer's premises (for a review of this literature, see Messenger and Gschwind 2015). Specifically, it appears that telework is neither purely advantageous compared with traditional office work at the employer's premises, nor does it seem to produce mainly negative effects. The disadvantages of telework with which workers seem to struggle most are its tendency to lengthen working hours and to create interference between paid work and personal life. On the positive side, workers report a reduction of commuting time, higher productivity, and more time spent with family and friends. Hence, the findings on the effects of telework indicate a profound inner ambiguity. The advantages of less time spent commuting, more time

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spent with family and friends, and higher productivity are interlocked in a trade-off with longer hours of work and a blurring of the boundary between paid work and personal life.

The negative effects of telework could be cushioned effectively with more appropriate managerial guidance, stricter separation between workplaces and the home, and clear working time regulations regarding work performed with ICTs away from the employer's premises. Such policy responses, however, should only provide a broad framework because detailed regulations, at least to some degree, run counter to the autonomy needed to enable telework in the first place. Telework in a form that can improve work–life balance and enhance individual performance generally requires a significant degree of autonomy. Organizations and managers will need to grant employees such autonomy, so that workers themselves can orchestrate telework and regular office work without unduly blurring the boundaries between paid work and personal life. Policies at the national, sectoral and organizational levels need to be adapted dynamically to technological advancements, companies' business requirements and workers' needs and preferences. These recommendations imply that workers, employers and public authorities must be well informed about the advantages and disadvantages of different forms of telework, in order to enable them to design appropriate policies to accentuate its positive effects and reduce the negative effects. Better data on telework, additional research, and a closer cooperation between policymakers, employers, employees and scholars is needed to pave the way for a continuing evolution of telework in the rapidly changing world of work in the 21st century.

NOTES

1. The 2015 EWCS also provides an alternative, higher benchmark of intensity (that is, the extent of telework) for regular mobile teleworkers of at least several times per week in two locations other than the employer's premises. An employee can qualify as a regular teleworker under either the lower, regular home-based teleworker benchmark or the higher regular mobile teleworker benchmark (for further information, see Chapter 1 in this volume).
2. It is important to keep in mind that the organized sector (formal economy) in India represents only a small portion of the total economy. Assuming that telework is rare in the unorganized sector (informal economy), the percentage of teleworkers in the total Indian economy is quite small.
3. Specifically, they selected the following responses: increase of time for communication with family, increase of time for housework and increase of time for childcare/nursing care.

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