4 Post-COVID-19 spatial effects and policy responses for G7 countries

This chapter sets out possible effects of COVID-19 on the adoption of remote working models and spatial distribution of people and firms, and outlines existent and needed G7 policy responses to benefit from these new trends. The chapter begins by reviewing the results from recent research and surveys on the effects of COVID-19 on remote working adoption and on the spatial decisions of workers and firms. Then, it outlines the G7 policy strategies at national and regional levels to make the most of remote working and attract people and firms. Finally, the chapter examines the policies needed to enhance the long-term attractiveness of non-metropolitan regions.

Introduction

The Covid-19 crisis has brought manifold changes to the way people interact and firms do business, but with unequal effects across the territory. The COVID-19 crisis has accelerated the trend of digitalisation, allowing a higher share of workers to continue their economic activity from home and many firms to function virtually, without a common physical workplace. Yet, as previous chapters have depicted, the capacity to adopt remote working methods is unequal among type of regions, workers and firms. Notably, large cities are the places with the greatest share of the labour force that is capable of working remotely because of the larger share of well-paid and high educated workers in high-value added service activities. Looking at the post-pandemic scenario, governments need to put in place forward –looking policies to help all regions seize the benefits of remote working and prepare for changes in settlement patterns.

This digitalisation of economic interactions has opened the possibility for workers and firms to reassess where to live and locate, which can reduce the attractiveness of cities, although a massive exodus from cities is unlikely. Cities have historically attracted most workers and firms due to benefits from **physical** agglomeration of economic actors. Greater acceptance and adoption of **virtual** working methods and social interactions offer new incentives for workers and firms to relocate outside high densely populated areas. These incentives include access to affordable and bigger housing and office spaces and to environmental amenities. Yet, densely populated areas will likely retain most workers and firms, as they benefit from economies of agglomeration and will also seek ways to transform and improve quality of life.

Irrespective of the post-pandemic scenario and the decision of workers and firms to relocate across the territory, policies need to be forward looking and responsive if they are to seize the potential benefits that remote working and other technologies can offer. Emerging technologies coupled with a greater adoption of remote working will continue to disrupt the benefits of physical proximity and the way people and firms interact, which could lead to new forms of mobility for a share of the population. Policies have then a decisive role in the future attractiveness of regions and the environmental and economic outcomes in the new normality.

This chapter sets out possible effects of COVID-19 on the adoption of remote working and the spatial distribution of people and firms, and outlines current and required policy responses to benefit from these new trends. The chapter begins by reviewing the results from recent research and surveys on the effects of COVID-19 on remote working adoption and on the spatial decisions of workers and firms. Then, it outlines the G7 policy strategies at national and regional levels to make the most of remote working and attract people and firms. Finally, the chapter examines the policies needed to enhance the long-term attractiveness of non-metropolitan regions.

COVID-19's effects on remote working and on the spatial distribution of people and firms

The COVID-19 pandemic has accelerated the adoption and acceptability of remote working. As Chapter 2 and 3 depicted, during the COVID-19 crisis many firms and workers have embraced remote working as a common practice and relied on it even during the months it was not compulsory. The increasing adoption of remote working coupled with a greater digitalisation of services and human interactions might offset some of the central forces behind economic agglomeration in cities. This section revises recent academic literature and official and private surveys on the long-term effect of COVID-19 on remote working adoption and on the spatial distribution of people and firms.

Working remotely will likely persist but under a hybrid model

COVID-19 has led to an unprecedented growth of teleworking. This crisis led many firms to accommodate their business models to function remotely and workers to change labour habits by working at home. Although prior to the COVID-19 outbreak, teleworking used to be treated chiefly as a matter of opportunity to improve employee's work-life balance, during the pandemic it became a mainstream standard in many professional environments. Remote working is a new experience for many, and it has proven to have a number of benefits and challenges for people and firms.

Benefits and challenges of remote working

Working at home has proven to bring benefits for people and firms in a number of economic, social and environmental areas:

- **Economic benefits**:
  - **For firms**: remote working enlarges the pool of workers that firms can choose from (e.g. high skilled workers who, for personal reasons, are tied to a specific location), which can decrease labour costs and improve skill-matching. Furthermore, with a share of employees working at home, firms could reduce some costs on office space, utilities or services. Remote working can also improve and normalise co-operation among satellite offices within the same company and open new business opportunities to meet teleworkers' needs.
  - **For workers:** remote working reduces commuting expenses and creates labour opportunities for women, people with disabilities or the elderly (Chapter 2). It also offers the flexibility to have multiple jobs and to relocate to reduce housing and living costs.
  - **For society**: Remote working can spread wealth across the territory by allowing mobility – temporary or permanently – to different locations.
- **Social and environmental benefits:**
  - **For workers**: This labour practice can improve work-life balance by allowing workers to spend more time at home with the family and decreasing commuting time.
  - **For society**: Remote working can have an impact on the reduction of global greenhouse emissions, air pollution and transport congestion, resulting in lower levels of air pollution.

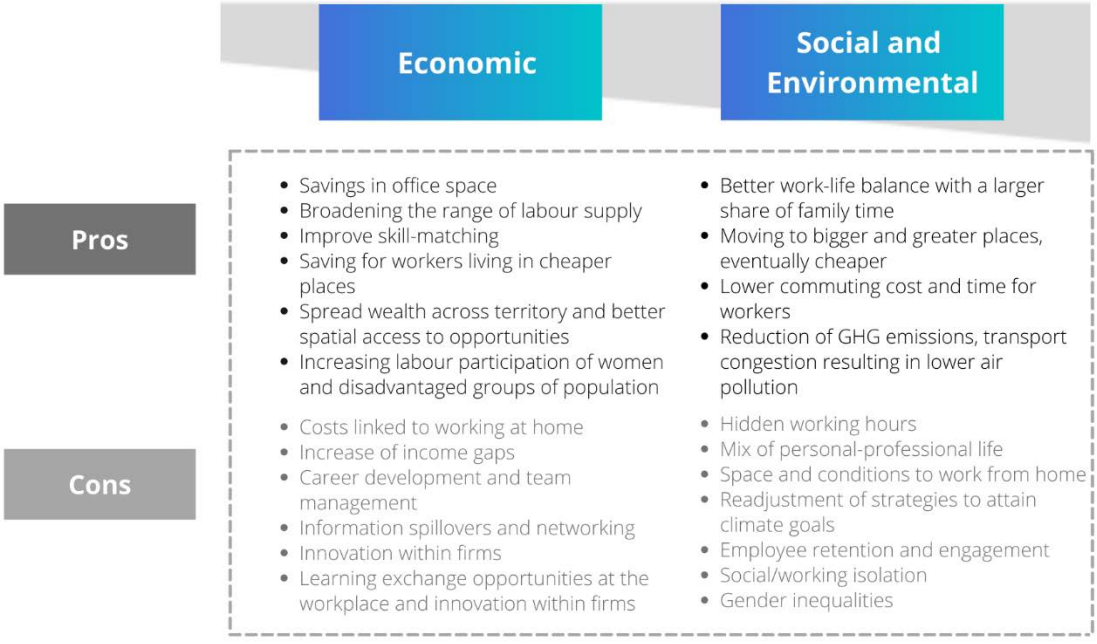
However, remote working also revealed a number of shortcomings in economic, social and environmental areas. As explained in Chapter 2 and 3, the unequal capacity to adopt remote working based on the type of region, type of worker or type of firm is a chief challenge for the future. However, some of the challenges in adopting remote working might include the speed and the compulsory nature of this labour practice coupled with lockdowns and the technology available until now.

- **Economic challenges**:
  - **For firms**: a greater adoption of teleworking raises questions around innovation and team cohesion. It also creates challenges for team management and limits the gains from information and knowledge spill overs inside and among firms. The cost associated with adopting digital technologies and management reorganisation is a sizeable challenge, particularly for small firms.
  - **For workers**: Disparities in access to telework add to existing dimensions of income inequality. Well-paid workers and those in high value-added service activities are often more likely to telework, while those with lower incomes and performing in-person services do not have the same possibilities. It adds to the cost of utilities and equipment at home. Career progression and networking is also perceived as a shortcoming of teleworking, especially for young people.
- **Social and environmental challenges**:

- **For firms**: Corporate culture belonging to a company might be affected by employee retention and engagement.
- **For workers**: Inappropriate working environment at home, high levels of multitasking with children, isolation, hidden overtime and blurry boundaries between private and work life, with consequences on health (OECD, 2020[1]). Many workers found themselves working at home with children and in unsuitable spaces and work conditions, especially young and low-income workers (Gorlick, 2020[2]). Moreover, the Covid-19-related economic crisis has exacerbated inequalities among type of workers, based on education, economic activity and gender (Chapter 2 and 3).
- **For society**: remote working might lead to a change in the mobility patterns of workers and greater individual consumption of resources at home (e.g. water, energy) which would require a readjustment of the strategy to attain climate goals due to lower gains from efficiencies of agglomerations (e.g. waste management, building energy efficiency).

Figure 4.2 summarises main challenges and benefits of teleworking during the recent scenario of short-term adaptation to this new working practice.

Figure 4.1. Advantages and disadvantages of teleworking for businesses and people



Source: OECD own elaboration.

Net impact of remote working on productivity remains uncertain with signs for optimism

Although the net effects on productivity levels are not yet clear, the results seem to be better than expected. Prior to the pandemic, the literature on productivity of working from home was relatively scarce. According to studies in the US and China before COVID-19, workers experienced an 8% to 13% increase in productivity due to working from home (Emanuel and Harrington, 2020[3]; Bloom, 2015[4]).[1] During the pandemic, the net effect of remote working on productivity remains unclear, as other factors affected workers' performance and well-being, such as lockdowns, mobility restrictions and the speed of the transition.

On the positive side, several studies, mainly through self-reported assessments, highlight the positive effect of telework on productivity during the pandemic:

- According to (Barrero, Bloom and Davis, 2020[5]), out of a sample of 1 500 workers in the US, 84.7% reported a similar or higher level of productivity from being at home than in the office. These authors estimate that productivity levels with remote working could increase by at least 2.4%, taking into account that this scenario involves other effects affecting productivity (e.g. children at home, pandemic-related stress) (Barrero, Bloom and Davis, 2020[5]).
- During May and June 2020, the Boston Consulting Group surveyed 12 000 employees in *teleworkable* activities in United States, Germany and India, of whom 75% reported being at least as productive in performing their individual tasks as they were before the pandemic (BCG, 2020[6]).
- In May 2020, a survey by YouGov, LinkedIn and USA Today covering 2 001 US adults showed that 54% of respondents stated that remote working had a positive effect on their productivity (YouGov, USA TODAY & LinkedIn, 2020[7]).
- Etheridge et al. (2020[8]), using self-reported survey data from the UK, found productivity at home is not significantly different from productivity in the workplace.

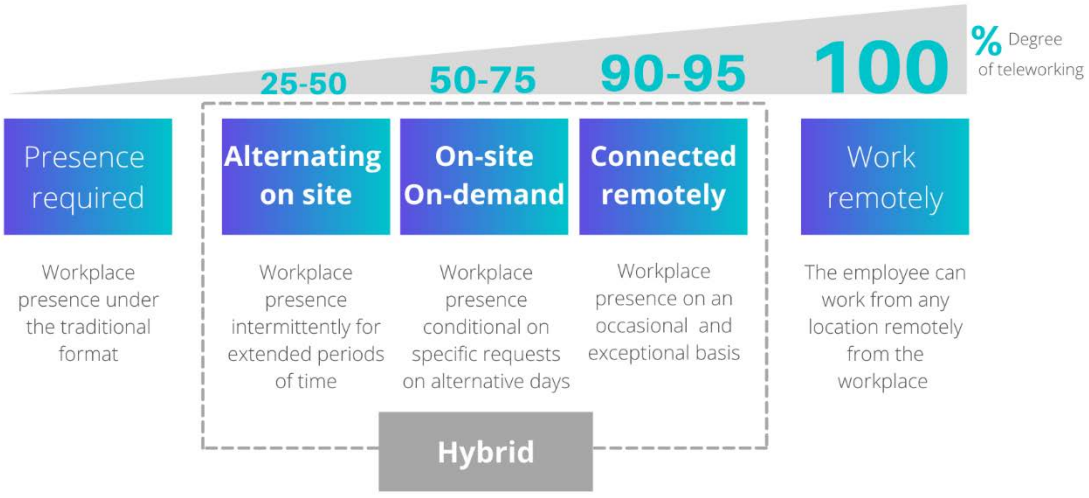
However, the conditions under which remote working unfolded makes it difficult to disentangle the net effect on productivity. A firm-survey in Japan underlined that employers perceived a lower productivity level of workers who adopted remote working during the pandemic (40% less than at the workplace on average), yet the effect varies across industries - information and telecommunications industry had the highest productivity, while retail the lowest (Morikawa, 2020[9]). The reported factors affecting productivity include outdated regulations for some tasks, poor telecommunications environment at home, and psychological effects of the health crisis, among others.

Companies have only just begun to apply the best available techniques for remote working. As technology is quickly advancing (e.g. use of virtual reality for meetings) and regulations are being revised, productivity benefits from remote working can be a target for industries and governments to improve in the future.

The increasing acceptability of hybrid remote working

Some surveys and authors have pointed to a post-pandemic scenario where a hybrid model of working is preferred by workers and firms. Hybrid remote working refers to a combination of time between working at home and at the workplace that varies from reduced working time at home, flexible approaches or only occasional presence at the workplace (Figure 4.2). A number of recent surveys reveal increased intentions from both managers and workers to keep remote working practices in place after the pandemic fades (Table 4.11). Nevertheless, some other surveys raise uncertainties about the extent of teleworking (Indeed, 2021[10]) .

Figure 4.2. Hybrid telework spectrum



Source: Own elaboration based on (BCG, 2020[6])

A common characteristic of the surveys analysed is the positive perception on the outcome of remote working and expectations that this working model will continue to a greater extent than before the pandemic (Table 4.1). For example, a survey of 500 managers in Germany shows that a large majority of them (89%) agree that the home office can be implemented on a larger scale without disadvantages, while a global survey from PWC (133 business and 1 200 office workers) reveals that a greater share of employers (83%) agree that remote work has been successful in their companies, in comparison with pre- pandemic scenarios. Specifically in most of the surveys, a hybrid teleworking model is the most likely working system to be implemented in the medium term (e.g. France 58% of respondents and in the United States 62%), in countries like Italy the concept of smart working (remote working but without fixed working hours) reported positive outcomes on productivity.

However, many respondents to these surveys agree that some strategies still need to be put in place to improve teleworking conditions. A survey in France (2 049 employees) highlights an important share of employees (40%) have felt isolated during the remote working periods, which can be explained by lockdown measures. Surveys in countries such as Italy and Germany highlight the relevance of adaptation of a regulatory framework for teleworking, the training of managers and supervisors with remote teams or career progression. The aggregate effect of the share of remote working time and the number of workers adopting this labour practices is still uncertain.

Table 4.1. Selected surveys on effects and perception of remote working during the pandemic, a focus on G7 countries (2020 and 2021)

Scope	Source/Institution	Year	Sample	Survey results
France	(Harris Interactive, 2020[11])	November 2020	2 049 people	• 70% teleworked at least partially and 45% teleworked full time; 30% were exclusively face-to-face. • 39% of employed people say that their current job cannot be carried out by teleworking, compared to 36% who say they can telework without difficulty. • 58% of employees believe in a hybrid model • 40% of employees who had teleworked during the week of the survey felt isolated

Canada	(Statistics Canada, 2020[12])	May 2020	Not specified	• 22.5% of businesses expect that 10% or more of their workforce will continue to telework or work remotely • 25% of Canadian business are 'likely' or 'very likely' to offer their employees the option to work remotely following the pandemic, while 14% will make it a requirement
Germany	(IAO, 2020[13])	May 2020	500 managers	• 70% of the companies, employees work entirely or mainly in their home office. 21% a hybrid model. • 58% of the companies had no home office regulation or company agreement becoming the main obstacle to telework • 89% agree with the statement that the home office can be implemented on a larger scale without disadvantages. • 75% of respondents also believe that their employees will in the future ask to work from home more often
	(IAB-Forum, 2020[14])	December 2020	1 723 establishments	• 43% of all employees receiving welfare benefits and marginal employment (14.1 million people) had the opportunity to work from home in May this year • 50% worked more than 20 hours per week from home in May 2020 compared to 8% of the previous year
Italy	(McKinsey & Company, 2020[15])	April 2020	5 000 service workers	• 64% of respondents rate their managers as either sufficiently or poorly prepared to manage their team. • 83% of respondents intend to continue to work from home • In general, respondents are convinced that smart working (remote working but without fixed working hours) has increased efficiency
	(Corriere della Sera, 2020[16])	June 2020	4 000 public employees	• 88% judge the experience (transition to telework) as successful and 93% would like to continue. • 34.3% say they have increased their working hours thanks to smart working • 68.3% did not receive specific training in teleworking • For 30% of public servants it was not possible to get a room to work and for 11% was difficult to work while family members were doing other things (e.g. watching TV, attending virtual school classes, cooking)
United States	(Ozimek, 2020[17])	April 2020	1 500 hiring managers	• 61.9% of hiring managers interviewed in a recent US poll stated their intention to rely more on remote work in the future • The expected growth rate of full-time remote work over the next five years has doubled, from 30% to 65%
United Kingdom	(Indeed, 2021[10])	March 2021	Not specified	• 60% of remote jobs posted by employers were marked as 'temporarily remote' during Lockdown 3 in early 2021 • 40% of remote postings of jobs are described as non-temporarily remote
	(Office for National Statistics UK, 2020[18])	July 2020	18 000 households	• 46.6% of employed people did some work at home • 34.4% worked fewer hours than usual and 30.3% more hours • 57.2% of people living in London did some work at home, though this less likely for people aged 16 to 24 years of age
Global	(PWC, 2021[19])	June 2020	133 executives and 1 200 office workers	• 83% of employers say the shift to remote work has been successful in their companies, compared to 73% in June 2002 • 55% of employees want to work remotely three days a week or more
	(BCG, 2020[20])	June 2020	12 000 employees	• 40% of their employees will follow a remote-working model in the future • 37% of companies expect that more than 25% of employees will work in hybrid models that combine remote and onsite work

Digitalisation and working from home might improve the attractiveness of low density populated areas

The long-term response of people and firms as a consequence of increased teleworking practices might lead to the relocation of some economic actors outside of densely populated cities, although a mass exodus from cities seems unlikely. Some workers with greater abilities to remote work might be attracted to move outside cities to less densely-populated places that offer housing that is cheaper and bigger with better environmental amenities. Some large firms, mainly technological companies have already given their employees the possibility to work from home permanently (e.g. Twitter or Shopify). Yet, the exodus from populated places is not likely as economies of agglomeration would keep attracting business and workers based on greater network opportunities, entertainment and cultural amenities.

Cities have historically been the most attractive places for firms and workers…

Cities have spearheaded economic success and living standards within countries, while attracting people at a rapid pace. The population living in cities, high-density places of at least 50 000 inhabitants, has more than doubled over the last 40 years (OECD/European Commission, 2020[21]). The agglomeration economies of cities have historically attracted capital, firms, consumers and workers whose physical proximity creates a number of benefits, including a better match of supply and demand for labour, greater offer of goods and entertainment activities. Density of cities has also a positive effect on exchange of ideas, innovation and productivity. OECD estimates point toward a productivity gain of 2-5% for a doubling of population size (OECD/European Commission, 2020[21]).

The attractiveness of cities is not only economic, as city residents also benefit from higher standards of living. Urbanisation and development are closely interlinked (Glaeser and Gottlieb, 2009[22]). Agglomeration increases the efficiency of health and education provision and offers citizens greater access to cultural amenities and social life. Educational attainment is considerably higher in cities than in rural areas, due to a greater concentration of universities and technological centres.

… But increasing adoption of remote working can reduce the appeal of cities

As cities keep growing in size, agglomeration effects also create a number of shortcomings. Cities tend to face higher prices of land and housing and a reduced offer of environmental amenities. Urban residents are more exposed to crime, health related issues, violence and air pollution than residents elsewhere (OECD/European Commission, 2020[21]). For many workers, especially in cites with poorly developed public transport, commuting to work takes an important share of the daily time and represents a high cost. It is also a source of stress and safety concerns.

The appeal of cities is dwindling

The arrival of COVID-19 and lockdown measures tarnished some of the attraction of cities, while it exacerbated some of their shortcomings. In many countries, lockdowns were coupled with restrictions on in-person services and cultural amenities such as restaurants, bars or theatres. With the greater adoption of remote working, many people found themselves in small and unsuitable conditions for working at home, while paying relatively high housing (rent, utilities, maintenance) and living costs (e.g. food and utility prices). In fact, a share of urban residents, mainly high earning workers or students with family elsewhere, moved temporarily outside cities, breaking the trend of the last decades of inflow population to the cities (see Chapter 1).

Central business districts in large cities have experienced most of the outmigration during COVID-19. In the largest US cities, this effect was greater among people living in high-income neighbourhoods (Ramani and Bloom, 2021[23]; Liu and Y Su, 2020[24]). People in these neighbourhoods (e.g. Manhattan) have greater incentive to relocate as they are most likely able to work remotely and own secondary houses,

while paying high rents and housing prices. Also, during the lockdown periods, the in-person entertainment amenities (restaurants and bars) were shut down, which make it much less attractive to live in those neighbourhoods. For example, during lockdown periods of 2020, Tokyo experienced the first net outmigration since 2013 (Ministry of Land, Infrastructure, Transport and Tourism of Japan, 2020[25]).

Some effects of the temporary outmigration have led to a moderate decrease or stagnation of prices in housing and office space in cities. In many local markets, firms are increasingly reluctant to rent or buy new space while waiting for changes in remote working, which has driven forecasting scenarios of price stagnation in the next couple of years (Credit Suisse, 2020[26]). In 2020, the annual growth of housing prices in capital cities like London (3.5% 2020 vs 2019) or Paris (5.4% for apartment prices 2020 vs 2019) grew below the national average (8.5%, 6.3% respectively) (UK HPI, 2021[27]) (Notaires-Insee, 2021[28]).

Ramani and Bloom (2021[23]) estimated that the top 10% zip codes with highest population density in the central business districts of the 12 largest metropolitan areas in the US experienced more than a 10% drop in rents, while the rent prices in areas with lower population density remain stable or slightly increased. Similarly, the effect on residential and commercial property prices in the 12 largest metropolitan areas in the US decreased relatively more than in less densed populated areas.

While the appeal of places with low population density increasing

With a greater possibility and acceptability of remote working, the arguments in favour of leaving big cities are certainly greater than before the pandemic. The lower living costs and increased affordability of larger spaces in more rural regions are particularly relevant for people. Some people could also value the possibility to be closer to nature and enjoy outdoors activities, while others can see it as an opportunity to leave stress of cities and change their way of living. For businesses, the possibility to relocate outside a city or downscale their offices or headquarters is under much debate. While surveys so far are inconclusive, a common threat is an increasing number of companies expecting to modify their real estate decisions.

The analysis of recent surveys in G7 countries reflects a greater willingness of people to move outside cities and firms' expectations to modify building offices in cities, in comparison to pre-COVID scenarios.

- A study in the UK showed that 15% of people surveyed were considering moving out of the city as a result of life in lockdown. Almost one-third (34%) stated they think differently about their home as result of the COVID-19 outbreak, especially the importance of a garden and the need for more indoor space for homeworking (Nationwide, 2020[48]).
- A survey in Japan conducted by the national government showed that 46% of respondents said they were more interested in moving outside the capital city. Moreover, 14% of the companies surveyed have started to consider offshoring or relocating their headquarters out of Tokyo (for more information, see the (Box 4.1).
- The AEI Housing Centre has found that between May and August 2020, buyers have opted for homes in areas with 19% less density on average than the same period last year. Demand was up 74% in the least dense quintile of zip codes (Tobias and Pinto, 2020[29])).
- A survey in Italy found that 85% of people surveyed "would go or return to live in the South if they were allowed to, and if it were possible to keep their jobs remotely". These are young people with a university degree, professional experience and, in 63% of cases, with a permanent contract (Lanari, 2020[30]). Moreover, COVID-19 has also driven requests for properties in the countryside. Thanks to the lockdown period and the massive use of smart working, the demand for farmhouses outside the big cities has soared by 30% compared to the same period in the pre-COVID era (Immobiliare, 2020[31]).
- A survey in the US showed that a majority (87%) of executives expect to make changes to their real estate strategy in the medium-term. These plans include consolidating not only office space in prime locations but also opening more satellite locations (PWC, 2021[32]).

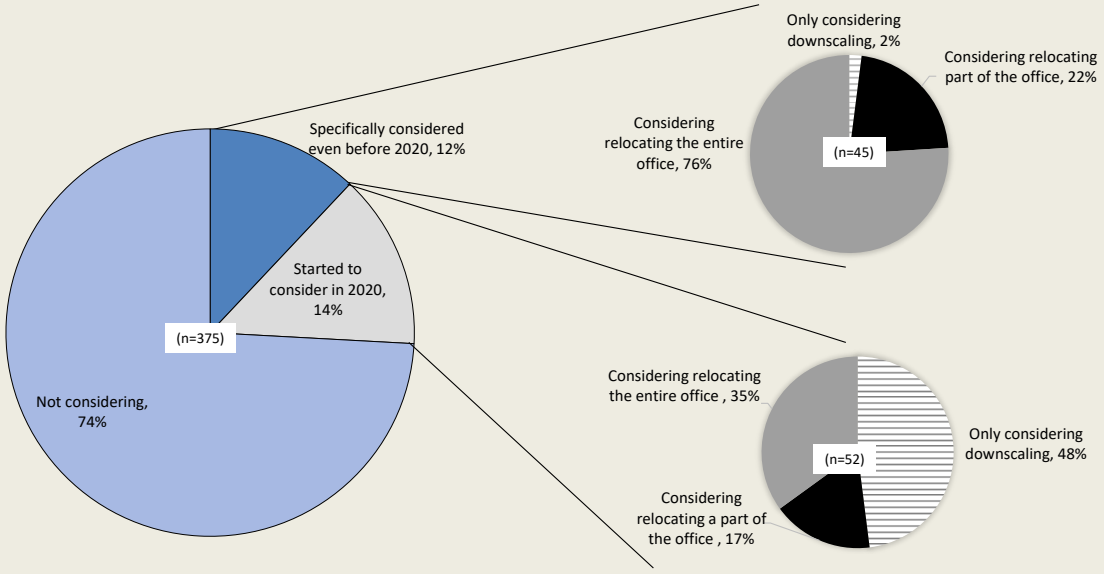
Box 4.1. Results from a survey in Japan

In April 2020, Japan's government (like numerous other governments) announced a state of emergency due to COVID-19 infections and gave governors greater legal authority to urge people to stay indoors and businesses to close. Unlike in many Western countries, enforcement relies more on peer pressure and Japan's deep-rooted tradition of respect for authority, rather than imposing fines.

The Ministry of Land, Infrastructure, Transport and Tourism conducted a series of surveys in the summer of 2020 to find out more about the effects of telework on the location decisions of companies and employees after COVID-19. The first survey was addressed to 375 companies that have their headquarters in Tokyo. It aimed to find out about companies' plans for teleworking after COVID-19. Some 53% of respondents said telework will continue, while 18% said it will increase. The survey also sought to find out companies' plans for offshoring as a result of COVID-19. Based on this feedback, 26% of the companies surveyed are considering offshoring or relocating their headquarters. Some of these companies had considered this even before the pandemic (12%), whilst others started to consider it with the onset of Covid-19 (14%).

Figure 4.3 Headquarters' relocation plans from enterprises based in Tokyo

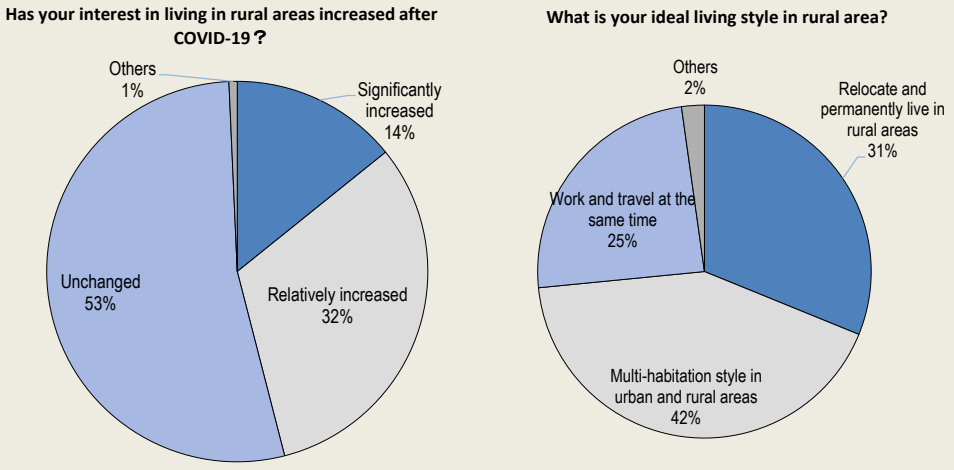
Relocation of the entire office or part of the office, or downscaling



Note: The figure on the left depicts responses from 375 enterprises headquartered in Tokyo regarding the willingness to relocate a specific department/division or the entire headquarters. The figures on the right highlight the type of change in headquarters' strategies from the enterprises considering relocating out of Tokyo.
Source: MLIT (2020[33]), Questionnaire on remote working conducted to enterprises headquartered in Tokyo (August 2020)

The second survey, conducted among 1,078 people over 20 years old in Tokyo, asked about the intention of workers in Tokyo to move to rural areas after COVID-19 and the ideal working style. The results show that 46% of people surveyed were slightly or significantly more interested in moving to rural areas than previous the pandemic. When asking about the ideal working method, most workers said they would choose a hybrid model of living part of the time in a rural area and the rest of the time in an urban one.

Figure 4.4. Workers' interest in working location after COVID-19



Source:MLIT (2020[34]), Questionnaire on remote working conducted to workers in Tokyo (August 2020)

Yet, a permanent outmigration from cities is unlikely and undesirable.

Despite the greater adoption of remote working, benefits from agglomeration economies will likely be a predominant factor to retain workers and firms in cities. As mentioned before, physical proximity in densely populated areas creates efficiency on economic, social and environmental factors. Exchange of ideas, innovation and business creation are factors that are highly dependent on face-to-face contact and these interactions are a source of productivity, growth and increased well-being. The relevance of in-person social interaction for people also leads to a demand for leisure and cultural amenities, (e.g. bars, restaurants and theatres) which tend to benefit from proximity to highly populated areas. Furthermore, efficiency of economies of scale facilitate a more sustainable management of resources and the attainment of climate goals. These agglomeration benefits will be harder to replace with virtual interaction in the short term.

In fact, in the scenario of greater migration away from cities, the dispersion of settlements could bring negative effects on various fronts, including the environment, income of low-skilled workers in large cities or efficiency of service delivery.

- Efforts to achieve the climate agenda could be undermined by potential sprawl as remote working becomes increasingly popular. The degree of urbanisation creates economies of scales that are relevant to reduce negative effects on the environment. These places also concentrate higher efficiencies regarding resources management (e.g. wastewater reuse, IT infrastructure), transport (e.g. public transport, commuting) and public service delivery (e.g. gas, water) (Newman and Kenworthy, 2000[35]).
- An increasing use of a hybrid work model could also reduce aggregate income of lower-skilled workers in cities. As mentioned before, high-skilled workers in cities are the share of the workforce with the greatest capacity to telework. Low-skilled service workers in large cities, who are heavily dependent on jobs requiring physical presence, bore the brunt of the economic impact of the recent pandemic (Althoff et al., 2020[36]). An intermittent presence of these types of workers in central business districts could affect income of local consumer service industries that rely heavily on their demand.
- Efficiency of service provision could also be affected as cities benefit from scale to provide high quality services, education and health, with an easier access to them.

Four scenarios of the distribution of settlement pattern in the post-COVID-19 world

Despite the uncertainties at the time of elaborating this report, with the pandemic still unfolding, four possible future settlement pattern scenarios could emerge in the new normality as workers and firms increasingly embrace remote working. They include:

1. business as usual but with greater adoption of remote working
2. expansion of commuting zones around cities as a doughnut effect, with
3. a rise of intermediate cities in terms of attractiveness for workers and firms, and
4. structural changes from a permanent movement of high-skilled workers outside city centres (name it "City Paradox").

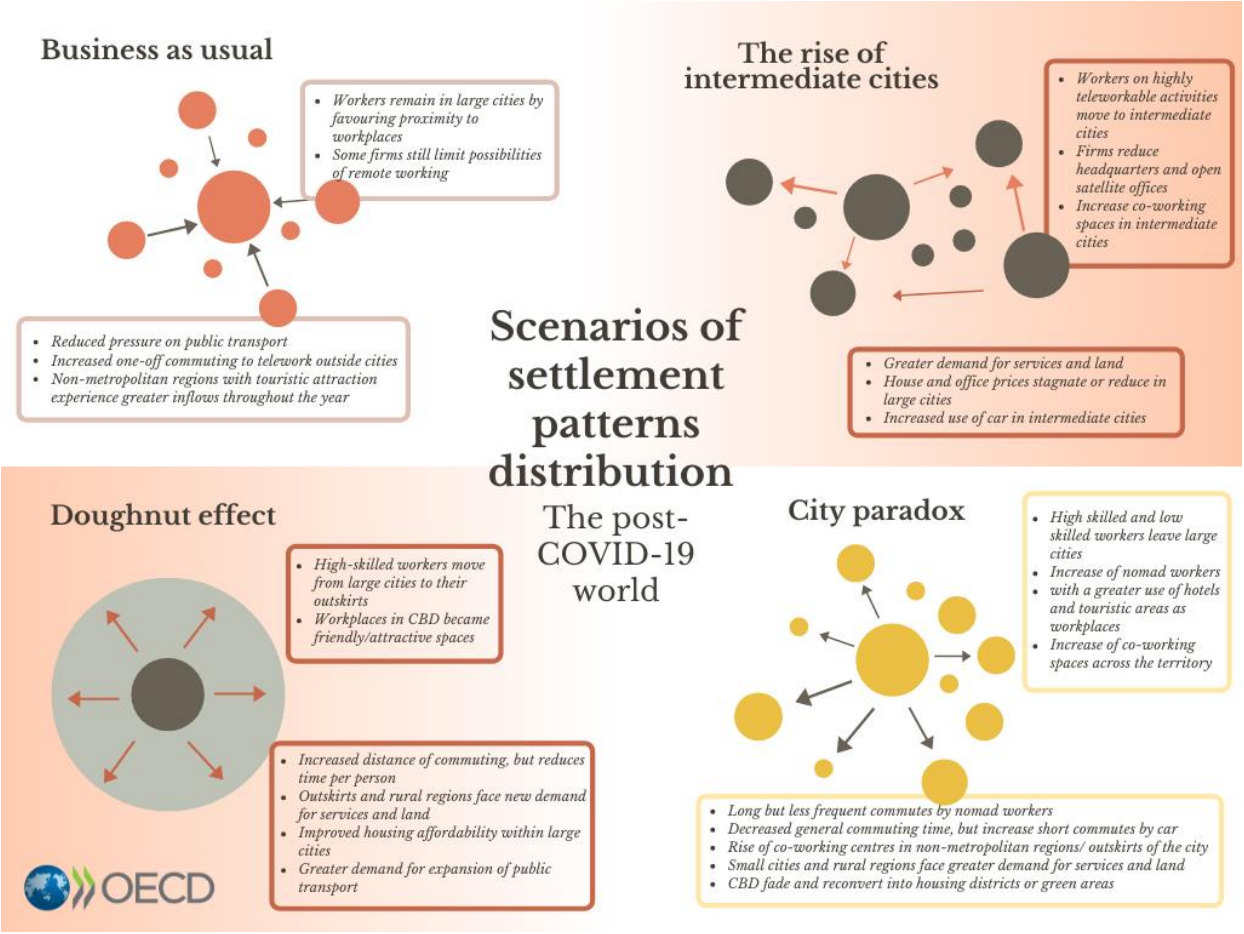
Table 4.2 describes these four scenarios and their possible effects on mobility patterns and regional development. These scenarios might not occur in mutually exclusive forms and the linkages between them may vary in time (some can happen before others) and space (regions can have different scenarios). Figure 4.5 ilustrates these four scenarios.

Table 4.2. Scenarios of the distribution of settlement patterns in the post-COVID-19 world.

	Description	Degree of workers' relocalisation and changes in firm's real estate strategies	Effect on mobility and regional development
Business as usual with greater use of hybrid working model	Dense cities continue to agglomerate workers and firms. Remote working is increasingly adopted within the city, with little impact on the workers' relocation.	Low: Most workers remain in large cities by favouring proximity to workplaces. -Some firms with teleworkable activities still limit possibilities of remote working.	-Reduce pressure on public transport at peak times in large cities and increased use during off-peak times. -Increased one-off commuting to telework outside cities, either in secondary houses or rented spaces. -Non-metropolitan regions with tourist attractions have greater inflows throughout the year.
Doughnut effect	The city centre becomes more hollow or empty, as businesses and people move to the outskirts of the city to find affordable and larger housing.	Medium-Low: High-skilled workers move from large cities to their outskirts or areas with bigger and cheaper spaces. - Workplaces in the CBD become friendly/attractive spaces that promote social interactions.	-Increase distance of commuting, but per person commuting time reduces. -Outskirts and rural regions face new demand for services and land. -Improve housing affordability within large cities. -Greater demand for expansion of public transport services in some large cities.
The rise of intermediate cities	Cities offering agglomerations and medium services benefit from the drain of densely populated cities. Workers and firms seek the advantages of these cities' balanced quality of life.	Medium-High: Workers with highly teleworkable activities move to intermediate cities. -Firms reduce headquarters and open satellite offices. -Increase co-working spaces in intermediate cities	- Greater demand for services and land in intermediate cities. - House and office prices stagnate or reduce in large cities, relative to other cities. - Increase use of car in intermediate cities with poorly developed public transport.
City paradox	Highly skilled workers move outside central business districts. It reduces income for workers (mostly low-skilled) in local consumer service industries in cities, which might trigger movement of these workers outside the city.	High: An important share of high-skilled and low-skilled workers leave large cities and spread out across the territory. -Increase in nomad workers (mainly young) with a greater use of hotels and touristic areas as workplaces. -Increase in co-working spaces across the territory	-Long but less frequent commutes by nomad workers (car, train and plane). - Decreased general commuting time, but more short commutes by car. -Rise of co-working centres in non-metropolitan regions/ outskirts of the city. -Small cities and rural regions face greater demand for services and land. -CBD struggler and are reconverted into housing districts or green areas.

Note: These four scenarios are built based on relevant articles available at the moment of this publication. The Doughnut effect scenario is inspired by (Ramani and Bloom, 2021[23]). The rise of intermediate cities scenario is inspired by a work in progress by Philipp McCann; the City Paradox is based on (Althoff et al., 2020[36]), while the Business as usual with more remote working world was built from internal discussions at the OECD. CBD refers to Central Business Districts.

Figure 4.5. Scenarios of the distribution of settlement patterns in the post-COVID-19 world (graphic description)



Note: CBD refers to Central Business Districts

Whether the post-pandemic world is closer to one of those scenarios, to a combination of some or to none, one thing is likely: the greater acceptance of virtual working methods and social interactions. Any greater magnitude of remote working adoption could imply greater consumption of resources at home and new commuting patterns for some workers. In some cities, a relocation of workers would lead to new demand for transport connections or longer distances commuted by car.

Furthermore, remote working is only one of several practices and technologies that can modify location and mobility patterns in the future (Box 4.2). In the long run, the cumulative effect of this new labour model with technologies such as virtual or augmented reality or automotive vehicles can modify the incentives for workers and firms to live or locate to different places than current ones (OECD, 2020[37]). Technological progress might also allow in-person activities such as hairdressers or sales to conduct services virtually (or through robots). While the future has many uncertainties, technology will certainly keep disrupting the way people interact and the benefits from physical proximity.

Governments should thus establish flexible policies to adapt to changes in settlement patterns, especially with land use and public transport policies as well as the promotion of resources efficiency and circular economy practices among households. The long-term preparedness of local governments and co-ordination policies to improve structural attractiveness and factors for development (including energy efficiency) of all regions is of chief importance for benefiting for any future scenario.

Box 4.2. Technologies impacting rural economies and communities

Technology is changing rapidly. Every year, new and improved types of devices and services become available on the market. Many of these technologies have the potential to improve rural economies, their production processes and the traditional economic sectors. New technologies also modify how people access public services and interact with society.

OECD (2020[37]) mapped a number of technologies that will shape the future of rural regions. While many technologies are undergoing rapid transformation and promise disruptive effects, the identified technologies could potentially change rural communities in particular.

Table 4.3. Key technologies driving rural change

Technologies		Opportunities for rural regions	Policies to harness the benefits for rural regions
	Self-driving cars	- Shared self-driving cars can improve public transport. - Increasing attractiveness of living in rural regions. - Easier access to services and social networks.	- Ensure good quality broadband connection. - Define regulations for autonomous cars and the low modal share of public transport. - Promote usership rather than ownership. - Improve online-mapping and quality of rural roads.
	3D printers	- Access mass-manufactured goods without waiting for delivery. - Produce goods to sell and adapt to rural industries. - Boost entrepreneurship. - Reduce the market dependence of rural regions on mass-manufactured goods (tools). - Increase the efficiency and autonomy of public services (healthcare inputs).	- Ensure a quality broadband connection. -Train professionals for maintenance and provision. - Disseminate information about technology.
	Drones	- Attract firms to test and conduct research projects with drones. - Improve access to goods (e.g. mass consumption goods, medicines). - Reduce production and delivery costs. - Boost the productivity of rural businesses.	- Ensure a quality broadband connection. - Define regulation and privacy policies. - Incentivise testing and support pilot applications.
	Advanced communications techniques	- Attract and retain workers by improving the teleworking experience. - Enhance social and labour connections. - Allow for collaborative innovation systems among firms and research centres. - Increase the efficiency of rural business and training of workers.	- Ensure a quality broadband connection. - Support firms to invest in data and organisational change to improve teleworking. - Enhance knowledge and information about augmented reality (AR) and virtual reality (VR).
	e-Education	- Enhance traditional learning experiences and make education more accessible and inclusive. - Retain the young population and attract families to settle in more rural areas. - Support reskilling of the workforce to facilitate the shift of economic activity.	- Ensure a quality broadband connection. - Awareness of the benefits of open education at the public and private levels. - Enhance teachers' training and the involvement of academic institutions in technology. - Increase student support (either in person

		- Improve teacher training.	or virtually).
	e-Health	- Increase healthcare coverage and quality in rural regions. - Enhance the skills of medical staff. - Improve information for patients and doctors. - Reduce transport cost in conducting a medical procedure.	- Ensure a quality broadband connection. - Train health professionals. - Conduct awareness campaigns. - Update ICT infrastructure and equipment in hospitals and medical centres.

Source: OECD (2020[37]) *Rural Well-being: Geography of Opportunities*, OECD Rural Studies, OECD Publishing, Paris, https://dx.doi.org/10.1787/d25cef80-en.

In summary

The post COVID-19 scenario is uncertain in many ways, but one thing is likely: the increasing adoption and acceptance of virtual working methods and social interactions. Remote working was a sudden experiment for many actors and involved different challenges for adoption. Yet, results have been rather positive in many aspects, including greenhouse gas emissions, time flexibility, work-life balance and productivity. As a result, in the future, many firms and workers will likely increase the adoption of a hybrid remote working model, compared to the pre-COVID-19 situation.

This new possibility to work and access services remotely will open up many opportunities for places with a low population density to attract new residents and firms. Given that many workers no longer need to go into the office every day, the arguments in favour of leaving big cities are certainly more convincing than before the pandemic. A new set of priorities is taking hold, as the lower living costs and increased affordability of larger spaces in low density regions coupled with greater access to environmental amenities are particularly relevant for firms and people. Either with full-time or a hybrid remote working, firms located in central business districts have incentives to reduce or consolidate office space. This type of change in real estate decisions from the private sector could improve access or affordability of housing and offices in cities.

Yet, a decline of cities is unlikely. Benefits from agglomeration economies will likely be a predominant factor to retain workers and firms in cities. A big exodus from cities would not be desirable for economic, social and environmental aspects. A decline in large urban centres would lead to a loss of economies of scale affecting national growth, efficiency in provision of public services and meeting environmental goals.

This chapter identifies four post-COVID-19 scenarios regarding the impact of remote working on settlement patterns across the territory: i) an important outmigration outside city centres, ii) a movement of actors to the outskirts of cities, iii) a greater attraction of intermediate cities, and iv) little movement but with a hybrid working model. A commonality of these scenarios is the acknowledgement that technology will keep disrupting the way people and businesses interact, which will have an impact (greater or lesser) on spatial distribution and commuting patterns.

Irrespective of the post-pandemic scenario and the decision of workers and firms to relocate across the territory, policies need to be flexible and prepare regions to seize the changes that remote working and other technologies can cause. Indeed, decisions by people and businesses to leave the city entails a cost-benefit analysis, in which local government actions might play a decisive role. Governments need to ensure that people and firms willing to adopt remote working have the right conditions to do so. Therefore the COVID-19 can become a trigger to increase quality of life in rural places, while unlocking and harmonising new growth opportunities throughout the territory.

G7 policies to seize benefits from remote working

The need for remote working during the pandemic led many governments to adapt their policies and regulations to ensure the right conditions and outcomes for workers and firms to benefit from this labour practice. This section discusses policy responses adopted by G7 countries to bolster the benefits and mitigate the challenges of remote working and to attract people and firms that want to further adopt virtual methods of working.

Policies to capture the benefits of remote working for people, places and firms.

Well-designed policies and smarter adoption of remote working could raise workers' well-being and lower firms' costs, while reducing the environmental effects of commuting (OECD, 2020[1]). By working at home, workers can allocate their time efficiently, lower levels of stress related to commuting and save transportation-related resources, while achieving greater overall work-life balance. Yet, as described before, this labour practice can have negative effects in terms of greater cost in utilities - especially in countries with extreme weather (cold winters and hot summers), professional isolation and hidden overtime.

G7 countries, as in many OECD countries, have reacted to the need to increase remote working during the pandemic and implemented a number of policies to make the most of this labour method (Table 4.4). Relevant policies to create the adequate conditions for a wider adoption of efficient remote work can be divided into three main groups i) investment policies, ii) policies to overcome cultural barriers and improve the legal framework and iii) policies to mitigate the potential negative side effects of this labour practice (OECD, 2020[1]).

Complementary investments for remote working

Promoting remote teleworking for all types of sectors and regions requires investments that level the playing field for its adoption. Some of these investments include stimulating investments in high speed broadband, providing financial support to small firms for ICT upgrades and promoting investments in digital skills among workers.

In the short term, all G7 countries have identified ICT support to workers and firms as a cornerstone policy to allow everyone to benefit from remote working. As depicted in Table 4.1, many G7 countries have provided either tax relief (UK, Canada), in-kind services (Italy) or direct grant support (Japan) for workers and SMEs to improve work equipment or technologies. For example, Italy launched the "Digital Solidarity" initiative, a portal where companies (in particular SMEs and self-employed) can access free digital services from large private sector companies (e.g. online conferencing, mobile data, cloud computing, etc.) (OECD, 2020[38]).

In the medium term, a common objective across G7 countries is to improve broadband connectivity in all regions. As discussed in the last section of this chapter, many countries have established strategies to level the playing field in terms of broadband connectivity among urban and non-metropolitan regions. Yet, there is still not a clear focus on ensuring equal internet speeds across the territory.

Overcoming cultural and legal hurdles for remote working

Remote working still faces a number of cultural barriers inside companies and the legal framework has many grey areas with regard to labour security and support for teleworkers. G7 countries have implemented polices to overcome these barriers:

- Promoting a 'right to telework'. G7 countries have taken actions to establish the right of workers to work from home. While it is not a statutory right, most G7 countries had directives even before

COVID-19 to encourage employers to allow employees to work from home wherever possible. In France, the *order of September 2017 to strengthen social dialogue*, which stipulated the right to telework without the need to change labour contracts, had established that in the event of exceptional circumstances (e.g. epidemics), the implementation of teleworking can be considered as necessary.

- Information campaigns on the broader societal benefits of home office. All G7 countries have implemented either information campaigns about the explicit benefits of teleworking, guidelines for workers and managers to best deal with remote working or platforms to resolve questions about remote working (e.g. France).
- Adapting the legal and regulatory system. For example, France introduced the use of digital signatures more broadly in notaries, while Canada's national employment service has an online tool, called "Job Bank", that has changed its website and adapted its services by allowing applicants to specifically search for teleworking opportunities (OECD, 2020[38]).
- Tax regimes and relief to frontier workers has been a major subject during the boom of teleworking. A co-ordinated regulation is necessary to prevent cross-border teleworking from undermining national labour standards and wage agreements (Baldwin, 2019[39]). Some G7 countries have already signed agreements to address this issue:
    - France and Germany along with Belgium and Switzerland have all agreed to lay down specific tax regimes for frontier workers (Ministére des Affaires Étrangeres, 2020[40]).
    - Germany has concluded mutual agreements with Austria, Luxembourg, and the Netherlands on the taxation of frontier workers, stating that the employment income related to work-days spent at home due to COVID-19 can remain taxable in the state where the usual place of work is located.

Mitigate potential side effects of remote working

As previously mentioned, remote working can lead to negative side effects for workers and firms, which can be overcome with policy responses. Workers can face isolation, 'hidden overtime' or increased costs in utilities, while firms can perceive negative effects on innovation, team cohesion and motivation. Policies can help mitigate these effects by promoting opportunities for in-person exchange (e.g. promoting co-working spaces across the country), encouraging the 'right to disconnect' or policies to avoid increased costs related to working space and IT equipment on workers.

G7 countries have implemented policies to address some of these challenges:

- Information campaigns for workers and firms to manage teleworking. This includes encouraging employers to introduce new models to manage employees in remote working. (e.g. Japan has published guidelines for labour management to encourage workers to work from home)
- Promotion of flexible work arrangements to ensure employees have the option to telework. In some countries (France, Germany) collective arrangements have agreed to monitor and reduce hidden overtime when working at home (e.g. in French post and telecom sector)
- Most countries have also set up dedicated programmes to allow workers to deduct higher utility bills from their taxes.

Table 4.6 summarises the main policy responses in G7 countries to facilitate teleworking.

Table 4.4. Remote working policies in G7 countries as a response to the COVID-19 crisis.

Country	Policies (selected)
Canada	• Information campaigns ("Going Remote Guide", "Remote Work Toolkit for Employers from City of Vancouver") • Home office expenses deduction and simplification to claim these expenses on the personal income tax (The Canada Revenue Agency) • Greater resources for community organisations to improve workplace accessibility and access to jobs in response to COVID-19
France	• Accelerate new uses and digital services (trained digital mediators, close to digital places) • National funding to support regional digital projects • Support to national inter-professional agreement between unions and employers which determines that companies cover worker's expenses to perform their tasks under remote working.
Italy	• A ministerial decree to encourage teleworking in the private sector. A plan to move at least 50% of public administration jobs to remote working • A 15% tax credit for investments in technologies (including software) and devices that enable agile work in the "Relaunch Decree" • Necessary IT equipment (laptops and tablets) made available to Public Administration employees (Cura Italia decree)
Germany	• Employees are entitled to deduct up to EUR 600 in home office costs (electricity, heating, etc.) from their income tax in 2020 and 2021 • Claim office expenses recognised for tax purposes as income-related expenses up to the amount of EUR 1 250 in the year of assessment
Japan	• Regional Vitalization Teleworking Grant to local governments • Information campaigns about delocalisation outside cities and new types of management • Access to IT support and management to promote teleworking in SMEs • Broadband investment
UK	• Tax relief to balance additional household costs from teleworking • Broadband investments
United States	• Information campaigns and guidance to firms and workers on remote working or flexible working hours • The U.S. Telework Enhancement Act requires the head of each executive agency to create a policy for their employees' teleworking • Some states announced they won't impose a corporate income tax nexus due to the temporary presence of new teleworkers (District of Columbia, Indiana, North Dakota)

Source: Own elaboration based on OECD (2020[41]) Answers from OECD G7 country delegates to the OECD survey on long-term spatial policy responses to COVID-19

Some policies are actively setting up incentives to attract firms and workers to non-metropolitan regions

Some policy programmes, mainly from regional governments, have created policy strategies to attract workers or firms interested in further adopting remote working. While most G7 countries do not have explicit national policies to drive the relocation decisions of workers, different regional and local governments have established strategies to attract new economic agents to their territory. For most non-metropolitan regions, particularly those remote, digitalisation and attraction policies are a way to tackle depopulation and rapid ageing. As this working method opens up new opportunities for women and people with disabilities to join the labour market (Chapter 2), strategies to attract women and families will help achieve rural revitalisation and build resilient communities.

Some of the strategies to attract workers and firms that adopt remote working include financial or in-kind incentives as well as programmes to ease the relocation process. Financial incentives can be issued to cover the cost of relocation or to sustain the installation during the first few months, while in-kind incentives include providing office space or housing for newcomers. Strategies for easing the relocation can involve

offering networking opportunities with local firms and community or creating fast track tools to accelerate the administrative process related to moving into the area:

- **In-kind incentives**. Some regional governments have aimed to improve remote work conditions by providing in-kind facilities for co-working such as industrial parks or co-working spaces. This strategy reduces the cost of offices for newcomers and also creates space for exchanging ideas and agglomeration economies among firms and workers, recreating the in-person contact that cities offer. For example, the Schleswig-Holstein region in Germany launched a pilot initiative, called CoWorkLand, which rezoned empty buildings in rural areas to create co-working spaces as a new solution for workers.
- **Easing the relocation process**. Some local strategies have aimed to promote the benefits of the non-metropolitan regions and to create networks with local actors before their arrival. For example, Gers, France has launched the *SOHO SOLO* initiative to support independent entrepreneurs who wish to settle in the region by discussing in advance practicalities and needs (access to trains and planes or quality and places to educate children) and offering meetings with other workers already in place and sharing the experience of their families (Soho Solo, 2021[42]).
- **Financial support for relocalisation**. Other governments have established active financial support to attract workers (Tusla, Oklahoma or Vermont in US). For example, Tusla, Oklahoma launched the Tulsa Remote initiative which provides remote workers and digital nomads with a maximum USD 10 000 grant (partly upfront for relocation expenses and in the form of a monthly stipend), a one-year membership at a local co-working space, support in finding housing, and regular community-building opportunities (OECD, 2020[38]).
- **Flexible/temporarily attraction of remote workers**. In Japan, prior to COVID-19 some regions were promoting the concept of the "workation" (work + vacation) as a way to encourage longer-term stays among visitors and travellers in non-metropolitan regions, while contributing to a more sustainable regional revitalisation model. After COVID-19, *workation* gained a greater role as a policy strategy and was actively supported by the national government. Regions like Nishi-awa (Tokushima) or Urabandai region (Fukushima) offered plans to remote workers that include working facilities and organised touristic tours.

At the national level, within G7 countries, Japan is an outstanding case of a country with a national strategy promoting teleworking as a tool to reverse the population decline as it seeks to reduce the excessive concentration of the population in the Tokyo metropolitan area and revitalize non-metropolitan economies.

Japan's teleworking policy: an active strategy to balance the distribution of settlements across the territory.

With the COVID-19 pandemic, Japan's government has seen in remote working and digitalisation a possibility to accelerate the goal of tackling population decline and boost quality of life by repopulating non-metropolitan regions in a family-friendly setting with a better work-life balance. The country has long struggled to boost its fertility rate to the replacement level, partially due to the work culture, a deterioration of employment opportunities for young men and the traditional gender division of labour (Tsuya, 2017[43]) Benefiting from the digitalisation trend, the country updated in December 2020 its core policy, which was implemented in 2014, to address population decline and repopulate non-metropolitan regions. *The Comprehensive Strategy for Overcoming the Population Decline and Vitalizing Local Economy* (Box 4.3). Some of the mechanism to promote remote working in this strategy include:

- Provide local governments a grant to enhance local conditions for teleworking practices, including setting up satellite offices in non-metropolitan regions (the Regional Vitalization Teleworking Grant).

- Information campaigns to promote the advantages of remote working for firms and local governments
- Promoting flexible working styles. This includes guidelines for employers to manage teleworkers and update labour practices.
- Specific support to ease implementation of teleworking in SMEs, including grants and free consulting service by IT experts.

This policy goes beyond the support to teleworking and actively incentivise relocation into non-metropolitan regions. In December 2020, The Comprehensive Strategy *for Overcoming the Population Decline* and *Vitalizing Local Economy* was amended by including measures to face the pandemic, such as promoting digital transformation, supporting increased teleworking and the economy decarbonisation. The amended policy strategy stresses the relevance for creating attractive universities and industries in regions, and increasing the number of people who move or visit places outside the capital city. Furthermore, it recognizes the importance of attracting women to revitalize rural areas and build resilient community tools to trigger this relocalisation out of Tokyo by setting up:

- Grants to municipalities (except the ones within Greater Tokyo) that promote teleworking as a regional revitalisation measure such as covering 75% of municipality expenses on systems for satellite offices of companies and shared office spaces (Government of Japan, 2021[44]),
- A national programme to match businesses with municipalities looking to accept branch offices, and
- An enhanced subsidy programme that financially supports people who live or work in central Tokyo and will move to work in non-metropolitan regions. This grant target people or families who move outside Tokyo to raise their children or take care of elderly family members, while continuing to work for their employers in Tokyo through remote work (The Japanese Cabinet Secretariat and the Cabinet Office, 2020[45]).

Box 4.3. Japan's policy strategy to overcome overconcentration

Japan is one of the world's super-aging societies and faces a rapid population decline. To solve this issue, In 2014, the Japanese government set up a policy to revitalize the local economy and attain a goal of keeping the population above 100 million by 2060 (Today's population is 126 million). Two specific strategies define this policy:

- The "Long-term Vision for Overcoming the Population Decline and Vitalizing Local Economy in Japan". This strategy sets Japan's vision to alleviate the rapid population decline and revitalize the regional economy by 2060. The primary goals are: 1) Ease the overconcentration in Greater Tokyo Area; 2) Support the younger generation's desire to work, marry, and have children; and 3) Solve the regional challenges based on the specific characteristics of each region. This strategy is revised every five years.
- The "Comprehensive Strategy for Overcoming the Population Decline and Vitalizing Local Economy in Japan". This sets Japan's basic policy principles and its implementation for the coming five years. The objectives are: 1) Generate stable employment in all regions, 2) Create a new inflow of people to regions, 3) Facilitate young people's wish to marry, have children, and become parents, and 4) Create regional areas suited to modern times, preserve safe and secure living conditions, and promote co-operation between regions. This strategy is revised every year.

The government and local governments co-operate in solving issues by: 1) creating a "Regional Economy Data Analysis System" to provide local governments with big data to analyse various

indicators, including demographics, business activities, and tourism trends in each region; 2) providing financial support (grant for local governments, local allocation tax, and tax incentives for businesses) to create the "Regional Comprehensive Strategy" in each region and its implementation; 3) supporting local government's capacity by assigning government officials and other experts to assist and provide consultancy services to governments of smaller municipalities.

Source: Cabinet Secretariat of Japan (2014[46]), Regional Empowerment for Japan's Growth.

Cities are also adapting to become better places to live and work

Long-term city policy responses to COVID-19 have highlighted the relevance of transformations towards inclusive, green and smart cities (OECD, 2020[47]). Policies around these three goals would help large cities to remain attractive and retain workers or firms that might be tempted to perform their economic activity remotely elsewhere.

Offering affordable and adequate housing is one of the chief policy targets to make cities more inclusive. Most of the world's metropolitan areas have experienced faster population growth in the commuting zone than in the city, partly as a consequence of a shortage of housing availability in the city itself (OECD/European Commission, 2020[21]). As a consequence of COVID-19, some cities have adapted their housing policies to reduce commuting times, increase available housing and create inclusive neighbourhoods. For example, Vienna (Austria) has announced important housing developments disseminated around the city in attractive residential environments at an affordable price for citizens of different income levels (OECD, 2020[47]).

Offering environmental amenities and improving urban mobility are also the focus of many city governments. Cities are adapting urban design and reclaiming public space to ensure easier access to services and amenities. For example, greater investments in bicycle infrastructure, concepts such as the "15 minute city" (ensuring access to essential functions in a short perimeter) or pedestrianisation of streets are policies that have gained traction, with the aim is to improve mobility and well-being for citizens (OECD, 2021[48]). Other policies are looking at opportunities to replace abandoned buildings or public spaces to create parks and green areas.

Cities are also increasingly embracing digitalisation and smart tools to improve citizens' lives, including greater security, access to services and political participation. Digitalisation of municipal services accompanied with interventions to improve digital skills are core policies for many cities (e.g., Milan, Italy).

This pandemic could also accelerate urban regeneration policies in cities to expand supply of housing and community areas. For example, the Tokyo Metropolitan Government has a project to give grants to private companies to renovate abandoned buildings and transform them into 1) houses for parents who take care of children, 2) houses for single parents, 3) houses for foreign workers, 4) community spaces (e.g. places for communicating between parents, event spaces, places for elderly people to eat together) (Tokyo Metropolitan Government, 2020[49]).

It is worth noting that countries have also developed specific policies to increase the attractiveness of intermediate cities (those with 50 000 to 500 000 people), which have received renewed attention, as they are at the core of territorial recovery but their potential is often underexploited. These cities can provide a good compromise of high quality of life with sufficient critical mass to achieve agglomeration benefits, while playing an important role for the surrounding territories. Yet, they experience difficulties in attractiveness, degraded housing or commercial vitality. France, for example, created a programme called *Action cœur de ville* (action in the heart of the city) to finance projects to revitalise medium-sized cities (e.g. improving housing in the city centre and accessibility and transport).

Policy takeaways

Policies that encourage people and firm's mobility can struggle to produce sustainable changes in territories. Subsidies or grants for people to relocate can create incentives to obtain the short-term economic benefit, instead of increasing long-term attractiveness of places. Without the right conditions at the local level (e.g. access to services), these policies risk to have little benefit in relation to the cost, as firms tend to be more responsive to co-location externalities rather than subsidies (Ascani, Crescenzi and Iammarino, 2016[50]; Devereux, Griffith and Simpson, 2007[51]). If not well-planed, moves might also lead to declines in welfare for existing residents, for example by increasing housing costs and a reduced capacity for public services. Furthermore, given the high share of elderly population living in Tokyo, policies inducing movement can struggle to trigger commuting of older workers, as age correlates negatively with mobility (OECD, 2020[37]).

Competition among regions for workers and firms can create spatial distortions and lead to aggregate inefficiencies within a country (Lingwen Zheng and Warner, 2010[52]). In the extreme case, increasing regional competition to attract economic actors through tax incentives or grants could lead to the "race to the bottom" scenario where local governments decrease their fiscal net revenue and end up with under provision of public goods for local communities (Glaeser, 2001[53]). Local tax incentives or grants for firms or workers to relocate to a region can also create distortions with local firms and workers.

National governments should help co-ordinate regional attraction policies and support broader strategies that improve the enabling factors for a sustainable development in regions. Balancing economic growth across types of regions should, instead, rely on place-based intervention that targets places with less focus on people or firm-based identifiers (Yagan et al., 2014[54]). Investing in quality broadband and access to health and education are some areas that can increase long-term attractiveness in regions.

Enabling factors to make non-metropolitan regions attractive places for people and firms

The boom in remote working and digitalisation of economic activities ushered in by the COVID-19 pandemic revealed the need to increase the structural attractiveness of non-metropolitan regions for people (workers and their families as well as young people and retirees) and businesses. Most non-metropolitan regions of the OECD and G7 face greater population decline and rapid ageing than metropolitan regions (OECD, 2020[37]). Furthermore, their economic performance in terms of GDP per capita, productivity and employment rates is on average below those in metropolitan regions, which has expanded regional inequality in almost all OECD countries since the 2008 financial crisis (OECD, 2020[37]). This section outlines the policies from G7 countries to increase the long-term attractiveness of non-metropolitan regions by improving access to fast broadband, high quality healthcare and education.

Government strategies to improve digitalisation in non-metropolitan regions

Without policy intervention, the effects of digitalisation could further increase the well-being and economic gap between non-metropolitan and metropolitan regions. Non-metropolitan regions tend to have outdated ICT infrastructures and deployments of new technologies (e.g. 5G) are more likely to occur first in urban regions as the high population density makes these investments more profitable. Increasing digital capacity and skills is also a pivotal competitive factor for places to succeed.

Digitalisation can help non-metropolitan regions enhance growth opportunities and quality of life. Digitalisation can increase job and market opportunities (e-commerce) and new technologies (e.g. drones, automotive vehicles) reduce transport times and costs. Digitalisation can also enhance well-being, living standards, access to quality healthcare and education, innovations to accelerate environmental

sustainability, and equal opportunity (OECD, 2020[37]). By embracing digitalisation, rural areas and towns can strengthen their resilience against future shocks and tap into megatrends (demographic change, digitalisation and climate change). G7 governments have acknowledged this issue and implemented some policy responses to strengthen digitalisation in non-metropolitan regions.

Digitalisation contributes to making non-metropolitan areas economically competitive and increasing well-being

The pandemic has exacerbated the existing digital urban-rural divide. The persistent gap in broadband accessibility between non-metropolitan and cities is more evident when comparing accessibility to high speed internet (OECD, 2020[37]). For example in Canada, internet performance testing found that median download speeds for rural Canadians (5.62 Mbps) were approximately 10 times slower than for urban Canadians (51.54 Mbps) (CIRA, 2020[55]). While urban internet speeds have nearly doubled since the beginning of the pandemic, rural speeds have plateaued. Furthermore, people in non-metropolitan regions have lower digital skills.

All G7 countries have implemented a type of policy to enhance digitalisation in non-metropolitan regions. Common policies ensure non-metropolitan regions have high-quality broadband so communities have access to services (telemedicine). They have also established and prepared places for teleworking in non-metropolitan regions (Italy, Japan). Others have actively supported digital transformation in local governments (Italy, Japan). Many governments are still investing in civil infrastructure (e.g., telecommunications infrastructure and roads) to strengthen accessibility and mobility for rural economies (Canada, Italy).

Table 4.5. Selected policies of G7 countries to improve digital connectivity in all regions

Countries	Policies
Canada	• Funding project to provide high-speed internet connectivity (Connecting Canadians programme Universal Broadband Fund and CRTC Broadband Fund, Southwestern Integrated Fibre Technology (SWIFT) project in Ontario) • Ensuring the deployment of broadband infrastructure in rural areas (Southwestern Integrated Fibre Technology (SWIFT) • Support small and medium-sized enterprises to embrace digital technologies (Ontario) (Digital Main Street Platform) and provides relief grants to small businesses for developing a website or e-commerce capabilities (Canada United Small Business Relief Fund)
France	• the National Broadband Plan, which extends fibre optics to subscribers throughout the country by 2025 • France Very High Speed (Très Haut Débit) which aims to give all French people access to good broadband (minimum 8 Mbit / s) and a very high speed internet connection (minimum 30 Mbit / s) by the end of 2022 • The creation of 4 000 digital mediator positions that provide digital mediation and support to users of digital technology, addressing its challenges for a large part of French people living in remote areas
Italy	• The Recovery Fund (or Next Generation EU), which is used for the development of network infrastructures • Installation and activation of satellite offices and modems for internet connection via satellite in rural areas of Piedmont and the purchase of decoders, antennas and all the material that can be used to install a satellite system to surf the internet from home and other places • Relaunch strategy for Inner Areas to strategies for localisation of production and job creation, including supporting digital transformation "(Piano Sud 2030")
Germany	• "German Gigabit programme", which finances broadband in areas where there is no market-driven expansion • State subsidies for fibre optic network expansion • European Agricultural Fund for Rural Development (EAFRD), the European Regional Development Fund (ERDF) and the joint task "Improving the Regional Economic Structure" (GRW) funded broadband expansion projects
Japan	• Improving ICT equipment such as 5G fibre optic communications (Box 4.5) • The government supports technology development, IT investment, and markets for small and medium-

Countries	Policies
	sized enterprises • The government provides digital specialists from private sectors to regional areas to share their skills with local governments
UK	• Gigabit Broadband Voucher Scheme (GBVS) and the Scottish Broadband Voucher Scheme (SBVS), which fund the cost of installing gigabit-capable broadband in rural areas
United States	• The U.S. Department of Agriculture (USDA)'s ReConnect programme, which aimed at increasing broadband development in rural areas through grants, loans and combinations • Rural Digital Opportunity Fund (RDOF), which improves connectivity in rural areas (2019) • American Broadband Initiative (ABI), which increases efficiency in government broadband programmes

Source: Own elaboration based on OECD (2020[41]) Answers from OECD G7 country delegates to the OECD survey on long-term spatial policy responses to COVID-19.

Box 4.4. Canada's policy to strengthen digitalisation

Canada has set strengthening rural broadband policies as one of its key challenges because of its low population density for many years. Several different federal governments have provided subsidies to service providers in an effort to have them improve the connectivity in these areas. For example, the Government of Canada has accelerated the budget project in 2019 and will support the Universal Broadband Fund (UBF) to deploy large-scale broadband projects in rural and remote communities.

The Government of Canada, in collaboration with the Government of Ontario, launched the construction of broadband infrastructure (December 9, 2020) to deliver reliable internet access to nearly all citizens.

The Government of Canada and the Government of Québec launched the Québec haut débit program to provide help to connect 230 000 households and enterprises in rural communities to high-speed Internet.

A wide range of policies have been designed to assist individuals, families, businesses, and industries in rural areas, including helping businesses to adopt new technologies to overcome this pandemic and increase the attractiveness of these areas.

Source: OECD, (2021[56]), Delivering Quality Education and Health Care to All: Preparing Regions for Demographic Change, OECD Rural Studies; OECD (2020[41]), *Answers from OECD G7 country delegates to the OECD survey on long-term spatial policy responses to COVID-19*.

Box 4.5. Japan's policy to strengthen digitalisation

Digital transformation can contribute to resolving various challenges in regions while improving productivity and convenience, which will enhance the quality of industry and people's lives. Also, Japan faces an aging society, especially in rural areas, and the number of labourers and markets is shrinking. It is important to create a strong economy in rural areas and create jobs. The pandemic reveals the delay of digitalisation in the national and local governments. In non-metropolitan regions, it is important to improve digitalisation to increase their attractiveness.

- Improving ICT equipment such as 5G. In 2020, 5G service started in Japan. The government assists ICT companies in developing 5G base stations and fibre optic communications in rural areas. This enables efficient and advanced services and helps people receive the same level of services in each rural region (e.g. online education and online medical treatments) regardless of location.
- Supporting local enterprises by digitalisation. To improve productivity in rural areas, the government supports the development of technology, IT investment, and markets, which strengthens the competitiveness of local industries. The government helps specific industries in regions such as manufacturing, agriculture, and tourism invest in capital (the industries are determined on a region-by-region basis). In addition to this, the government encourages rural regions to create innovation by supporting co-operation between local industries and universities. Further, it will improve the financial environment by encouraging small and medium-sized enterprises to co-operate, which enables these companies to challenge their business innovation.
- Developing human resources. The government provides digital specialists from private sectors to regional areas to share their skills with local governments and have webinars about how to incorporate digital technologies into the local policy for revitalising the local economy, enhancing to create educational projects to developing experts for using digital technology.
- Promoting the use of new technologies. The government promotes the uptake of new technologies (AI, drones, 5G, edge computing, self-driving technologies, etc.) by informing good practices.

Source: Cabinet Secretariat of Japan (2020[57]) the Comprehensive Strategy for Overcoming the Population Decline and Vitalizing Local Economy in Japan.

Policy takeaways

G7 policies to expand broadband coverage are headed in the right direction, but preparing non-metropolitan regions for future digitalisation trends require a more active approach. In turn, this will ensure everyone has access to high quality broadband while helping to improve digital skills. To this end, governments should:

- Accelerate equal access to high quality and affordable communication services in non-metropolitan regions by:
  - Implementing holistic policies that foster competition in communication markets to increase investments and reduce prices for communication services
  - Reducing barriers to broadband deployment with simplified licensing procedures, streamlined access to rights of way and faster permits

  - Creating funding methods to increase connectivity, including demand aggregation models to ensure financial viability of projects, public private partnership (PPP) initiatives and coverage obligations in spectrum auctions.
- Implement educational and training programmes to boost digital skills of all communities and firms outside metropolitan regions. This includes implementing courses on basic use of ICT technologies and computers, and capacity building on software and ICT maintenance.

Improving access to basic services (education and health) will increase non-metropolitan regions' attractiveness

The COVID-19 pandemic revealed some of the difficulties of people in non-metropolitan regions to access health and social care services. Geographical distances and less developed transportation services exacerbate the challenge to provide public services. Non-metropolitan regions also tend to face an increasing number of closures of hospitals and the consolidation of schools, due to increasing depopulation and limited local revenues (OECD, 2020[37]). Furthermore, social isolation, a lack of medical staff, and an aging population are particular challenges for non-metropolitan regions (OECD, 2021[56]).

Digitalisation has proven to be a useful tool to improve delivery of health and education. Health technology and innovation are changing how doctors and hospital staff tackle clinical and health problems. These tools let clinics change the procedures and practical styles for delivering healthcare through technologies such as process innovations, e-Health, and Big Data. Good internet access, access to equipment, and use of online distance learning platforms are crucial factors to determine who benefits and who suffers from online education.

G7 countries have already implemented a number of policies to enhance education access through digitalisation (Table 4.6). Most countries support e-learning at school by providing equipment such as laptops, tablets, and SIM cards (Canada, France, Italy, Germany, Japan and the US). Furthermore, countries like Canada leverage ICT to foster social innovation through the collaboration with communities in primary and secondary schools, while expanding co-operation with private companies to increase e-education (OECD, 2021[56]).

In terms of health, most G7 countries have taken measures to reap the benefits of e-health (Table 4.7). This includes investing in infrastructure capacity to support online treatment (Canada, Japan, US), or ease regulatory barriers to encourage the use of teleconsultation (France, Germany, Japan, UK, US) (OECD, 2021[56]). Moreover, some non-metropolitan regions have implemented mobile health clinics to guarantee adequate primary care (Germany).

Table 4.6. Selected policies of G7 countries to provide online education in all regions

Country	Policies
Canada	• "Broadband Modernisation Programme (2020-21)" for e-learning (Ontario) • The project "Networked Schools", a school for e-learning (Quebec) • Partnership with Apple and Rogers Telecommunications to provide low-income students with iPads and free mobile data plans (Ontario)
France	• Digital plan for education, which enables 500 schools to be connected to the internet and access to tablets or laptops
Italy	• Tax deductions (up to 30%) for the donation of IT equipment to enable students to access distance learning • Contribution for the purchase/rental of equipment dedicated to support secondary schools (Lazio, 2020) • Inner Areas National Strategy, which aims to contribute to improving their inhabitants' well-being and quality of life (education and healthcare) in rural areas (2014). This is funded by the European Regional Development Fund (ERDF), the European Social Fund (ESF), and the European Agricultural Fund for Rural Development (EAFRD). • The "Territorial Strategy" aims to improve access to and quality of essential services such as transportation, health and education.

Country	Policies
Germany	• Budget project, which equips more than 40 000 schools and colleges with faster internet, wireless access points and tablet computers
Japan	• The "Giga School project" provides school children with fast internet connection and equipment in schools
UK	• Government-funded support for setting up a digital education platform for schools
United States	• the CARES Act Elementary and Secondary School Emergency Relief Fund, which financially supports schools and ensures the proper functioning of online education during the pandemic • Coronavirus Aid, Relief and Economic Security (CARES) Act, which support a distance learning and telemedicine programme

Source: Own elaboration based on OECD (2020[41]) Answers from OECD G7 country delegates to the OECD survey on long-term spatial policy responses to COVID-19

Table 4.7. Selected policies of G7 countries to provide e-health in all regions

Country	Policies
Canada	• High-speed broadband internet in schools and the delivery of well-being and mental health services (The 2016 budget -Ontario) • Ontario Telemedicine Network (2017)
Italy	• Inner Areas National Strategy to improve inhabitants' quality of life for example on access to education and healthcare (funded by European funds). • Improving access to and quality of essential services such as transportation, health and education (The "Territorial Strategy")
Germany	• Developing a network to combat disease and early prevention, including cancer and digitalisation of healthcare provision (Global Health Hub Germany)
Japan	• Promoting online healthcare treatments
UK	• Tax benefit for companies in the digital health and care sector
United States	• Medicare investment on telemedicine services • Coronavirus Aid, Relief and Economic Security (CARES) Act, to support a telemedicine programme

Source: Own elaboration based on OECD (2020[41]) Answers from OECD G7 country delegates to the OECD survey on long-term spatial policy responses to COVID-19

Countries have also implemented a number of strategies to improve overall access to services in regions. Improving accessibility to a greater range of amenities can help attract a broader range of population. Cultural and leisure amenities can be prioritised by the younger population, while elderly care facilities can attract retirees and senior citizens. Of chief importance in the post-COVID-19 scenario and in countries facing rapid ageing, like Japan, is to focus on strategies that improve quality of life for the entire family. Childcare facilities for example can help people found families , while lowering the trade-off for women to integrate the labour market.

Some policies across OECD countries, including G7 countries, offer good practices to support child and elderly care in non-metropolitan regions. Extended schools programmes are strategies that encourage schools to offer a wider set of services, including support for parents and childcare (UK). Multi-function centres can also be a good solution to attain efficiency and economies of scale in the provision of different services under a single management structure, including kindergarten or day care services, pre-primary and primary education, and a community facility (Japan, Lithuania) (OECD, 2021[56]). Strategies to attract healthcare workers to low density populated areas are a common policy target in many countries. Regarding elderly care, many countries try to increase and retain the number of caregivers, by giving financial support for their training programmes and using public image campaigns, increasing wages, and providing counselling services to caregivers (France, Japan, the UK, the US) (OECD, 2020[58]).

Policy takeaways

Despite the policy effort of governments to improve the quality of public service delivery in non-metropolitan regions, there is room for improvement on a number of fronts, including addressing skill and physical infrastructure gaps. The OECD (2021[56]) has identified a number of policies that help governments prepare non-metropolitan regions for future changes related to demographics and digitalisation:

- Increasing scale on the provision of education, health and government services in non-metropolitan regions, which includes:
  - regarding education: developing school clusters or structures in which schools formally co-operate under a single leadership to allocate resources more flexibly and efficiently. Furthermore, taking a flexible approach when considering class sizes and regulatory matters will benefit education in scarcely-populated areas
  - regarding health: providing incentives for the establishment of multi-disciplinary health centres and reinforcing primary and integrated care provision in non-metropolitan regions as it is generally the first point of contact for the majority of patients' needs
- Strengthening policies for attracting, retaining and empowering teachers and health workers
- Promoting a greater use of digitalisation to provide services in non-metropolitan regions, which includes:
  - Investing in managing and operating software and improving intellectual property and security protocols
  - Enhancing co-operation between schools/healthcare centres and ICT firms
  - Improving ICT training to teachers, healthcare and local government staff
- To support equal opportunities in the adoption of remote working, policies could also adapt support services so women, youth and low-skilled can work remotely. This could entail enhancing child and elderly care amenities in non-metropolitan regions and supporting co-working spaces to offer quality work conditions and networking opportunities.

References

Alexander W. Bartik, M. (2020), "How Are Small Businesses Adjusting to COVID-19? Early Evidence from a Survey", *National Bureau of Economic Research*, https://www.nber.org/papers/w26989. [71]

Alexander W. Bartik, Z. (2020), *What Jobs are Being Done at Home During the Covid-19 Crisis? Evidence from Firm-Level Surveys*, https://www.nber.org/papers/w27422 (accessed on 14 February 2021). [70]

Althoff, L. et al. (2020), *The City Paradox: Skilled Services and Remote Work*, Munich Society for the Promotion of Economic Research - CESifo. [36]

Ascani, A., R. Crescenzi and S. Iammarino (2016), "Economic Institutions and the Location Strategies of European Multinationals in their Geographic Neighborhood", *Economic Geography*, Vol. 92/4, pp. 401-429, http://dx.doi.org/10.1080/00130095.2016.1179570. [50]

Baldwin, R. (2019), *The Globotics Upheaval*, Oxford University Press. [39]

Barrero, J., N. Bloom and S. Davis (2020), *Why Working From Home Will Stick*, University of Chicago, Becker Friedman Institute for Economics. [5]

BCG (2020), *What 12,000 Employees Have to Say About the Future of Remote Work*, https://www.bcg.com/publications/2020/valuable-productivity-gains-covid-19 (accessed on 15 January 2021). [20]

BCG, B. (2020), *COVID-19 Employee Sentiment Survey*, https://www.bcg.com/publications/2020/valuable-productivity-gains-covid-19 (accessed on 2021 February 25). [6]

Bloom, N. (2015), "Does working from home work? Evidence from a Chinese experiment.", *The Quarterly Journal of Economics*, Vol. 130(1), pp. 165-218, https://academic.oup.com/qje/article/130/1/165/2337855?login=true. [4]

Cabinet Secretariat of Japan (2020), *Comprehensive Strategy for Overcoming the Population Decline and Vitalizing Local Economy in Japan*. [57]

Cabinet Secretariat of Japan (2014), *Regional Empowerment for Japan's Growth*. [46]

CIRA (2020), *New internet performance data shows urban speeds improving while rural speeds plateau*, https://www.cira.ca/newsroom/state-internet/new-internet-performance-data-shows-urban-speeds-improving-while-rural (accessed on 4 March 2021). [55]

City of Vancouver (2020), *Remote and Flexible Work Toolkit for Employers*, https://vancouver.ca/files/cov/remote-work-toolkit.pdf. [59]

Corriere della Sera (2020), *Smart working, adesso si fa sul serio ma a chi conviene tra capi, dipendenti e aziende?*, https://www.corriere.it/sette/attualita/20_giugno_12/smart-working-adesso-si-fa-serio-ma-chi-conviene-capi-dipendenti-aziende-5fd07e08-abe8-11ea-822f-b27e74f859d1.shtml (accessed on 10 February 2021). [16]

Credit Suisse (2020), *COVID-19 boosts demand for central locations*, http://file:///C:/Users/Sanabria_a/Downloads/swiss-office-property-market-2021-en.pdf. [26]

Devereux, M., R. Griffith and H. Simpson (2007), "Firm location decisions, regional grants and agglomeration externalities", *Journal of Public Economics*, Vol. 91/3-4, pp. 413-435, http://dx.doi.org/10.1016/j.jpubeco.2006.12.002. [51]

Emanuel, N. and E. Harrington (2020), *"Working remotely? : Selection, treatment and the market provision remote work"*, https://scholar.harvard.edu/files/eharrington/files/remote_work.pdf. [3]

Etheridge, B., Y. Wang and L. Tang (2020), *Worker productivity during lockdown and working from home: evidence from self-reports*, https://www.iser.essex.ac.uk/research/publications/working-papers/iser/2020-12. [8]

EUROSTAT (2021), *Work from home, from an external site or on the move*, http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=isoc_iw_hem&lang=en (accessed on 2021 February 26). [63]

Glaeser, E. (2001), "The Economics Of Location-Based Tax Incentives", *SSRN Electronic Journal*, http://dx.doi.org/10.2139/ssrn.289834. [53]

Glaeser, E. and J. Gottlieb (2009), "The Wealth of Cities: Agglomeration Economies and Spatial Equilibrium in the United States", *Journal of Economic Literature*, https://www.jstor.org/stable/40651531?seq=1#metadata_info_tab_contents. [22]

Gorlick, A. (2020), *The productivity pitfalls of working from home in the age of COVID-19, Stanford News*, https://news.stanford.edu/2020/03/30/productivity-pitfalls-working-home-age-covid-19/. [2]

Government of Japan (2021), *Foundation of the teleworking grants for rural areas*, https://www.kantei.go.jp/jp/singi/sousei/meeting/telework_suishin_kentoukaigi/r3-01-18.html. [44]

H.Dang, H. and C. Nguyencd (2021), "Gender inequality during the COVID-19 pandemic: Income, expenditure, savings, and job loss", *World Development*, https://www.sciencedirect.com/science/article/pii/S0305750X2030423X. [67]

Harris Interactive (2020), *Coronavirus Updated and Research*, https://harris-interactive.co.uk/covid-19/ (accessed on 2 March 2021). [11]

IAB-Forum (2020), *https://www.iab-forum.de/en/the-impact-of-the-covid-19-pandemic-evidence-from-a-new-establishment-survey/*, http://The impact of the Covid-19 pandemic: evidence from a new establishment survey (accessed on 4 February 2021). [14]

IAO (2020), *The coronavirus home office survey: How well are we working from home?*, https://www.iao.fraunhofer.de/en/press-and-media/latest-news/the-coronavirus-home-office-survey-how-well-are-we-working-from-home.html (accessed on 3 January 2021). [13]

Immobiliare (2020), *AUMENTANO LE RICHIESTE DI CASE IN CAMPAGNA*, https://www.immobiliare.it/news/aumentano-le-richieste-di-case-in-campagna-46397/ (accessed on 8 March 2021). [31]

Indeed (2021), *The Office is Not Dead: Most Remote Job Postings Describe Remote Work as 'Temporary'*, https://www.hiringlab.org/uk/blog/2021/03/10/the-office-is-not-dead/ (accessed on 12 March 2021). [10]

JRC, J. (2020), *Telework in the EU before and after the COVID-19: where we were*, https://ec.europa.eu/jrc/sites/jrcsh/files/jrc120945_policy_brief_-_covid_and_telework_final.pdf (accessed on 2021 February 26). [62]

Lanari, C. (2020), *Investireoggi*, https://www.investireoggi.it/economia/smart-working-no-south-working-come-cambia-il-lavoro-con-le-citta-svuotate/ (accessed on 8 March 2021). [30]

Le ministère de l'Économie, des Finances et de la Relance (2020), *Plan de Relance*, https://www.economie.gouv.fr/plan-de-relance. [60]

Lingwen Zheng and M. Warner (2010), "Business Incentive Use Among U.S. Local Governments: A Story of Accountability and Policy Learning", *Economic Development Quarterly*, Vol. 24/4, pp. 325-336, http://dx.doi.org/10.1177/0891242410376237. [52]

Liu, S. and Y Su (2020), *The impact of the COVID-19 pandemic on the demand for density: Evidence from the US housing market*. [24]

LSE Business Review (2020), *Remote working: here to stay?*, http://eprints.lse.ac.uk/104509/1/businessreview_2020_04_02_remote_working_here_to.pdf (accessed on 12 March 2021). [69]

McKinsey & Company (2020), *What's next for remote work: An analysis of 2,000 tasks, 800 jobs, and nine countries*, https://www.mckinsey.com/featured-insights/future-of-work/whats-next-for-remote-work-an-analysis-of-2000-tasks-800-jobs-and-nine-countries (accessed on 2 March 2021). [15]

Ministére des Affaires Étrangeres (2020), *COVID-19 : situation des travailleurs frontaliers*, https://de.ambafrance.org/COVID-19-situation-des-travailleurs-frontaliers. [40]

Ministero dell'Economia e delle Finanze (2020), *COVID-19*, https://www.mef.gov.it/covid-19/I-provvedimenti-del-Governo-a-sostegno-del-Lavoro/. [61]

Ministry of Land, Infrastructure, Transport and Tourism of Japan (2020), *Presentation on changes during COVID-19*, Prepared from "Report on Internal Migration of the Basic Resident Registration" (MIC). [25]

MLIT (2020), *Questionnaire on remote working conducted to enterprises headquartered in Tokyo (August 2020)*. [33]

MLIT (2020), *Questionnaire on remote working conducted to workers in Tokyo (August 2020)*. [34]

Morikawa, M. (2020), ""Productivity of Working from Home during the COVID-19 Pandemic: Evidence from an Employee Survey"", *Covid Economics*, Vol. 40, pp. 132–147. [9]

Newman, P. (2006), "The environmental impact of cities", *Environment & Urbanization*, http://dx.doi.org/10.1177/0956247806069599. [64]

Newman, P. and J. Kenworthy (2000), "Sustainability and cities: overcoming automobile dependence", *Island press*. [35]

Notaires-Insee (2021), *Indices Notaires-Insee des prix des logements anciens - quatrième trimestre 2020*, https://www.insee.fr/fr/statistiques/5058675#graphique-ipla-g2-fr. [28]

OECD (2021), *Delivering Quality Education and Health Care to All: Preparing Regions for Demographic Change*, OECD Rural Studies, OECD Publishing, Paris, https://dx.doi.org/10.1787/83025c02-en. [56]

OECD (2021), *OECD Regional Outlook 2021*, OECD, http://dx.doi.org/10.1787/17017efe-en. [48]

OECD (2020), *Answers from OECD G7 country delegates to the OECD survey on long-term spatial policy responses to COVID-19*. [41]

OECD (2020), "Exploring policy options on teleworking: Steering local economic and employment development in the time of remote work", *OECD Local Economic and Employment Development (LEED) Papers*, No. 2020/10, OECD Publishing, Paris, https://dx.doi.org/10.1787/5738b561-en. [38]

OECD (2020), *OECD Policy Responses to Coronavirus (COVID-19). Cities policy responses. Updated 23 July 2020*, http://www.oecd.org/coronavirus/policy-responses/cities-policy-responses-fd1053ff/#part-d1e2443. [47]

OECD (2020), *Productivity gains from teleworking in the post COVID-19 era : How can public policies make it happen?*, https://www.oecd.org/coronavirus/policy-responses/productivity-gains-from-teleworking-in-the-post-covid-19-era-a5d52e99/. [1]

OECD (2020), *Productivity gains from teleworking in the post COVID-19 era: How can public policies make it happen?*, https://read.oecd-ilibrary.org/view/?ref=135_135250-u15liwp4jd&title=Productivity-gains-from-teleworking-in-the-post-COVID-19-era (accessed on 2021 March 01). [65]

OECD (2020), *Rural Well-being: Geography of Opportunities*, OECD Rural Studies, OECD Publishing, Paris, https://dx.doi.org/10.1787/d25cef80-en. [37]

OECD (2020), *Who Cares? Attracting and Retaining Care Workers for the Elderly*, OECD Health Policy Studies, OECD Publishing, Paris, https://dx.doi.org/10.1787/92c0ef68-en. [58]

OECD (Forthcoming), *Regional Outlook*. [66]

OECD/European Commission (2020), *Cities in the World: A New Perspective on Urbanisation*, OECD Urban Studies, OECD Publishing, Paris, https://dx.doi.org/10.1787/d0efcbda-en. [21]

Office for National Statistics UK (2020), *Coronavirus and homeworking in the UK: April 2020*, https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/bulletins/coronavirusandhomeworkingintheuk/april2020 (accessed on 13 February 2021). [18]

Ozimek, A. (2020), *The Future of Remote Work*, https://www.upwork.com/press/releases/the-future-of-remote-work (accessed on 14 February 2021). [17]

PWC (2021), *It's time to reimagine where and how work will get done*, https://www.pwc.com/us/en/library/covid-19/us-remote-work-survey.html (accessed on 3 March 2021). [19]

PWC (2021), *PwC's US Remote Work Survey*, https://www.pwc.com/us/en/library/covid-19/us-remote-work-survey.html. [32]

Ramani, A. and N. Bloom (2021), *The doughnut effect of COVID-19 on cities*, https://voxeu.org/article/doughnut-effect-covid-19-cities. [23]

SGV (2020), *Lockdown led to big increase in worker productivity*, https://www.swissinfo.ch/eng/lockdown-led-to-big-jump-in-worker-productivity/45818576 (accessed on 14 February 2021). [72]

Soho Solo (2021), *Le Gers votre nouvel space de travail*, https://www.soho-solo-gers.com/ (accessed on March 2021). [42]

Statistics Canada (2020), *Canadian Survey on Business Conditions: Impact of COVID-19 on businesses in Canada, May 2020*, https://www150.statcan.gc.ca/n1/daily-quotidien/200714/dq200714a-eng.htm (accessed on 4 February 2021). [12]

The Guardian (2021), *Environment*, https://www.theguardian.com/environment/2020/dec/11/rebound-in-carbon-emissions-expected-in-2021-after-fall-caused-by-covid (accessed on 8 March 2021). [68]

The Japanese Cabinet Secretariat and the Cabinet Office (2020), *Grant for relocation*, https://www.kantei.go.jp/jp/singi/sousei/ijyu_shienkin.html. [45]

Tobias, P. and E. Pinto (2020), *The Great American Land Rush of 2020*, https://www.aei.org/research-products/report/the-great-american-land-rush-of-2020/ (accessed on 8 March 2021). [29]

Tokyo Metropolitan Government (2020), *Reiwa 2nd Area Renovation Promotion Support Project*, https://www.metro.tokyo.lg.jp/tosei/hodohappyo/press/2020/08/31/09.html (accessed on March 2021). [49]

Tsuya, N. (2017), *LOW FERTILITY IN JAPAN—NO END IN SIGHT*, Honolulu: East-West Center. [43]

UK HPI (2021), *UK House Price Index for December 2020*, https://www.gov.uk/government/news/uk-house-price-index-for-december-2020. [27]

Yagan, D. et al. (2014), "Moving to opportunity? Migratory insurance over the Great Recession", https://eml.berkeley.edu/~yagan/MigratoryInsurance.pdf (accessed on 27 June 2019). [54]

YouGov, USA TODAY & LinkedIn (2020), *The biggest challenges facing those working from home*, https://eu.usatoday.com/story/money/2020/05/04/coronavirus-pandemic-might-game-changer-working-home/3061862001/ (accessed on 14 February 2021). [7]

Note

[1] These studies analysed productivity on samples of 3 063 and 15 000 employees respectively from one particular working sector, call-centre operators.