R-Map

MAPPING THE EFFECTS OF REMOTE WORKING ARRANGEMENTS IN URBAN AND RURAL AREAS

D1.1

Current status and emerging trends of remote working arrangements in Europe and beyond

SOUTH-EAST EUROPEAN RESEARCH CENTRE (SEERC)

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Project Information

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Abbreviations

AI	Artificial Intelligence
ACAS	Advisory, Conciliation and Arbitration Service
AR	Augmented Reality
BDA	Confederation of German Employers' Associations
BHPS	British Household Panel Survey
BN	Bayesian Networks
CBI	Confederation of British Industry
CEEP	European Centre of Employers and Enterprises
CEO	Chief Executive Officer
CSCW	Computer-Supported Cooperative Work
DAGs	Directed Acyclic Graphs
DESI	Digital Economy and Society Index
DGB	German Trade Union Confederation
DMS	Digital Management System

EFTA	European Free Trade Association
ERC	European Research Council
ESEE	National Confederation of Hellenic Commerce
FTTP	Fibre to the Premises
FWAs	Flexible Working Arrangements
GSEE	Greek General Confederation of Labour
GSEVEE	Hellenic Confederation of Professionals, Craftsmen and Merchants
HCI	Human-Computer Interaction
HR	Human Resources
HRM	Human Resources Management
HRM	Human Resources Management
ICT	Information and Communications Technology
IV	Instrumental Variables
IV	Federation of Austrian Industry
LISER	Luxembourg Institute of Socio-Economic Research
LLM	Large Language Model
MOOC	Massive Open Online Course
MSCA	Marie Skłodowska-Curie Actions
nFADP	New Federal Act on Data Protection (Switzerland)
NGA	Next Generation Access Networks
OECD	Organization for Economic Cooperation and Development
ÖGB	Austrian Trade Union Confederation
OH&S	Occupational Health and Safety

POS	Perceived Organizational Support
RVO	Netherlands Enterprise Agency
RW	Remote Work
RWAs	Remote Working Arrangements
SEV	Hellenic Federation of Enterprises
SHP	Swiss Household Panel
SMEs	Small and Midsize Enterprises
TAM	Technology Acceptance Model
TOE model	Technology-Organization-Environment Model
TUC	Trades Union Congress
VHCN	Very High Capacity Network
VÖWG	Austrian Association for Public and Social Economy
VPN	Virtual Private Network
VR	Virtual Reality
WERS	Workplace Employment Relations Survey
WFA	Work from Anywhere
WFH	Work from Home
WKÖ	Austrian Economic Chamber

Table 1.1 Abbreviations

Executive Summary

COVID-19 accelerated the implementation of remote and hybrid work arrangements on an almost global scale. The growing adoption of remote and hybrid work can be considered a paradigm shift in how work is structured and executed. Work is increasingly transformed as the traditional location bound workspace is replaced or complemented by other work locations (e.g. home, co-working spaces, or other flexible or informal work environments) and the talent pool from which employers can now draw is expanding beyond state borders, breaking down geographical barriers and redefining work flexibility. Technological advancements have enabled these transformations. Access to and implementation of remote or hybrid work, however, is not equally distributed and is determined by a number of factors, shaping the geography of remote work: labour market characteristics, remote work policies, labour law, inter-country agreements, digital and physical infrastructure, digital intensity of markets, socioeconomic development and human capital, to name but a few. All these generate disparities that see remote work clustered in urban centres of developed economies with rural areas and less developed economies lagging behind. The purpose of this report is to illuminate some of the conditions that might enable remote work to alleviate the urban rural divide, in order to generate insights for the design of the R-Map model, which will be a tool designed to assess the individual, social, economic, environmental and spatial impacts of remote working arrangements in Europe.

The objectives of this report are formulated as follows:

- To study remote working arrangements (e.g. definitions, types, differences with flexible/alternative work arrangements, etc.)
- To Study how they are currently implemented in Europe and beyond (e.g. challenges, barriers, opportunities, etc.)
- To explore what their future outlook will be (emerging trends from a policy and business perspective)
- To explore how job profile and sector may enable or hinder the application of remote working arrangements.
- To explore how remote working policies, broadband availability, digital infrastructure, amenities, cost of living and such regional conditions might enable or hinder the application of remote working arrangements.

A mixed-methods approach was used to meet the above objectives encompassing the following components: a systematic and narrative literature review, consultation of grey literature, remote work policy analysis of the R-Map countries, interviews with the tripartite employer-policy makers and workers' representatives and a survey directed at employees engaged in remote or hybrid work. The literature review draws on academic articles published between 2019 and 2024 to capture the state of the art in remote and hybrid work research and rendered the following themes: technology and its impact on remote work; leadership and management evolution in the era of digital work; remote work policies; and, impact of remote work on productivity, society and job satisfaction. The primary themes and insights that emerged from the literature review guided the data consultation process to delineate regional conditions conducive or prohibitive of remote working. Therefore, grey literature such as reports and statistical information from sources like Eurofound, ESPON, Cedefop, etc was used to look at aspects such as digital intensity, human capital, cost of living, etc. National policies on remote work were analysed to explore the extent to which remote work might be institutionalised in specific countries and to understand its legal definitions. The insights from the literature review and the grey literature informed the design of the interviews, which revolved around specific challenges, advantages and potential

trends for remote/hybrid work tailored to the role and expertise of each interviewee (employer, policy maker, workers' representative). To capture the perspective of employees engaged in remote or hybrid work arrangements, a survey was designed, geared towards understanding their awareness of their rights and responsibilities as remote workers, their challenges and priorities.

The core conclusions of the report are formulated as follows:

- In some cases, disparities in digital infrastructure, digital intensity of the labour market, digital and other skills amongst the population are great amongst European countries.
- Rural areas are lagging behind in terms of digital and physical infrastructure, which might render them less attractive locations for remote workers.
- Rural areas are also behind in terms of human capital that has the digital and other skills to compete in the remote work job market.
- While policies in many European countries are to a great extent similar, if not harmonised, with some variations in terms of the authority that employer, state, works councils and other entities exercise in defining specific aspects of remote work, concerns with mental and physical health, safety, security, privacy and surveillance emerge both in the literature and through the interviews conducted for R-Map, calling attention to the fact that policies need to be robust, on the one hand, and their implementation should be monitored, on the other.
- Telework is an important part of the current EU digitalisation policies, but regional conditions reveal gaps in the harmonisation of policies, disparities in infrastructure and technological advancements among EU member states, between urban and rural areas, as well as between EU and its non-EU partners. These issues need to be addressed at both the EU and the national levels, especially in view of the EU goal to create a single digital market and maintain its 'digital sovereignty'.
- A common opinion shared by all stakeholders is that remote work is here to stay and that it will continue to increase. Legal frameworks should be consistent and clear when it comes to the status of remote or digital workers in different sectors of the economy.
- Employers, employees and policy makers urge for policies that are more inclusive (e.g. gender), transparent and consistent, with issues relating to employees' rights (e.g. occupational health and safety, provision of equipment, occupational costs, etc.)
- The advent of remote work can impact companies' culture and thus its corporate brand, managerial styles and internal policies. A more concerted effort to study the impact of hybrid and remote work arrangements might bring about important insights.

1. Introduction

The advent of the COVID-19 pandemic and the consequent rolling lock-downs impacted heavily on the landscape of work by accelerating the widespread adoption of telework, broadly defined as working remotely outside the work/office space, with the use of technology. Telework pre-existed the pandemic, as globalisation, technological advancements and regional market integration conditions, especially in the tertiary sector of the economy (i.e. provision of services, consultancy etc), favoured this type of employment as part of the modernization of the labour market. One such regional example is the European Union, which had produced the EU Framework Agreement on Telework in 2002. Nonetheless, the scale and magnitude of the sudden widespread application of telework during 2020 and 2021 was unprecedented and in many cases it was realised in a quasi-anarchical manner due to the urgency of the pandemic. This revealed, among others, policy gaps, unregulated parameters and regional disparities in infrastructure, while creating the need for rapid and radical changes in the implementation of telework. Four years later, emerging trends in policy and in the economy suggest that remote work is a permanent feature of the labour market.

This report, entitled Deliverable 1.1 (D1.1) under Task 1.1 (T1.1), researches the current status and emerging trends of remote working arrangements in Europe and beyond. The objective of T1.1 is to study remote working arrangements (e.g. definitions, types, differences with flexible/alternative work arrangements, etc.) as well as the manner in which they are currently implemented (e.g. challenges, barriers, opportunities, etc.).Additionally, the task sets out to study the outlook of remote working arrangements in the future in order to identify emerging trends from a policy (new policy priorities, measures, initiatives, etc.) and a business perspective (future business practices regarding remote work, new business models, etc), as well as associated opportunities and threats.

D1.1 covers the following research objectives set for T1.1:

- RO1. Study remote working arrangements (e.g. definitions, types, differences with flexible/alternative work arrangements, etc.)
- RO2. Study how they are currently implemented in Europe and beyond (e.g. challenges, barriers, opportunities, etc.)
- RO3. Explore what their future outlook will be (emerging trends from a policy and business perspective)
- RO4. Explore how job profile and sector may enable or hinder the application of remote working arrangements.
- RO5 Explore how remote working policies, broadband availability, digital infrastructure, amenities, cost of living and such regional conditions might enable or hinder the application of remote working arrangements.

To address the above research objectives T.1.1 adopts a multi-level exploratory study, which includes a literature review exploring the state of the art in academic publishing related to the different types of remote working arrangements that have been deployed in Europe and beyond along with their implementation aspects; a study of regional conditions, including remote working policies, broadband availability, job profiles etc; a thematic analysis of 15 interviews with stakeholders from the private and public sectors, policy and employees' representatives; and a descriptive statistical analysis of a survey conducted among employees.

The results of the analysis reveal the current state of remote work in Europe and beyond, as well as identified emerging trends.

The rationale of the report and its structure are based around the following overarching sections: a methodology review; remote working arrangements, definitions and current implementations; remote work adoption and practices discussing the results from the literature review; regional conditions and policies across Europe, referring to regional conditions and remote work policies; perspectives on remote work policies, challenges and opportunities presenting the results from the thematic analysis of the interviews; the employees' perspectives, policy awareness and priorities, which presents the results from the descriptive statistical analysis based on the online survey with remote workers; and finally, conclusions and initial implications, drawing from the synthesis of all the analysis provided prior.

2. Methodology overview

This report aimed at investigating the dynamic landscape of remote working arrangements, a rapidly evolving aspect of the modern workplace. The project aimed to comprehensively understand these arrangements – their definitions, classifications, and how they differed from flexible work models. It also explored their past and current implementation across Europe and beyond, dissecting the challenges, opportunities, and anticipated future trends associated with this evolving work style. This in-depth exploration provided valuable insights that could inform policy changes and shape future business practices regarding remote work.

The investigation was centred around five key research goals. First, it aimed to establish clear definitions and comprehensively explore the diverse types of remote working arrangements that existed. Second, it analysed how remote work was currently implemented across different regions and sectors, pinpointing the challenges and opportunities it presented. To gain a glimpse into the future, the project delved into the anticipated evolution of remote work, exploring emerging trends from both a policy and business perspective. The impact of job profiles and industry sectors on the successful application of remote work arrangements formed another objective. Finally, it examined how factors like remote work policies, broadband availability, infrastructure, amenities, and cost of living influenced the adoption of remote work in different regions.

To achieve these goals, two key research questions were formulated. The first focused on identifying the distinct advantages and challenges associated with various remote work models implemented by companies across different sectors. By comparing and contrasting the outcomes of different models, the project gained a deeper understanding of their effectiveness. The second question explored how national and regional policies might influence the adoption and anticipated evolution of remote work environments across various sectors and regions. It analysed the impact of existing policies and stakeholder perspectives on the future of remote work regulations and practices. Finally, it offered insights into current regional conditions in Europe

The research approach rested on five key themes derived from the research questions:

- **Types of Remote Working Arrangements and Definitions**: A clear understanding of the various classifications of remote work and their defining characteristics was crucial.
- **Challenges of Implementing Remote Work**: Identifying and analysing the potential roadblocks associated with remote work was essential for successful implementation.
- **Opportunities Presented by Remote Work**: Highlighting the potential benefits and advantages of remote work arrangements was key to encouraging their adoption.
- **The Role of Remote Work Policies**: Examining the impact of government regulations and company policies on remote work practices was vital.
- **The Future Outlook for Remote Work**: Exploring anticipated trends and the evolving landscape of remote work was crucial for informed decision-making.

The following means of data collection were used overall:

1. Literature review

2. Consultation of relevant grey literature

3. Collection and analysis of remote work/telework policies on the EU level and on a national level for specific states.

4. 15 interviews with policy makers, employers and employee representatives

5. A survey targeting employees engaged in remote or hybrid work arrangements.

2.1 Literature Review

To gather a comprehensive body of knowledge, a literature review was conducted using the databases Scopus and Web of Science. At this stage, various combinations of the following search strings were used to collect studies related to the research questions, following the methodology of a systematic literature review:

#1	Remote work	("remote work*" OR "telecommuting" OR "virtual work*" OR "telework" OR "work from home" OR "hybrid work*" OR "flexible work*" OR "smart work*" OR "agile work*" OR "telework*" OR "distance work*" OR "e-work" OR "home-based work" OR "mobile work*" OR "online work*" OR "teleworking" OR "virtual employment" OR "cloud working" OR "digital nomad*" OR "offsite work*" or "work from anywhere" OR "asynchronous work*" OR "working remote*" OR "remote employment" OR "distributed work*")
#2	Implementation and advantages/disadvantages	("models" OR "types" OR "arrangements" OR "implement*" OR "strategies" OR "practice*" OR "advantages" OR "benefits" OR "challenges" OR "barriers" OR "opportunities" OR "threats" OR "pros" OR "cons" OR "limitations")
#3	Location	("EU" OR "European Union" OR "Europe" OR "Austria" OR "Belgium" OR "Bulgaria" OR "Croatia" OR "Cyprus" OR "Czech Republic" OR "Denmark" OR "Estonia" OR "Finland" OR "France" OR "Germany" OR "Greece" OR "Hungary" OR "Ireland" OR "Italy" OR "Latvia" OR "Lithuania" OR "Luxembourg" OR "Malta" OR "Netherlands" OR "Poland" OR "Portugal" OR "Romania" OR "Slovakia" OR "Slovenia" OR "Spain" OR "Sweden" OR "US" OR "United States" OR "UK" OR "United Kingdom" OR "Australia" OR "Turkey")
#4	Sectors	("sector" OR "industr*" OR "public" OR "government*" OR "agenc*")
#5	Policies	("national policies" OR "regional policies" OR "government regulations" OR "legislation" OR "infrastructure" OR "technological infrastructure" OR "digital infrastructure")

#6	Adoption rates and future trends	("adoption rate" OR "implementation" OR "uptake" OR "future trends" OR "evolution" OR "anticipated changes")

These search strings encompassed terminology related to remote work, explored the implementation and associated advantages/disadvantages of different models, and incorporated considerations of location and sector to ensure a geographically and industry-diverse dataset, to the extent that it was available. Search terms focused on policies and future trends were included to capture studies that examined the impact of existing regulations and those that explored the anticipated evolution of remote working practices.

The quality and relevance of the findings were paramount. The primary focus was on academic, peer-reviewed articles published in reputable journals, available in English. To capture the latest developments in the pre-research period (presumably before COVID-19), articles published since 2019 were prioritized. Accessibility was also a crucial factor; only articles that were digitally accessible for thorough analysis were considered. Studies that fell outside these parameters, such as non-peer-reviewed sources, conference proceedings, books, book chapters, and author correspondences, were excluded from the analysis. Systematic and scoping reviews were also excluded. Therefore, strict selection criteria employed. The first search rendered 28,428 academic articles, after which 18,313 were duplicates. 10,115 articles were then screened of which 555 were sought for retrieval. Given the broad and diverse themes that were targeted during the search, articles were then divided into the broader themes examined in Section 4: the role of technology in remote work; leadership and management evolution in the remote working era; remote work policies and legislation and remote work impact on productivity, society and job satisfaction. Therefore, a narrative literature review approach was then taken which was deemed more appropriate given the objectives of this particular report. In line with this approach, the most relevant papers for each theme were selected for the review. Accordingly, 239 articles were excluded due to their lack of direct relevance to the above identified main themes; ten due to dubious quality; 54 due to their focus on locations beyond the scope of this report; ten due to lack of access; six because they were in a language other than English; 54 because of the timeframe they covered, which would mostly be because they were directly preoccupied with Covid-19 conditions and the crisis context of lockdowns; and, 28 because they were systematic literature reviews, conceptual papers or opinion papers with no data.

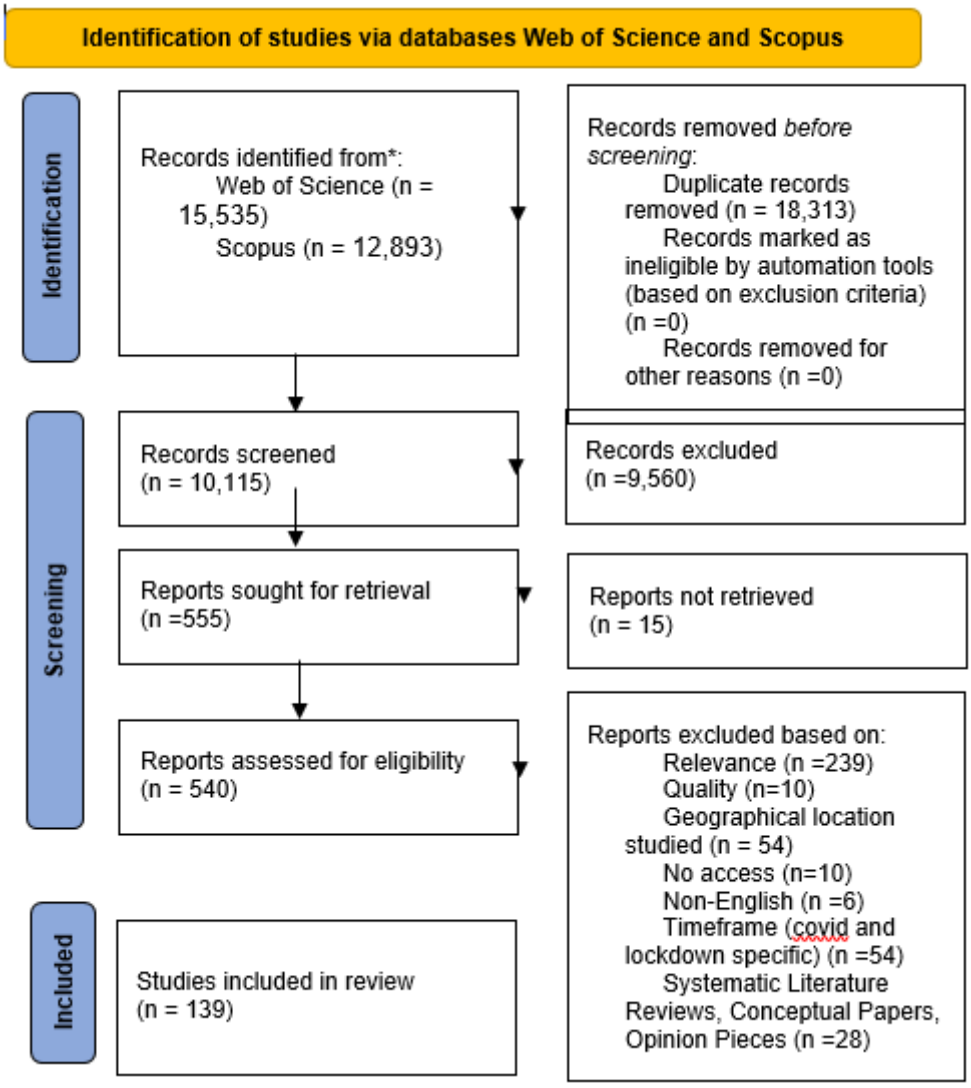


Figure 2.1.1 PRISMA flow diagram for source selection

2.2 Grey Literature

The research endeavours extended beyond the realm of academic publications. The project recognized the value of insights gleaned from reputable institutions like Eurofound, OECD, and the World Economic Forum. These were used to generate insights into the current implementation of remote work and the conditions that defined the urban/rural divide, of paramount importance to R-Map. By extension, these sources offered information on:

- Broadband availability and affordability
- Wider digital infrastructure
- Sectoral development per country and projections
- Digital intensity of SMEs
- Human capital and digital skills

- Cost of living
- Life quality and good life enablers

In addition to the aforementioned research methods, the project incorporated interviews with relevant stakeholders to supplement the insights gleaned from the literature review. These interviews targeted individuals with expertise in remote work arrangements, encompassing representatives from various sectors and regions.

2.3 Policy Analysis

In identifying the potential or barriers to remote work/telework, policy on remote work is instrumental. D1.1 drew on the 2002 EU Framework Agreement on Telework to extract its main components, against which national policies were then assessed as follows:

- Voluntary nature of teleworking
- Employment conditions
- Data protection
- Privacy
- Equipment
- Health and safety
- Organization of work
- Training
- Collective rights

Based on these the following themes were explored on the level of national policies:

- Definitions of remote work (e.g., telework in Greece, home working in Italy).
- Background to new agreements/additions.
- Types of agreements (cross-sectoral or other frameworks) and signatories.
- Public consultations involved.
- Cross-border agreements.
- Cybersecurity regulations related to telework.

Finally, discussion focused on a comparative analysis of national policies to determine differences and similarities in remote work definitions, telework policies as part of dependent employment, how mobile work is treated, variation in policies (e.g. whether remote work is covered by general labour law or whether specific telework regulations exist), levels of state involvement in telework regulation and stakeholder involvement in consultations and agreement types (e.g. cross-sectoral).

2.4 Interview Design

The insights produced by the literature review were complemented by 15 semi-structured interviews to capture the perspectives of key stakeholders. Therefore, interviews with four policy makers and experts (regional/national level) and eleven business decision-makers or employee representatives (HR, CEOs, labour unions, etc.) were held from a variety of countries: Germany, Greece, Türkiye, France, the UK, Austria and Portugal. The objectives of the interviews were to understand current formats and manifestations of remote

working arrangements, as well as their potential socio-economic and spatial effects, and their impact on working and living conditions. More specifically, the aim was to thoroughly explore the array of remote working models adopted across Europe and elsewhere, focusing on their advantages, challenges, and the latest trends from both policy and business viewpoints. To achieve a comprehensive and balanced insight into remote work and its impact on the tripartite relationship among governance, employers, and employees, perspectives on policymaking and employment were gathered.

The interviews were conducted by the Southeast European Research Centre, Aristotle University, and Koç University. Research ethics approval was obtained from CITY College, University of York Europe Campus, and was also subject to ethics approval by Aristotle University and Koç University's internal ethics approval practices. In particular, the interviews conducted in Türkiye were anonymized before the data were transferred. The anonymization was done by the project partner at Koç University. No personal information was retained.

Three themes were covered in the questionnaires, depending on the capacity in which each participant was taking part in the interview. The interview questions were created by the Southeast European Research Centre and were reviewed by partners for quality assurance purposes. The questions and themes can be found in Appendix A.

By engaging with policymakers, business leaders, and potentially even remote workers themselves, the project aimed to capture a multifaceted perspective on the implementation, challenges, and opportunities associated with remote work. This triangulation of data sources – academic literature, grey literature, and stakeholder interviews – ensured a rich and well-rounded understanding of the current and future landscape of remote working arrangements.

2.5 Questionnaire Design

The questionnaire, that can be found in Appendix B, was developed and distributed as a Google Form. It was distributed through the network "Remote Workers Worldwide" (https://www.remoteworkersworldwide.co/) and via the snowball method to acquaintances and companies supporting remote work. The "Remote Workers Worldwide" network is a popular remote work community with more than 130,000 members worldwide. While the use of the snowball method, in an effort to attract as many participants as possible, may introduce some bias, the distribution of the questionnaire by the "Remote Workers Worldwide" network offers diversity of locations and individuals. The development of the questionnaire was based on an extensive review of the existing literature on remote work arrangements and remote workers (see section 7.1.1). The goal was to create questions that provide insights on issues relevant to the target of the study, while keeping the survey short (less than ten minutes) to maximise participation. All partners contributed to the final form of the questionnaire by reviewing and providing feedback. Additionally, a pilot phase involving stakeholders was conducted to ensure validity and reliability.

A total of 132 participants completed the questionnaire. The inclusion criteria required participants to be above 18 years old and currently engaged in remote or hybrid work. All participants signed a consent form included in the Google Form, where they were informed that participation was optional and they could withdraw at any point during the session by opting out of the questionnaire. The consent form is provided in appendix B.

The questionnaire was divided into two parts including multiple choice questions, Likert scale ratings and in many questions, an option for the participants to choose "Other" and write down their answer. The first section collected demographic information, including age, gender identity, industry, length of employment, duration of remote work, and work location, among others, in an effort to contextualise the information gathered by the second part of the questionnaire. The second section sought participants' insights and assessments of governmental and organizational policies regarding remote and hybrid work arrangements. The statistical analysis of the questionnaire included descriptive and inferential statistics, as well as non-parametric tests, conducted using R software (version 4.3.2) to identify trends and correlations. Details on the statistical analyses conducted are provided in each section.

3. Remote Working Arrangements: Definitions and Current Implementations

3.1 Definitions of remote work and related concepts

Quite often the term 'telework' is used interchangeably with other types of flexible out of office work arrangements via the use of ICT, most often, with the term 'remote work'. According to Eurofound, the preferred term used to refer in both research and in European policy and national legislation to 'work arrangements outside employer's premises enabled by ICT', is 'telework' (2022a). Below is a comprehensive table of different concepts.

Concept	Definition	Source
Remote work	Remote work refers to any work carried out outside the employer's premises regardless of the technology used.	ILO (2020)
Telework	Telework is any form of organising and/or performing work using information technology, in the context of an employment contract/relationship, in which work, which could also be performed at the employer's premises, is carried out away from those premises on a regular basis.	EU Framework Agreement on Telework 2002
Part-time telecommuting	This work arrangement mixes remote-working days with office based days and was first put in practice by Jack Nilles in the early 1970s in the USA.	Nilles (1975, 1988)

Telework and ICT-based mobile work (TICTM)	TICTM refers to the use of ICT – such as smartphones, tablets, laptops and desktop computers – for the purpose of working outside the employer's premises. It comprises all forms of telework but tries to distinguish between working from home or a fixed place (telework) and ICT-based mobile work. The latter term is used in Germany to distinguish home-based telework from a more mobile form of work.	Eurofound and ILO (2017)
Smart work/agile work	Smart work refers to a flexible working system that allows workers to work in a convenient and efficient manner free from time and place constraints (any time, anywhere) using ICT on a network. A similar term, 'agile work', is used in Italy. Lee (2016), based on South Korean policy documents for the activation of smart work	Law No. 81/2017 (Italy)
Flexible working arrangements	Flexible working arrangements are alternative work options that allow work to be accomplished outside the traditional temporal and/or spatial boundaries of a standard workday.	Allen et al (2015)
Virtual work	Virtual work is labour, whether paid or unpaid, that is carried out using a combination of digital and telecommunications technologies and/or produces content for digital media.	Webster and Randle (2016), Meil and Kirov (2017)
Mobile virtual work	Virtual work that is physically mobile is referred to as mobile virtual work.	Vartiainen (2006)
Hybrid work	This is a work arrangement in which work can be performed partly from the employer's premises and partly from home or other locations.	The term was recently popularised in the aftermath of the COVID-19 pandemic
Remote work	This term is to be understood as not being bound to the default location of the workplace	

Table 3.1.1 Definitions of Remote Work and Related Arrangements

The horizontal themes running through the different concepts are technology, working time flexibility, regularity and workplace and mobility. Technology refers to the fact that telework is based on ICT enabled work away from the office. Working time flexibility refers to ways of working, such as synchronous or asynchronous. Regularity refers to work arrangements in which work is performed outside the employer's premises without a regular pattern. This can include occasional work, smart work, hybrid work etc. Workplace and mobility refers to the variety of worksites, from the traditional home-based office to co-working spaces, coffee shops etc. (Eurofound, 2022b). Implementation of these different types of working outside the default workplace are detailed in the report, whenever applicable to the analysis. Implications of working tinder a

specific regime, as outlined above, include a higher or lower degree of flexibility, be it time or location related, as well as being covered under national regulatory frameworks and having access to rights related to provision of equipment, occupational health and safety, being reimbursed for work-related costs, data protection etc. As the landscape of out of office types of work becomes more and more enriched with different types of work models, it is important to be acknowledged and regulated.

This report draws on a diverse set of academic sources, reports, and policy documents, and accordingly, terms such as remote work, telework or hybrid work are used interchangeably based on the preferred or more dominant terminology of each source or clusters of sources, as well as contextual appropriateness. For instance, policy documents frequently use the term 'telework,' while academic research often employs terms such as 'remote work' or 'hybrid work.' To ensure inclusivity and clarity, we adopt the term 'remote work' when discussing the various configurations of remote, hybrid, telework or other such configurations collectively. This approach acknowledges the established terminology used within the various bodies of literature we draw on but also allows us to use a more cohesive framework for our analysis. It further allows us to be able to integrate insights from various disciplines and sources.

3.2 Remote Work Penetration: National Economies and Professions

This section draws some broad observations on remote work, relevant to understanding the potential of remote work and related working arrangements in Europe. According to Eurostat, in 2022, around 10.2% of Europeans declared working usually from home. The variation amongst different states is great, with Romania scoring lowest with a total of 1.4% of its population working from home and Ireland scoring the highest with 25.3% of its total population declaring usually working from home. From our use-case countries, the Netherlands stand at 17.8%, Germany at 14.5%, Austria at 12.9%, Switzerland at 10.7%, Italy at 5.2% and Greece at 2.5% (see Statista 2024). While this specific statistic does not include data on the UK and Türkiye, drawing on datasets created by the Office for National Statistics (Public opinions and social trends, Great Britain: working arrangements), Hooson (2024) calculates the percentages of individuals working from home at the UK for Forbes at 10% for fully remote workers and 29% for workers sometimes working from home.

The variation in remote work availability or remote work take up can be attributed to a variety of reasons, many of which were explored in other parts of this report. A key role, however, is played by national conditions, such as remote work policies and legislation, country-specific profiles, labour market characteristics, cybersecurity and other dimensions. The Global Remote Work Index 2023, created by NordLayer, a US-based cybersecurity and business network safety provider, ranks 108 countries in terms of the potential and quality of remote work they provide across four dimensions-i.e. Cybersecurity, economics, infrastructure and social safety criteria, all attributed equal weight. Based on this Index, which appears as a score from 0.0 to 1, it appears that the best five countries for remote work are based in Europe as follows and in hierarchical order: Denmark (score: 0.847), the Netherlands (score: 0.843), Germany (score: 0.842), Spain (score: 0.825) and Sweden (score: 0.824). From the use-case countries, apart from Germany and the Netherlands, the UK ranks at 19th place (score: 0.787), Austria at 23rd place (score: 0.781), Italy at 26th place (score: 0.778), Switzerland at 29th place (score: 0.772), Greece at 32nd place (score: 0.766) and Türkiye at 57th place (score: 0.633). Figure 3.2.1 below provides a map with countries ranked from most to least attractive for remote work based on a colour scheme (see NordLayer 2024a).

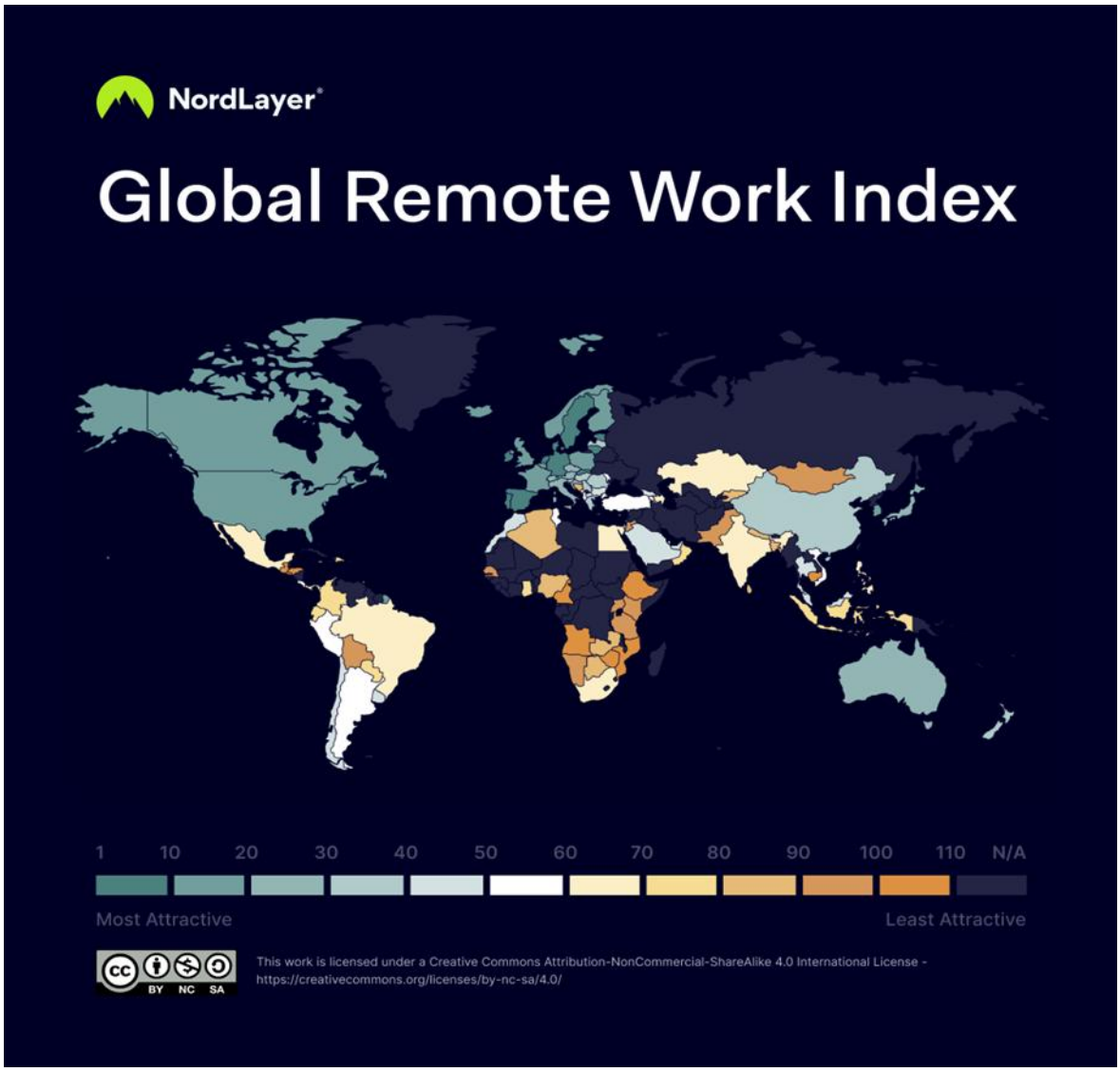


Figure 3.2.1 Global Remote Work Index 2023, Created by NordLayer.

If we compare the Netherlands-the highest ranking country of R-map's use-cases-against two very high-performing countries, such as the USA and Canada, as seen in Figure 3.2.2, we see that it scores higher than those in two out of the four dimensions compared to the US: cyber safety and social safety. When compared to Canada, it also scores higher on the digital and physical infrastructure dimension.

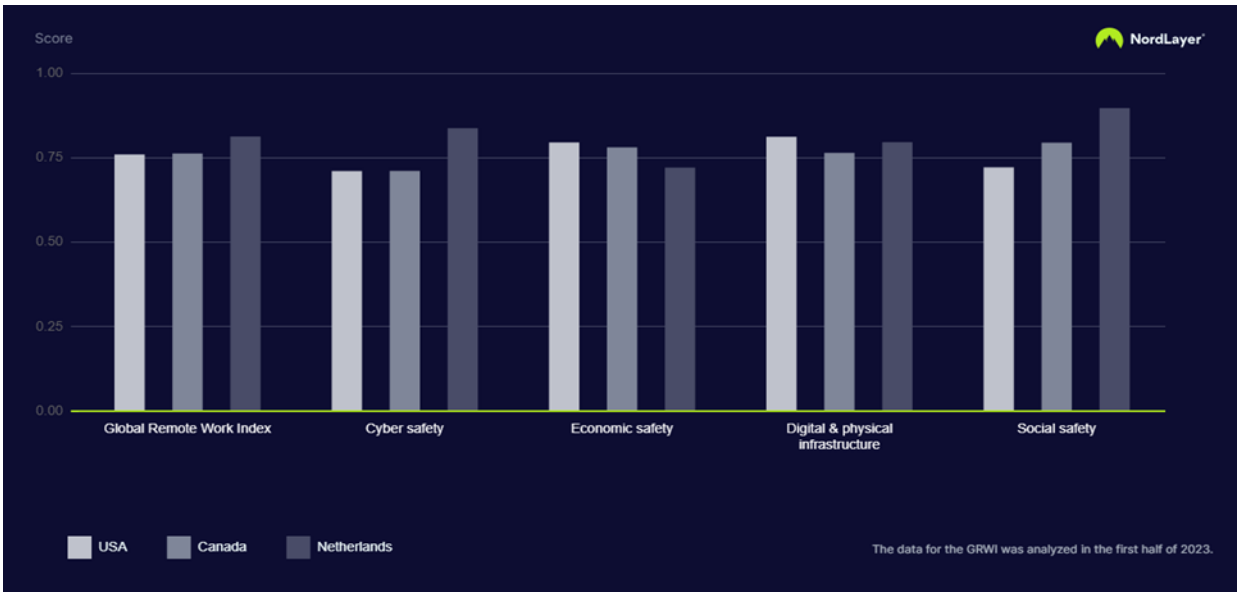


Figure 3.2.2 Comparison of USA, Canada and Germany, Created by NordLayer.

If we compare the highest-ranking country of R-map's use-case countries against the two lowest-ranking ones (see Figure 3.2.3), we see that there are considerable variations across all four dimensions within Europe. For instance, Greece seems to have the highest score for cyber safety, while Türkiye scores lower than both the Netherlands and Greece. In terms of economic safety, however, which could include factors such as cost of living, healthcare access and economic stability, the Netherlands far outperform Greece and Türkiye which both offer more moderate economic safety for remote workers. In terms of digital and physical infrastructure, the Netherlands scores much higher, which indicates faster and more reliable internet connection and physical infrastructure, such as the availability of co-working spaces, compared to the other two countries. Finally, when it comes to the social safety dimension, which could indicate state of personal rights, inclusiveness and overall safety, Türkiye scores the lowest amongst the three and Greece also scores considerably lower than the Netherlands.

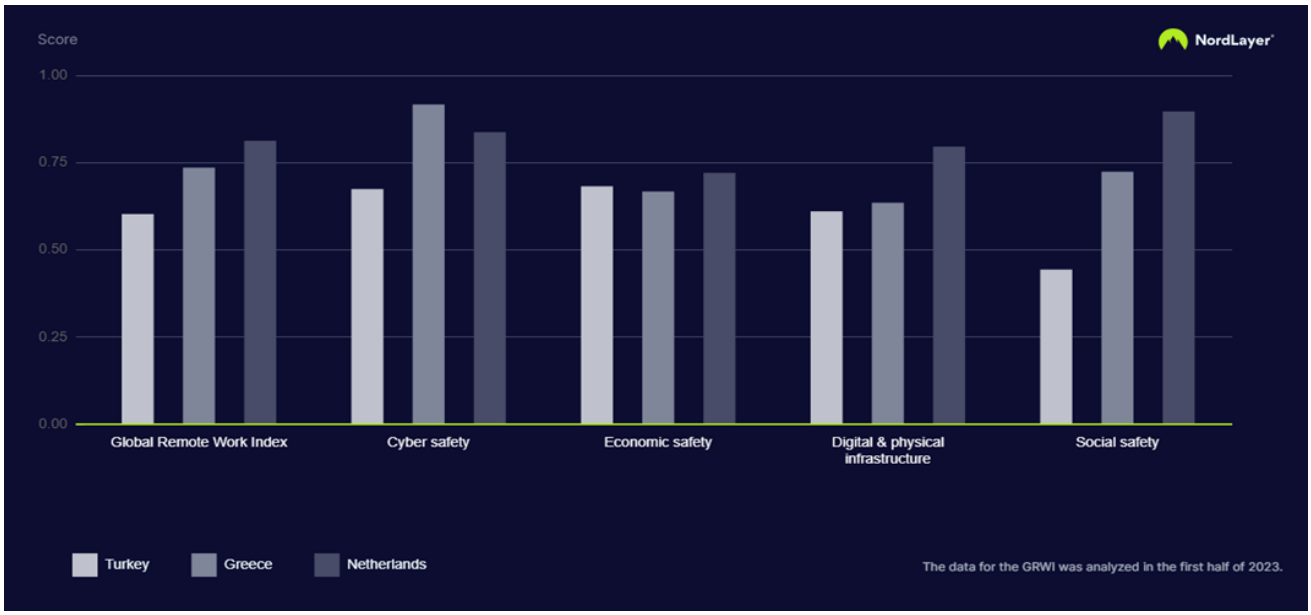


Figure 3.2.3 Cross-Country Comparison across the four dimensions (Türkiye, Greece, Netherlands) Created by NordLayer.

Amongst selected country profiles, we find useful information on the Netherlands, US, UK, Canada and Germany, which all score very high on the index (see NordLayer 2024b, 2024c, 2024d, 2024f). The Netherlands, which ranks 2nd in the general rankings, ranks second in the social security rankings primarily due to the security it provides in terms of personal rights and inclusion. It stands at 8th place amongst all 108 countries on digital and physical infrastructure, surpassing all Benelux countries. Despite being a prime location for remote work, it seems that it does not score amongst the top five on cost of living affordability and healthcare. The US stands at 16th place in the index, excelling in economic safety (2nd), quality of internet (2nd) and ranking quite high in terms of healthcare (4th), digital and physical infrastructure (6th). The UK, ranking 19th in the index, while suffering in terms of accessibility to the labour market due to Brexit, it excels in economic safety (1st). Despite ranking lower in cyber safety (36th), it has a very strong cybersecurity infrastructure (10th) and legal measures (13th) when it comes to legal measures regarding remote work. Canada ranks 14th in the index, performing strongly in economic safety (3rd) but struggles with high cost of living (83rd) and internet affordability (49th).[1] Finally, Germany, which ranks 3rd in the index, is especially strong in cyber safety and in legal and employment matters. The country performs very well in economic safety (6th) and healthcare (7th) and ranks first in most affordable internet services worldwide (1st). It stands relatively low, however, in terms of general safety (33rd).

Drawing on some different indicators, including conducive to WFH occupational distribution amongst 30 countries and macroeconomic factors such as high-quality internet and family obligations, Bana, Benzell and Solares (2020) suggest that already developed economies and especially those that offer a mix of industries and occupations perform better with WFH, when combined with supportive conditions (e.g. high-quality connectivity). Although developed during the COVID-19 outbreak and with the intent to explore which

[1] See also https://madeinca.ca/internet-statistics-canada/ [Accessed 9 June 2024]

professions fare better during social distancing measures, their index explores which professions might be more immune to such measures, especially since many companies at the time were considering a shift to remote work. Their focus was again on the national level, but they considered a mix of occupations and the degree to which close proximity to other people was required as one of the indicators of the index. National economies with a high share of close proximity professions such as barbers, doctors etc. would be more impacted by a need for social distancing and it seems that richer countries do have a higher share of such workers- i.e. workers in high-proximity services. Their analysis showed that white-collar occupations might not be the only ones that have little need for close proximity, but also low-tech ones (e.g. loggers and agricultural workers) or high-tech professions (e.g. statisticians). The rest of the indicators were (i) internet access and quality, (ii) percentage of households with a child and (iii) percentage of employees already working from home.

The results of this study show that an interplay of factors determines how conducive nations are to remote work. For instance, Luxembourg, which has the highest internet penetration of all sampled countries, a good occupational mix as well as previous WFH experience is extremely conducive to remote work. Strong labour unions and social and employment policies might also play an important role, as in the case of Sweden. Developing countries were all low in the rankings. A good policy suggestion that the authors make is for governments to try to avoid regional overspecialization and the overconcentration of specific services in specific locations (which are mostly urban environments). Not all R-map use-case countries were studied by Bana, Benzell and Solares, but of those who were, The Netherlands scored highest in the index, followed by Austria, the UK, Germany, Greece and Italy.

A more nuanced picture emerges if we consider which professions and job profiles are more favourable for remote or hybrid work in the light of country-specific information such as digital intensity of SMEs, industry distribution and human capital. In a working paper entitled *Remote Work Across Jobs, Companies and Space* for the National Bureau of Economic Research, which was based on a very robust set of data, namely 250 million job postings across five Anglophone countries- i.e. USA, Australia, Canada, New Zealand and the U.K- Hansen et al. (2023) found that in the periods between 2019 and 2023 jobs offering hybrid or fully remote options increased in all sectors, but experienced a dramatic increase in certain sectors such as Computer and Mathematical, Business and Financial Operations, Legal, and Management, amongst others. Below is a Figure with the percentages of postings offering remote or hybrid work options in 2022 relevant to the countries mentioned above. An astounding 35%of Computer and Mathematical jobs offered remote or hybrid work, followed by Business and Financial Operations (27%), the Legal sector (24%) and Management (17%) (see Figure 5.4)

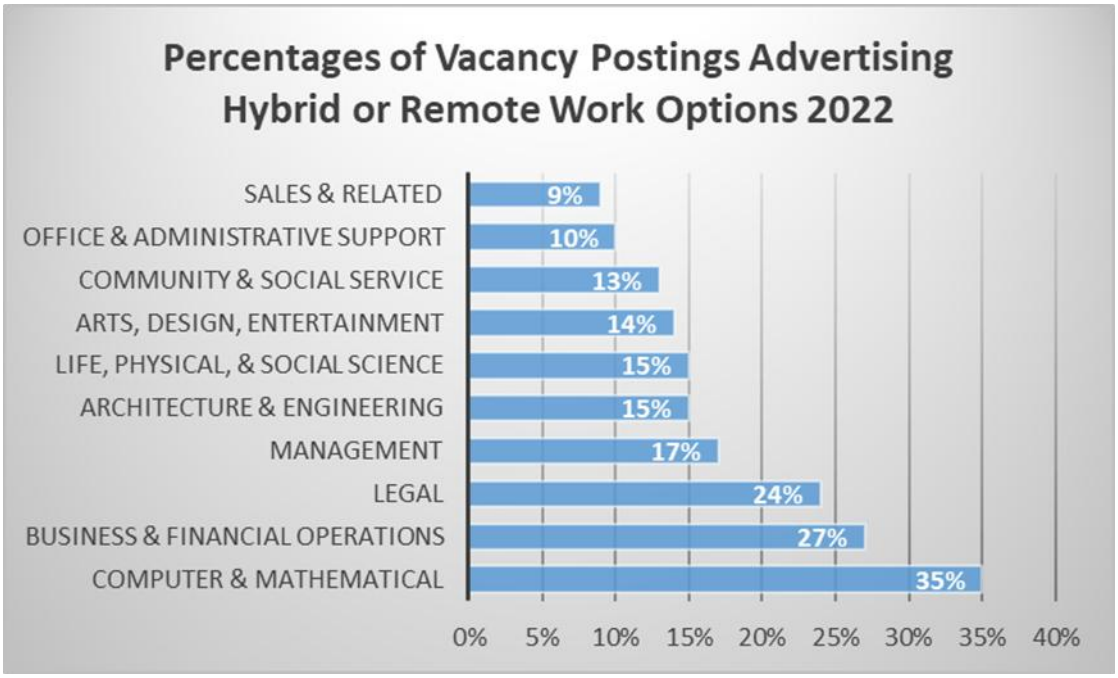
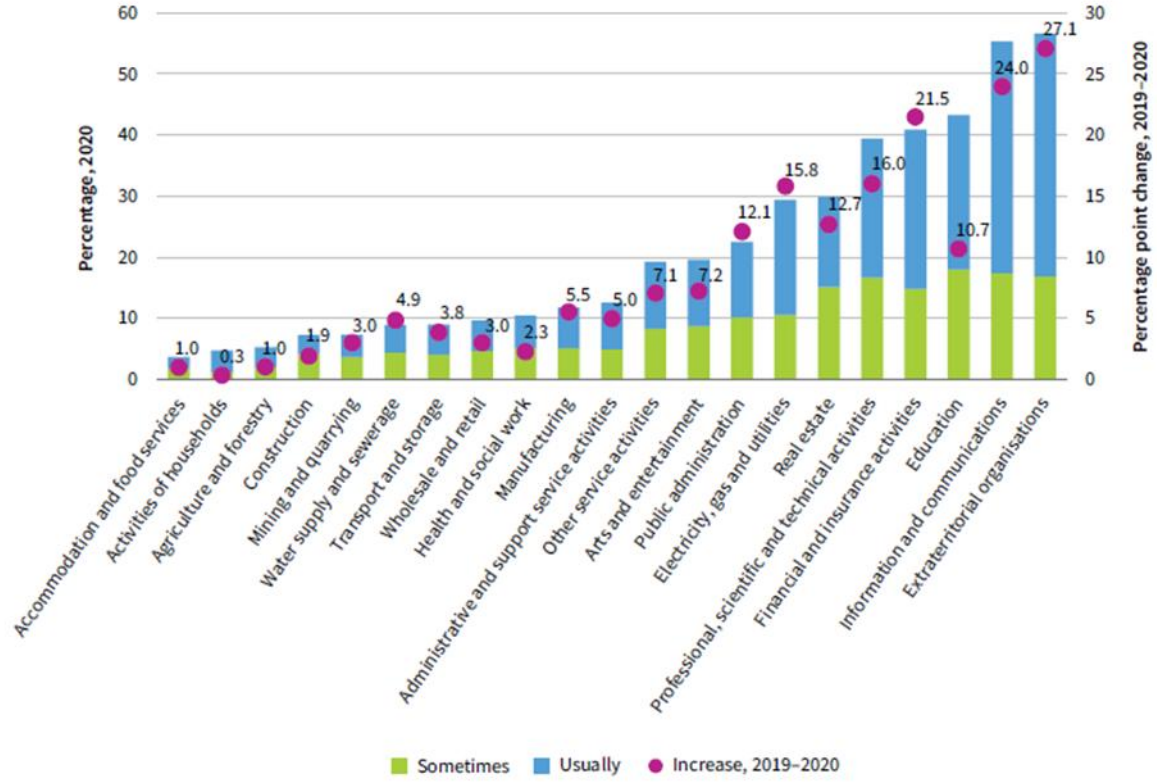


Figure 3.2.4 Job postings across the five Anglophone countries allowing one or more remote workdays per week. Data drawn from Appendix, Figure 4, Hansen et al. (2023)

Clearly the top teleworkable job roles, as specified above, require a number of digital skills, from programming, knowledge of specific software, such as finance software, online design tools, data analysis skills, project management software, to e-leadership skills, amongst others (see Wickersham, 2024). However, as Hansen et al. (2023) highlight, technology itself might not always be the most important enabler in remote work availability. As highlighted in the report, there is great variation noted across different companies within the same sector (p. 22) and across cities (p. 19). We can hypothesize that these variations in the case of sectorial differences might have to do with company policy, management support (see e.g. Gutworth et al., 2023; Chatterjee et al., 2022), while, when it comes to cities, it could be attributed to the presence of infrastructure. For instance, Hansen et al. (2023) find that cities like London and New York which serve as business hubs advertise more remote work (p. 2).

In Eurofound's report *The rise in telework: Impact on working conditions and regulations* (2022), although drawing on a slightly different sectorial typology, similar results are found (see Figure 5.5), this time drawing on actual percentages of employees working from home, not job postings and exploring the shift in remote work between 2019 and 2020 during the COVID-19 pandemic, when various countries implemented different levels of lockdown and social distancing.



Note: *'Increase, 2019–2020' includes the 'usually' and 'sometimes' categories for the variable 'working from home'.*
Source: *Authors' elaboration, based on EU-LFS data*

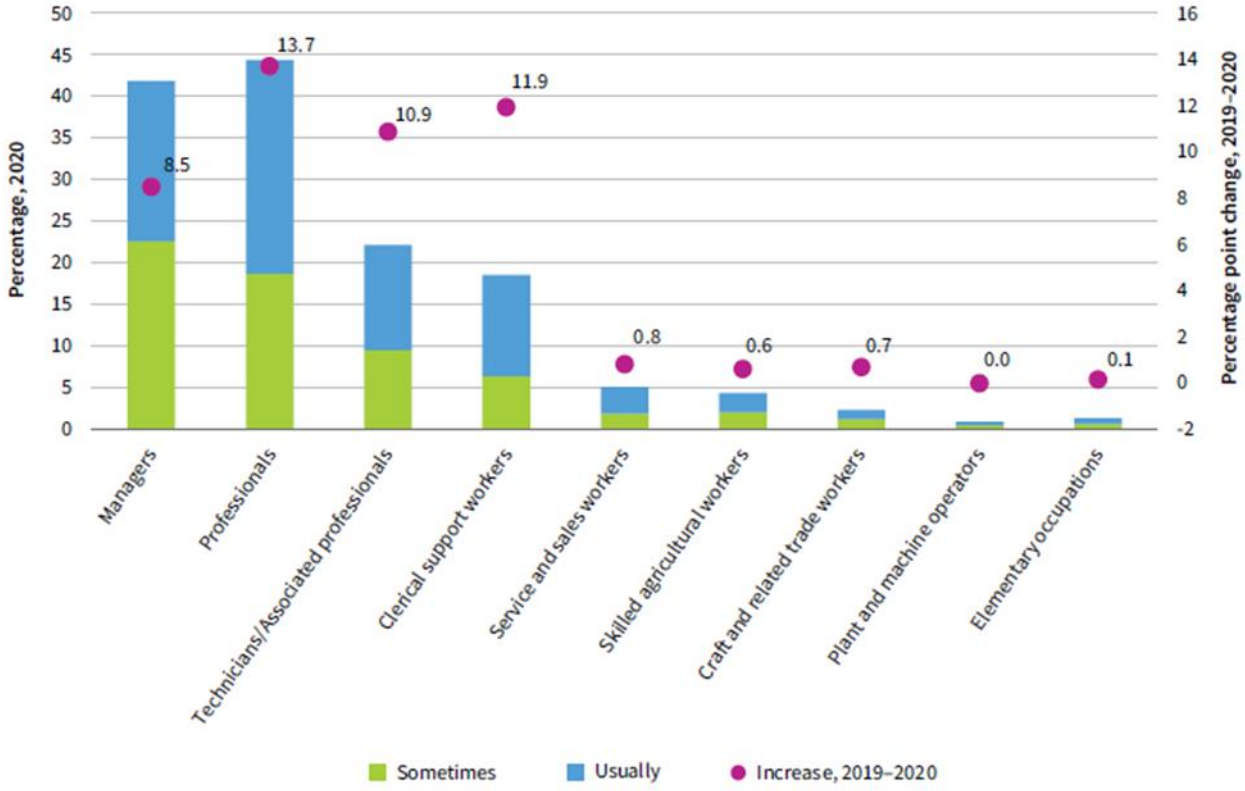
Figure 3.2.5 Employees working from home by sector, 2020 (%) and 2019–2020 (percentage point change), EU27. Reproduced from Eurofound's Report The rise in telework: Impact on working conditions and regulations (2022b, p. 16).

As can be observed, sectors that demand close physical proximity such as accommodation and food services or on-site presence such as agriculture and forestry or both noted a minimal increase in remote work, unlike sectors such as information and communications and financial and insurance activities. Extraterritorial organizations noted the highest percentage of remote work. While indicative of the teleworkability of certain jobs across sectors, the specific percentages are drawn from data collected during the pandemic and are not necessarily always indicative of more permanent shifts to remote or hybrid work. For example, if we examine data on education, comparing job postings (Hansen et al. 2023) to education during COVID-19 and lockdown regimes (Eurofound 2022) reveals a clear trend: during the lockdown, teaching at all educational levels frequently transitioned to remote delivery. This does not indicate that there will be a general shift towards remote teaching across all levels of education, although many universities are offering long-distance degrees. Despite many employees returning to pre-pandemic work from the office or work in close physical proximity, remote or hybrid work is a viable option for many sectors and will define the future of work. In fact, many companies (19.1%) surveyed for the World Economic Forum Future of Jobs 2023 report saw changes to labour laws relating to remote work across borders as a very positive move to increase talent availability (2023).

More broadly, according to the Economic Forum Future of Jobs 2020 report (2020), the share of jobs that can be theoretically be carried out remotely stands at around 38% for jobs in high-income countries, 25% for jobs in upper-middle income countries, 17% in lower-middle income countries and 13% in low-income countries. Those figures decrease greatly if internet access disparities are considered (see Section for a discussion on

internet access) to 33.6%, 17.8%, 10% and 4% respectively. Again, the report notes that there are considerable sectorial differences, with 74% of the employees in the Information Technology and Insurance industries reporting having access to remote work arrangements.

Apart from sectorial differences, stark differences in access to remote or hybrid work arrangements is observed across different occupations, as seen in Figure 5.6. Although data is again drawn from the height of the pandemic, comparing 2010 to 2020 figures, Eurofound (2022) reports a much higher share of individuals working from home that are professionals or managers comparing to e.g. plant and machine operators and elementary occupations. This suggests that both white-collar occupations and individuals in more senior positions are more likely to be able to work remotely. As clearly stated in the report, the numbers of teleworkers in lower-level, blue-collar occupations were extremely low in 2019 but also during the COVID-19 pandemic. This is not the case for white-collar occupations, where employees at lower levels were able to continue working remotely post-pandemic.



Note: *'Increase, 2019–2020' includes the 'usually' and 'sometimes' categories for the variable 'working from home'.*
Source: *Authors' elaboration, based on EU-LFS data*

Figure 3.2.6 Employees working from home by occupation, 2020 (%) and 2019–2020 (percentage point change), EU27. Reproduced from Eurofound's Report The rise in telework: Impact on working conditions and regulations (2022b, p. 15).

Eurofound (2022b) further offers a more insightful perspective when considering the teleworkability of various occupations. The report does so by differentiating between professions beyond simple teleworkableand non-teleworkable categories, further identifying highly teleworkable professions (such as finance professionals, numerical clerks, database and network professionals) and teleworkable professions that might present challenges due to the necessity for social interaction (such as secondary education teachers, professional

services managers, managing directors, etc.). Drawing on Sostero et al (2020), Eurofound (2022) calculates highly teleworkable employment options at 17.2% and teleworkable employment that involve social interaction or tasks at 21.3%. Therefore, the viability of remote work for a particular job might differ greatly from the ideal scenario due to the desirable or necessary level of social interaction. In the case of the latter, teleworking might involve loss of quality to varying degrees.

To wrap up the discussion, it is crucial to note that while certain professions remain non-teleworkable, with the majority of employment (61.5%) characterised as such (Eurofound 2022), it is interesting to note that the share of clerical and administrative workers who can telework stands at 83%, which is higher than that of managers and professionals (70%), despite the fact that they had limited access to telework before the pandemic (Milasi et al. 2020a). This, as suggested by Milasi et al. (2020a), implies that access to telework might have been driven by hierarchical and seniority considerations rather than actual teleworkability, which points at lack of equality in access. Further indicators of inequality emerge when considering that remote work remains largely unrealistic for low and middle-skilled occupations and that the feasibility of telework is highly dependent on education level (ibid.) and income, with three-quarters of the highest-paid employees able to telework compared to only 3% of the lowest-paid.

Having looked at teleworkability and access to remote or hybrid work arrangements across sectors and professions, it becomes evident that the potential for remote work in any given economy is largely influenced by the industry composition and business structure of each country. For instance, countries such as Sweden, Finland and Denmark, which have very high shares in knowledge and ICT-intensive economies, offer more opportunities for telework (Milasi et al. 2020b). Nonetheless, even within the same professional occupations variations are noted. For instance, in 2018 60% of ICT professionals in the Netherlands teleworked compared to 32% in Germany and 11% in Italy (ibid.).

This section offered a broad overview of remote work and potential in Europe and according to sector and professions. In Section 5 a more detailed discussion takes place, which looks to illuminate specific regional conditions in Europe that can either facilitate or hinder the adoption and expansion of remote work in Europe more broadly, with special attention to its potential for distribution in rural or urban areas.

3.3 Current Advances in Remote and Digital Work Research Projects

Before addressing the various facets of remote work (Section 4), this section examines specific prior projects relevant to the topic, identifying opportunities to capitalize on their findings, methods and insightsthat could greatly inform the R-Map project. R-Map is dedicated to leveraging the findings of prior research projects to achieve optimal outcomes. The project will further monitor and incorporate the ongoing results of relevant current projects on remote work and on the urban rural divide. This will ensure that its approach remains current and is informed by the latest advancements in relevant research and interventions. This section identifies a number of relevant projects funded by the EU and pinpoints ways in which its results can be leveraged by R-Map. While some of these projects were implemented outside of the timeframe examined by this report and as early as 2015, their insights are still crucial. The discussion is not exhaustive and many other projects (including ERASMUS+) have been identified.

SANE: Sustainable Accommodation in the New Economy

The SANE project[2] was a multidisciplinary and multicultural R&D project funded under the "User-friendly Information Society" program (1998-2002). Coordinated by DEGW PLC in the United Kingdom, the project ran from January 1, 2001, to December 31, 2002. SANE focused on designing sustainable workplaces that integrate both fixed and mobile, local and remote work areas.

The core outcomes of this project are the Space Environment Model, 'WorkScape' and the Human Environment Model. The former offers a conceptual framework for describing how the distributed workplace project works. The latter analyses communication and collaboration in the workplace, including all types of work environments: physical, hybrid and virtual. Crucially, the model is meant to explore how people accomplish common ground, shared knowledge, information and beliefs through interaction. It further investigates how communication takes place across co-located or non-co-located environments in synchronous and asynchronous spaces.

SANE's project outcomes inform R-Map in as far as they provide a nuanced understanding of how the human element (communication) and the environmental aspect (space) interact in different work settings and how different work environments can be structured. This can help R-Map assess how remote or hybrid working arrangements can be optimally designed to effectively address the urban-rural divide.

TELE: DOES IT PROMOTE ECONOMY AND WELL-BEING? THE IMPACT OF TELEWORKING ON ENVIRONMENT AND LABOUR MARKET OUTCOMES

The TELE[3] project is a project that was funded under the EXCELLENT SCIENCE Marie Skłodowska-Curie Actions scheme and was completed between 2015 and 2017. By drawing on two comprehensive databases, namely the Workplace Employment Relations Survey (WERS) and the British Household Panel Survey (BHPS), the project aimed:

- To analyze the link between job satisfaction, labour productivity, and firm performance by investigate how teleworking influences job satisfaction and its subsequent impact on productivity and overall firm performance.
- To examine the environmental effects of teleworking by assessing the impact of teleworking on environmental factors such as traffic congestion and air pollution.
- To study teleworking's impact on labour market and household dynamics by exploring how teleworking affects labour market dynamics, specifically the division of housework between men and women.

Some of its key findings, relevant to R-map are posited in the following paragraphs.

- Through advanced econometric techniques, including Bayesian Networks (BN), Directed Acyclic Graphs (DAGs) and Instrumental Variables (IV) Giovanis (2019) found that:

[2] See https://cordis.europa.eu/project/id/IST-2000-25257 [Accessed 23 June 2024]
[3] TELE: Does it promote economy and well-being? the impact of teleworking on environment and labour market outcomes (2015-17). Available at: doi: 10.3030/652938.

- Flexible working arrangements can serve as effective polices to improve both employee retention and job satisfaction.
- Access to flexible working arrangements allow for more employee autonomy and control over their work schedule, which has a positive impact on work-life balance.
- These arrangements might further lead to cost saving for companies (e.g. through reduced office space and energy consumption)
- Through drawing on micro-level data from the Swiss Household Panel (SHP) survey from 2002 to 2013, Giovanis (2018) found a reduction in traffic volume and a significant reduction in several key air pollutants (such as nitrogen dioxide, carbon monoxide, etc.) due to teleworking. These findings suggest that teleworking or remote working can be a valuable tool for urban planning and development to reduce traffic and, by extension, improve air quality.

TELE's findings are important for R-map, as R-map also aims to look at the broader implications of teleworking or RWAs on the environment, labour market, working conditions etc. in specific locations in Europe, especially with reference to the urban/rural divide. Furthermore, TELE offers valuable information on remote work as an antecedent of job satisfaction, which has important individual and social impact. In other words, it offers valuable input for R-Map, which is looking to evaluate and assess the environmental, social, economic and other impacts of RWAs or FWAs in urban and rural regions.

WORKANDHOME: Reshaping society and space: home-based self-employment and businesses.

WORKANDHOME[4] was a 5-year ERC-funded research, which ran between 2015-2021. The project links economic geography, urban geography, housing studies and geoinformatics to investigate home-based self-employment and how it reshapes societies and space. WORKANDHOME explores how this transformation of work impacts on the meaning of the home, cities, neighbourhoods and residential choices in Germany, the Netherlands, the United Kingdom, Europe and beyond.

Some of the core findings of this project are articulated as follows:

An uneven distribution of work from home is found across different socio-economic groups, as higher-paid and better-educated individuals are more likely to engage in WFH arrangements than those involved in low-skilled jobs. At the same time, there are significant spatial variations in WFH ability with metropolitan areas offering more flexibility in that direction and higher rates being recorded in Northern Europe compared to the Southern Mediterranean or transitional economies. This is further connected to housing as those living in expensive metropolitan areas find it more difficult to have dedicated home office space, which poses challenges (see Reuschke and Felstead, 2020).

[4]See https://www.google.com/url?q=http://workandhome.ac.uk/&sa=D&source=editors&ust=1719213410402706&usg=AOvVaw37NhslrL8lWW3d9IDRxbrb [Accessed 23 June 2024]

Reuschke and Domecka (2018) identify a significant proportion of private enterprises being home-based. These are often based at home due to lower operating costs and to allow for handling family responsibilities. Home-based businesses are found to offer a great boost to local economies and to generate opportunities for disadvantaged groups, leading to greater social and labour inclusion. At the same time, these are hindered by regulatory barriers (e.g. zoning laws and housing regulations) and weak infrastructure (e.g. no access to high-speed internet) that can serve as barriers.

The findings on housing arrangements, open-plan offices and co-working spaces can inform the R-Map model, as it also draws on socio-economic factors (including access to housing) to explore how work from rural areas can be viable solution to alleviating existing socio-economic inequalities and allowing access to remote work to a wider range of the workforce. At the same time, R-Map can build upon the policy suggestions and regulatory reforms initiated by WORKANDHOME, particularly with reference to zoning and housing. By looking at these suggestions through the lens of the rural/urban divide, R-Map can explore how to further enhance these policies to accommodate the specific needs and challenges faced by both rural and urban regions.

Boss Ex Machina: Mapping and Understanding the Technological Transformation of Managerial Prerogatives in Workplaces Driven by Machines, AI, and Algorithms

Boss Ex Machina[5] was a 3-year Marie Skłodowska-Curie fellowship project. This project focused on the impact of machines, artificial intelligence (AI), and algorithms on managerial practices across various industries. It examined how these technologies are reshaping work and power relationships, leading to significant legal and societal consequences. The project aimed to map new human resources management (HRM) practices driven by AI and algorithms across various differences and to evaluate how these practices (mis)align with existing legal frameworks. Ultimately, it aimed to understand the degree and nature of the impact of these practices on managerial prerogatives and to ensure that AI-driven HRM practices are legally compliant, socially responsible and aligned with the European Commission's vision for a sustainable future of work.

The project (see Aloisi and de Stefano, 2021) found a broad adoption of AI-driven management tools (e.g. GPS tracking, facial recognition, automated job applicant assessments) across all economic sectors, which are reshaping managerial functions, making traditional managers superfluous and employees more compliant. While AI-driven management solutions can enhance inclusiveness and efficiency especially in remote work arrangements, they can undermine human agency, infringe on basic labour rights, perpetuate bias or even exacerbate existing inequalities. Legal intervention to secure the transparency of the use of such HRM practices is called for and Spain is highlighted as a leader in such regulations (i.e. algorithmic decisions affecting workers, profiling, etc.). Drawing on a case of an Italian Glovo driver taken before the Palermo Tribunal (see Aloisi, 2021), it further suggests that a 'Europenization' of social issues is noted across EU countires, especially in the area of employment classification, noting the uniform and effective application of EU policy when it comes to employee status and rights in the era of AI-driven management.

[5] See https://cordis.europa.eu/project/id/893888 [Accessed 24 June 2024]

This project's outcomes inform R-Map in as far as it provides insights into the sustainability of the future of work, highlighting key legal areas (e.g. data protection, anti-discrimination laws, safety measures) in which reform is needed (see Aloisi and de Stefano, 2022) to secure that modern forms of employment (hybrid, remote work, platform work) accompanied by AI-driven management solutions are characterised by equity, fairness and inclusiveness.

TRACE-WORK: Developing Human-Centred Design Principles for Leveraging Digital Traces of Activity in Knowledge Work

TRACE-WORK[6] is a project funded under the Marie Skłodowska-Curie Actions (MSCA) program, aimed at optimizing remote work through the systematic exploration of digital traces in computer-supported cooperative work (CSCW). Coordinated by University College Cork - National University of Ireland, Cork, the project will run from August 26, 2024, to August 25, 2026.

The Expected Outcomes of the project are:

- A comprehensive typology of digital traces that fills a crucial void in CSCW and HCI (human-computer interaction) literature.
- Human-centred design principles that guide the development of workplace technologies, enhancing their effectiveness and user-friendliness.
- High-quality scientific outcomes, including publications and presentations in top-tier venues, as well as practical resources for industry application.

The TRACE-WORK project aims to significantly advance the understanding of digital traces in the context of remote and hybrid work. By developing a typology and human-centred design principles, the project will contribute to more effective and socially aware workplace technologies. The outcomes will benefit knowledge workers, technology designers, and the broader field of CSCW, promoting a more nuanced and practical approach to leveraging digital traces in professional settings.

The project's outcomes are relevant to R-Map, as it looks to optimize the remote and hybrid working experience and performance of teams working in the knowledge sector.

CREATIVR: Redefining Organisational Spaces for the Digital Age

The project, coordinated by Technische Universität Berlin in Germany, commenced on January 1, 2024, and will be completed on December 31, 2026. It is funded under the Marie Skłodowska-Curie Actions (MSCA) scheme. The CREATIVR project[7] seeks to explore the transformation of organisational spaces through the integration of digital immersive technologies, particularly virtual reality (VR). The shift towards remote and flexible work models, driven by digitalisation, pandemic-induced changes, and increasing workforce demands

[6] See https://cordis.europa.eu/project/id/101110480 [Accessed 24 June 2024]
[7] See https://cordis.europa.eu/project/id/101108938 [Accessed 24 June 2024]

for flexibility, has led to a redefinition of organisational spaces. These spaces now extend beyond traditional physical office boundaries, incorporating virtual environments that support diverse work arrangements.

The goals of the project are to:

- Redefine Organisational Space by investigating how digitalisation and recent global developments have accelerated the decoupling of workspaces from fixed physical premises and by understand the implications of this shift for the future working environment, with a focus on knowledge-intensive organisations.
- Explore the Impact of VR Technologies by assess the potential of VR as a complement to or replacement for traditional workspaces and examining how VR technologies can enhance or alter work outcomes, including productivity, collaboration, and employee well-being.
- Evaluate Organisational and Employee Adaptation by studying how organisations and employees adapt to the use of VR in their work environments and identifying challenges and opportunities associated with the integration of VR technologies in organisational settings.

The Expected Outcomes are:

- Comprehensive Framework: To develop a framework for understanding the redefinition of organisational spaces in the digital age, incorporating both physical and virtual elements.
- Impact Analysis: To provide a detailed analysis of the impact of VR technologies on work outcomes, including productivity, collaboration, and job satisfaction.
- Guidelines for Implementation: To create guidelines for organisations on how to effectively integrate VR technologies into their workspaces, addressing potential challenges and maximising benefits.
- Policy Recommendations: To offer policy recommendations to support the adoption of digital immersive technologies in the workplace, promoting innovation and flexibility in work arrangements.

As remote and hybrid work is to a great extent enabled through technology solutions, R-Map is highly interested in CREATIVR's insight into how workspaces will be redefined to include virtual environments, further contributing to the understanding of how remote work can be effectively implemented in both rural and urban settings. Its focus on knowledge-intensive sectors is particularly relevant as these organisations are mainly concentrated in urban centres but their processes have the potential to be decentralised to rural areas.

WinWin4WorkLife: Enabling Healthy, Inclusive, and Sustainable Remote Working Arrangements in Europe

WinWin4WorkLife[8] is a project funded under the "Culture, Creativity and Inclusive Society" program, coordinated by the Luxembourg Institute of Socio-Economic Research (LISER). Running from February 1, 2024, to July 31, 2027, the project aims to integrate employer and employee perspectives into a unified framework to promote sustainable remote working arrangements (RWA) across Europe.

[8] See https://cordis.europa.eu/project/id/101132580 [Accessed 24 June 2024].

The Project Objectives are the following:

- Generate an interdisciplinary understanding of RW by investigating how the private and work spheres interact in remote working environments, considering various disciplines and perspectives.
- Assess living and working conditions by evaluating which conditions ensure a healthy work-life balance for both men and women in urban, rural, and cross-border regions when working remotely.
- Develop forecasting models by creating models to predict the impacts of different RWA scenarios on mobility, land use, air quality, noise, and health.
- Enhance knowledge of cultural and regional contexts by studying the influence of cultural norms, regional contexts, and welfare systems on the adoption of RWA by employees and employers.
- Develop evidence-based spatial policies by formulating comprehensive spatial policies for sustainable RWA implementation, involving co-creation processes with stakeholders and citizens.

The expected outcomes are:

- Interdisciplinary insights: Provide a thorough understanding of the interaction between private life and remote work.
- Balanced living and working conditions: Identify and promote conditions that support a healthy work-life balance for remote workers across diverse settings.
- Predictive models: Offer forecasting models that predict the broader impacts of RWA on various societal and environmental factors.
- Cultural and regional adaptations: Enhance understanding of how different cultural and regional contexts influence remote work adoption and effectiveness.
- Policy development: Develop a comprehensive set of spatial policies that support sustainable RWA practices, informed by stakeholder collaboration and empirical evidence.

WinWin4WorkLife is especially relevant to R-Map as it also evaluates the social and other conditions affecting remote workers based in urban, rural and cross-border regions. It creates prediction models to assess the impacts of remote working arrangements on mobility, land use, air quality, noise and health, generating insights and data that are highly relevant to the model R-Map is seeking to develop, especially in the context of the benefits and challenges faced by rural and urban areas.

REMAKING, "Remote-working multiple impacts in the age of disruptions: socio-economic transformations, territorial rethinking, and policy actions"

The REMAKING project[9] funded by the EU aims to redefine our understanding of remote work (RW) in the context of evolving societal structures and recent global shocks. By examining four distinct case studies across seven countries, REMAKING seeks to provide policymakers with a comprehensive framework to navigate the challenges and opportunities posed by remote work.

[9]See https://remaking-project.eu/#:~:text=REMAKING%2C%20%E2%80%9CRemote%2Dworking%20multiple,in%20the%20socio%2Deconomic%20sphere. [Accessed 26 June 2024].

The project has two main objectives:

Understanding remote work effects by exploring RW's impacts on individuals' living conditions, work-life balance, and identities; analysing RW's influence on business and public organizations, emphasizing platform setup and spatially dispersed production and examining RW's broader socio-economic impacts and assess local policy responses.

Providing a policy-oriented framework by developing a nuanced policy framework reflecting RW's multifaceted realities, supporting policymakers in adopting place-based policies that balance RW's opportunities and risks and facilitating mutual learning among stakeholders to optimize RW's potential within the context of megatrends and global shocks.

Expected impacts:

- Socio-Spatial Transformation: Improve planning, design, and implementation of multi-level policies.
- Territorial Resilience: Promote socio-economic resilience and development in second-tier cities and rural areas.
- Enhanced Understanding: Advance understanding of RW's impacts to inform future policy and societal responses.

The REMAKING project aims to leverage participatory research to shape a policy framework that supports sustainable socio-spatial transformations and addresses the complexities of remote work in a rapidly changing global landscape. It's particularly relevant to R-MAp as it is geared towards building territorial resilience in second-tier cities and rural areas. It is also especially insightful since it draws on case studies stemming from both R-Map use-case countries, such as Italy, Greece and Germany, but also illuminates conditions in other regions in Portugal, Czech Republic, Ukraine and Ireland.

ReWORCS: Understanding the Complexities of Modern Work

ReWORCS[10] is a project funded by the European Research Council (ERC) and coordinated by the Fondation Nationale des Sciences Politiques in France. Running from January 1, 2024, to December 31, 2028, this project seeks to explore the complexities of individual labour market experiences in the digital age.

The ReWORCS Project Objectives are to:

- Analyse individual job trajectories by measuring the diversity of job trajectories considering economic returns, costs, and risks and by understanding how these trajectories are influenced by work activities and workers' perceptions of labour market structures.
- Integrate diverse perspectives by combining formal and constructionist approaches to explain the interplay between contexts, practices, and meanings in work.

The expected outcomes of the project are the following:

[10] See https://cordis.europa.eu/project/id/101117844 [Accessed 26 June 2024].

- To produce a comprehensive understanding by providing a holistic view of how individual job trajectories unfold in diverse economic and social contexts.
- To highlight specific policy implications by offering insights that can inform policies to address job security, flexibility, and equality, particularly for women and marginalized groups.
- To generate academic contributions by bridging gaps between different research approaches and contributing to the understanding of modern labour market dynamics.

The ReWORCS project aims to redefine our understanding of modern work by addressing the nuances of individual labour market experiences in the digital age. By integrating diverse research perspectives and utilizing advanced data analysis techniques, the project seeks to uncover the complexities of job trajectories, economic returns, and workers' interpretations of the labour market. This comprehensive approach will provide valuable insights for policymakers, businesses, and academics, fostering a more inclusive and equitable employment landscape. The outcomes of this project are relevant to R-Map, as they help illuminate the specific challenges and opportunities faced by remote workers in different settings, including rural and urban settings.

Several Erasmus + projects focused on enhancing digital skills and expanding remote work capacity are critically important to the R-Map project. Indicatively, RemoteNET: European Digital Skills Hub for Remote Workers[11] aimed to enhance digital skills essential for remote work and created a number of outputs, such as the Digital Workstation for Remote Work, a platform that supports remote work by providing virtual office tools, storage and scheduling features, as well as a MOOC for remote skills, focusing on digital communication, cybersecurity and digital literacy. Disparities in digital literacy amongst European countries but also between rural and urban areas make the outputs of this project important for R-Map. The Rework: Enhancing Inclusivity in Hybrid and Remote Work Environments[12] is also deemed as highly relevant given its focus on diversity, equity and inclusion in hybrid and remote work arrangements. These aspects are crucial as they can either facilitate access to and implementation of remote and hybrid work or act as barriers if they are not adequately addressed and can further be illuminated through the urban/rural divide prism. Other such projects are REMSKA: Remote Working Skills for All[13] and Work4Future[14] among others.

[11] See https://erasmus-plus.ec.europa.eu/projects/search/details/2021-1-TR01-KA220-ADU-000028318 [Accessed 26 June 2024].
[12] See https://rework-project.eu/ [Accessed 26 June 2024].
[13] See https://www.remskaproject.eu/ [Accessed 26 June 2024].
[14] See https://work4future.eu/ [Accessed 26 June 2024].

4. Remote Work Adoption and/or Practices

4.1 The role of technology in remote work and its impact on work practices

4.1.1 The pandemic's impact on remote work

The COVID-19 pandemic brought about an unprecedented and rapid shift to remote work, compelling organizations to undergo a swift digital transformation. This evolution has been described as a "tipping point" in the digitalization of the economy and workplace (Butollo et al., 2023, p. 1), accelerating the adoption of technologies that enable remote collaboration and communication. The pandemic acted as a catalyst, compelling organizations to embrace digital tools and platforms to maintain business continuity and adapt to the new normal of remote work. When a vast number of office employees had to transition to remote work setups, it became clear that the necessary technological infrastructure to enable seamless remote collaboration was already in place and readily available (Godefroid et al., 2024). This situation highlighted the numerous prospects and advantages that facilitate cooperative efforts in the post-pandemic economic landscape through remote work and virtual collaboration tools. The necessity to adapt to the changing circumstances led to a significant increase in the adoption of various digital technologies, including video conferencing, cloud computing, and collaboration tools. The pandemic not only accelerated the application of existing technologies but also fostered innovation in developing new tools and platforms specifically designed to enhance remote work experiences (Blooma et al., 2023). The Covid-19 pandemic sparked a surge in the digitization of work processes, largely fuelled by the dramatic uptake of remote work and teleworking practices (Friedrich and Vicari, 2023). The widespread adoption of telework during the pandemic significantly contributed to the digitalization boost, as organizations and employees had to rely on digital tools and platforms to collaborate and communicate effectively. The pandemic also highlighted the importance of digital transformation in ensuring business continuity and resilience. Organizations that had already embraced digital technologies were better equipped to adapt to the challenges posed by the pandemic, while those that lagged faced difficulties in maintaining operations and supporting their remote workforce. The pandemic served as a wake-up call for many organizations, prompting them to prioritize digital transformation initiatives to enhance their agility and responsiveness to future disruptions (Li et al., 2022).

4.1.2 Technological enablers of remote work

The rapid shift to remote work during the pandemic underscored the critical role of technology in supporting these arrangements. Technological enablers of remote work include tools and platforms that facilitate communication, collaboration, and productivity in virtual environments. Key among these are video conferencing platforms such as Zoom, Teams, and Webex, which have become indispensable for virtual meetings, enabling face-to-face communication, and fostering a sense of connection among remote team members. The implementation of COVID-related safety measures led to a surge in the use of these platforms, as they provide a viable alternative to in-person meetings (Delany, 2021). However, video conferencing has limitations, particularly in contexts requiring active engagement from all attendees (Barry and Kane, 2023).

For brainstorming sessions or collaborative projects, additional tools or alternative communication methods may be necessary. Other technological enablers include cloud computing, project management tools, instant messaging platforms, and virtual private networks (VPNs). Cloud computing allows remote access to files and applications, while project management tools facilitate task allocation, progress tracking, and collaboration. Instant messaging platforms provide real-time communication for quick discussions, and VPNs ensure secure remote access to organizational networks and resources, including personnel management platforms such as Monday.com (Audretsch et al., 2024). The pandemic increased the demand for these digital tools, reflecting a growing reliance on them for both work and personnel management in remote settings. Investments in digital technologies were driven by the need to sustain business operations and facilitate virtual communication. These investments included additional laptops and hardware, enhanced server capacities, improved Wi-Fi bandwidth and VPN access, and a range of software tools for online collaboration. Cloud computing played a pivotal role in enabling remote work, providing the flexibility and scalability needed to support a remote workforce and ensure business continuity (Butollo et al., 2023).

4.1.3 Impact on workforce management and operations

The widespread adoption of remote work significantly affected workforce management and operations. It has offered increased flexibility and adaptability, allowing organizations to respond more effectively to unforeseen circumstances and enabling employees to have greater control over their work schedules and locations (Tarafdar and Saunders, 2022). In fact, remote work offers significant flexibility, enabling organizations to adapt swiftly to changing environments (Bullini Orlandi et al., 2024). This flexibility has been particularly valuable during the pandemic, as organizations have had to adjust their operations quickly to comply with social distancing measures and other restrictions. Remote work has also enabled employees to achieve a better work-life balance, as they can avoid commuting and have more time for personal activities. However, the shift to remote work also presents challenges in terms of workforce management. The absence of in-person interactions and casual communication channels can pose challenges for managers in evaluating employee productivity, offering constructive feedback, and fostering team unity in remote settings (Mirowska and Bakici, 2023). Effective communication and collaboration are vital in virtual work environments, necessitating that managers of remote teams assume coaching and mentoring roles. They must cultivate and uphold the desired organizational culture while clearly delineating performance expectations for their remote personnel (Delany, 2021). This requires managers to develop new skills and strategies for leading and managing remote teams, such as setting clear deliverable standards, providing regular feedback, and fostering a sense of community and belonging among team members. To this end, trust is crucial especially in remote work arrangements, as managers need to trust their employees to work independently and deliver results, while employees need to trust that their managers will provide the necessary support and guidance. Building and maintaining trust in virtual environments can be challenging, but it is essential for the success of remote work arrangements (Jarrahi et al., 2021). Organizations with a long history of remote working have often embraced it as a key driver for sustained organizational performance, recognizing its potential to enhance productivity, improve employee morale, and reduce operational costs. These organizations have integrated remote work into their organizational values and culture, viewing it as a strategic advantage rather than a temporary solution.

4.1.4 Challenges: cybersecurity and data privacy

The increasing reliance on digital technologies in remote work environments has raised significant concerns regarding cybersecurity and data privacy (Bauters et al., 2021). With employees accessing organisational networks and resources from various locations and devices, the decentralised nature of remote work has expanded the attack surface for cyber threats. This transition has led to a surge in cybersecurity risks, including ransomware attacks, distributed denial-of-service incidents, insider threats exploiting authorised access, deceptive social engineering tactics, risks associated with using personal devices and social media (Taylor and Dobbins, 2021), vulnerabilities in home network setups, and the absence of robust policies governing remote work practices (Jayarao et al., 2024). To address these vulnerabilities, organisations need to prioritise cybersecurity awareness and training for remote workers. Employees should be educated about potential risks, such as phishing scams, malware attacks, and unsecured Wi-Fi networks, and trained to identify and report suspicious activity, use strong passwords, and protect sensitive data. Additionally, organisations should establish and enforce comprehensive cybersecurity policies and protocols for remote workers, covering password management, data protection, secure access, and incident response. These policies should be regularly reviewed and updated to address emerging threats and vulnerabilities. Investing in cybersecurity technologies and solutions, such as firewalls, intrusion detection systems, and antivirus software, is also crucial to protect networks and data from unauthorised access and cyberattacks (Nwankpa and Datta, 2023).

In this regard, small and medium-sized enterprises (SMEs) appear to be particularly vulnerable due to their limited financial resources when compared to larger enterprises. SMEs must also ensure they are adequately prepared to effectively manage information security risks associated with remote work arrangements. Despite their resource constraints, SMEs must establish robust measures to mitigate cybersecurity threats posed by remote work practices and protect their critical data and systems from potential breaches or compromises. Organisational readiness involves having the necessary policies, procedures, and technological infrastructure to safeguard the security and privacy of sensitive data. It also entails educating employees about cybersecurity threats and providing them with the tools and resources to protect themselves and the organisation from cyber vulnerabilities. A balanced approach to cybersecurity is essential, where risk management is not merely confined to strategic planning but is a dedicated focus area. Emphasis should be placed on the three fundamental pillars of cybersecurity: confidentiality, integrity, and availability. By addressing these pillars holistically, organisations can effectively mitigate cybersecurity risks linked to their workforce working remotely (Jayarao et al., 2024).

4.1.5 Employee productivity and the work environment

While some studies have reported productivity gains associated with remote work, others have found productivity losses or mixed results (Bergeaud et al., 2023; Yang et al., 2022). The ability to work from home varies across occupations and industries, with some jobs being more suitable for remote work than others. According to research by Adams-Prassl et al. (2022), there exist significant variations in workers' capability to perform their duties remotely, with disparities observed not only between different occupations and industries but also within the same occupation or industry. This suggests that the impact of remote work on productivity can vary depending on the nature of the job and the specific tasks involved. For example, jobs that require high levels of collaboration and interaction with colleagues may be less productive in remote settings, while jobs that involve independent work and require minimal interaction may be more productive. Individual preferences also play a role, as some employees thrive in remote work environments, while others

struggle with distractions and isolation. The availability of appropriate technology and resources, such as reliable internet connectivity, ergonomic workstations, and collaboration tools, is also crucial for ensuring productivity in remote work settings. In addition to productivity, remote work can also impact employee well-being and the work environment. While it can offer benefits such as improved work-life balance and reduced commuting time, it can also lead to feelings of isolation, technostress, burnout, and difficulty in separating work from personal life (Galanti et al., 2023). The lack of physical presence and reduced social interaction in remote work settings can thus negatively impact employee well-being and mental health. Organizations need to be mindful of these worrying consequences and implement measures to mitigate them, such as providing opportunities for virtual social interaction, promoting work-life balance, offering mental health support resources, as well as apply policies and tools to ensure the employees' right to disconnect (Ghislieri et al., 2022). Thus, the creation of a positive and supportive remote work environment is of paramount importance as employees who have opportunities for informal socialization throughout the workday report experiencing positive emotions and a sense of connection, according to their accounts (Cimperman, 2023). Organizations can foster a positive remote work environment by encouraging virtual social interactions, providing opportunities for team-building activities, and promoting a culture of open communication and support. To this end, priority should be given to providing training to both leadership and employees on employing digital communication technologies effectively for informal and formal communication methods. In fact, the digital transformation brought about by the shift to remote work has also highlighted the importance of digital skills and training. As organizations increasingly rely on digital technologies, employees need to possess the necessary digital skills to navigate and utilize these tools effectively. This has led to a growing demand for digital skills training programs to upskill and reskill employees. Effective communication is crucial in remote work environments, and training programs can help employees develop the necessary skills to communicate clearly and efficiently using digital tools. Emphasis shall be given particularly to manager training in the context of remote work. In fact, the shift towards increased remote work arrangements undoubtedly reveals any deficiencies in managerial competencies, as many managers may find themselves overseeing remote staff for the first time, a situation they have not previously encountered (Delany, 2021). Managers need to be equipped with the skills to lead and manage remote teams effectively, including setting clear expectations, providing feedback and support, and fostering a positive virtual work culture. Additionally, organizations need to address the digital skills gap among employees, particularly those who may not be familiar with digital technologies. Organizations can bridge the digital skills gap by offering training programs, mentorship opportunities, and access to resources that empower employees to enhance their digital proficiencies. Bringing on board young experts well-versed in digitalization can also prove beneficial. Additionally, organizations should explore government grants and subsidies as potential solutions to address this skills deficit (Pira and Fleet, 2023). By investing in digital skills training and development initiatives, companies can ensure their workforce possesses the necessary capabilities to thrive in the digital era and contribute meaningfully to the success of remote work implementations.

4.1.6 Future trends and innovations

Several trends and innovations are shaping the landscape of remote work. The hybrid work model, which combines remote work with occasional office visits, is gaining popularity as organizations recognize the benefits of both work arrangements (Lansmann et al., 2023). Organizations planning for a hybrid future must create environments that foster collaboration and innovation, both for on-site and remote employees. Hybrid work models require organizations to create flexible and adaptable workspaces that cater to the needs of both remote and in-office employees (Tagliaro et al., 2022). This may involve redesigning office spaces to include

more collaborative areas, providing hot-desking options, and investing in technologies that facilitate seamless communication and collaboration between remote and in-office workers. The use of virtual reality (VR) (Abramczuk et al., 2023) and augmented reality (AR) (Narayanamurthy and Tortorella, 2021) technologies is also emerging as a potential trend in remote work. These technologies can create immersive virtual work environments, enhancing collaboration and communication among remote team members. The integration of VR and AR technologies in remote work has the potential to radically change the way employees collaborate and interact in virtual settings, making remote work more engaging and productive. Hence, advancements in information and communications technology (ICT), particularly virtual collaboration tools and artificial intelligence (AI), are poised to revolutionize the future (Kauffeld et al., 2022). Another trend is the increasing focus on employee well-being and work-life balance in remote work arrangements. Organizations are recognizing the importance of supporting employee well-being to maintain productivity and engagement (Błaszczyk et al., 2022; Stamos and Kotsopoulos, 2024) as the rise of remote work offers employees a significant opportunity to enhance their work-life balance (Kauffeld et al., 2022). Organizations are implementing various initiatives to promote work-life balance, such as flexible work schedules, wellness programs, and mental health support resources. They also aim at establishing ways to create a sense of community and belonging among remote workers, such as virtual social events and team-building activities (Soroui, 2021).

Outcome:
The COVID-19 pandemic has accelerated the digital transformation of the workplace, significantly increasing remote work. Technological tools have become essential for communication, collaboration, and productivity in these virtual environments. However, the shift also presents challenges in workforce management, cybersecurity, employee productivity, and the overall work environment. Organizations must adapt to address these challenges and maximize the benefits of remote work. Looking ahead, hybrid work models, VR/AR technologies, and a focus on employee well-being are shaping the future of remote work. As organizations navigate this evolving landscape, embracing digital transformation, prioritizing cybersecurity, and fostering a positive and productive remote work environment are paramount.

4.2 Leadership and management evolution in the remote working era

4.2.1 Leadership and Management in the Digital Era: Current and Future Trends.

In an impressive in scale study, drawing on 250 million online vacancy postings collected by the major labor market analytics firm Lightcast between 2019 and 2023 across USA, UK, Canada, Australia and New Zealand using a state-of-the-art Large Language Model (LLM), Lambert (2023) reveals a four-fold increase in job postings offering remote/hybrid working arrangements in the US and more than a five-fold increase across the UK, Australia, Canada and New Zealand. The increase spans all sectors with the most significant growth noted in computer, scientific and professional occupations. While the study notes a strong bias towards remote/hybrid work in white-collar professions and cities with concentration of government, business, technology and higher education, it clearly indicates that remote and hybrid work will define the post-pandemic work landscape but also suggests that the distribution of remote/hybrid work is highly influenced by the nature of the profession, the need for special remote-work enabling equipment and city-specific characteristics like infrastructure and culture. These trends underscore the imperative to develop innovative

management and leadership models capable of ensuring the sustainability of labour markets and employee satisfaction across remote and hybrid environments.

Through a review of relevant literature, this section explores the state-of-the-art in research on managing and leading remote and/or hybrid work teams and organizing remote or hybrid environments. While certainly not triggered by the COVID-19 pandemic, the rapid changes in the workplace it has prompted have necessitated the development of new managerial and leadership models to effectively address the dynamic nature of the modern workplace.

4.2.2 Current Remote/Hybrid Work Arrangements

First, identifying the spectrum of work arrangements managers are called to orchestrate is important. Table 4.2.1 below presents a series of arrangements as identified by Hopkins and Bardoel (2023), who gathered insights from various industries in Australia, and Smite et al. (2023), who looked into work arrangements of software teams. While Hopkins & Bardoel (2023) focus more on working arrangements for the individual, Smite et al. (2023) produce a typology of working teams.

Work Arrangement	**Explanation/Definition**			**Source**
Full-Time Office Workers	All employees in teams work onsite			Hopkins and Bardoel (2023); Smite et al. (2023)
Full-Time Remote Workers or WFA	Employees work remotely all the time, without regular office attendance, and members can be dispersed geographically			Hopkins and Bardoel (2023); Smite et al. (2023)
Office Frequency and Days Fixed	Employees are required to attend the office on specific, mandated days per week (e.g., Tuesdays, Wednesdays, Thursdays)			Hopkins and Bardoel (2023)
Hybrid Teams	Teams with erratic presence in the office			Smite et al. (2023)
Partially Aligned Teams	Semi-remote teams: Teams with few members working permanently or	Office-remote mix mode: Teams with regularly including either permanently or	Semi-onsite mode: Remote teams with few members working permanently	Smite et al. (2023)

	occasionally remotely	occasionally office-based and remote workers	or occasionally from the office	
Variegated Teams[15]	Office-first mode: Teams with predefined but alternating work locations, varying their office presence while ensuring team alignment.	Office-remote mix mode: teams altering planned office and WFA days	Remote-first mode: Remote teams with few office days planned	Smite et al. (2023)
Core Hours Mode	Teams have a predefined overlap in working hours (core hours) with otherwise flexible schedules.			Smite et al. (2023)
Core Meetings Mode	Teams organize their work around scheduled meetings or events, ensuring attendance while keeping work hours flexible.			Smite et al. (2023)
Digital Nomads	Employees who live a nomadic lifestyle, working remotely from various locations around the world.			Hopkins and Bardoel (2023)

Table 4.2.1 Types of Remote and Hybrid Working Arrangements

Apart from the above arrangements, Hopkins and Bardoel (2023) further call attention to digital nomads, as a separate category, which apart from representing a specific work arrangement (i.e. work from anywhere-WFA), they can also be seen to constitute a distinct culture. From a managerial perspective, Smite et al. (2023) delve more into work schedule, apart from work location, and identify teams who have completely erratic work schedules (flexible schedule mode), teams that are partially aligned and opt for at least a partially overlapping work schedule (core hours mode) or predefined meeting slots (core meeting mode) or, finally, teams with fully aligning work schedule (synchronous schedule mode).This temporal complexity-exacerbated further for geographically distributed teams due to different time zones-further complicates the management

[15] The key difference between partially aligned teams and variegated teams is that in the latter, teams opt for altering but predefined work locations with varying degrees of office presence, but in the case of the former, team members might have mixed and not coordinated work schedules and arrangements.

of work teams through extra layers of coordination challenges and necessitates sophisticated strategies to ensure collaboration and productivity, by both HR (human resources) departments and management.

Hopkins and Bardoel (2023) further examine the consequences of certain arrangements, such as proximity bias, which in flexible hybrid work arrangements (i.e. flexible office attendance days) might lead to managers favouring onsite to remote employees or dematerialization of infrastructure, which minimizes the costs of a company. They move on to highlight key managerial considerations for the successful leveraging of hybrid work arrangements, such as trust, flexibility and clarity of hybrid/remote work policy, which is sensitive to employee needs but also, the operational needs of the company, technical and other support for remote employees, such as accommodating diverse time zones and work schedules, implementing strategies that boost team cohesion and organizational culture, as well as effective communication and collaboration tools. The remainder of this section will look at several aspects of remote work management and leadership in hybrid/remote teams whose successful implementation leads to a more robust labour market and to the maintenance of more competitive companies through a variety of outcomes, such as increased productivity and efficiency; satisfaction and retention of employees; access to a global pool of talent; scalability- i.e. companies that are well-versed in remote/hybrid management can scale up their operations through investing in remote work infrastructure, whose cost is significantly lower than that of onsite work infrastructure; and resilience- e.g. companies that are prepared in remote/hybrid management will tackle crises such as COVID-19 without major disruptions, among others.

4.2.3 Factors Influencing Remote/Hybrid Work Success, Adoption and Implementation

This section looks at aspects that either positively or negatively influence the adoption and implementation of remote/hybrid work from a managerial/leadership perspective.

4.2.3.1 Antecedents

Supportive Leadership and Organizational Support

A supportive leadership that employs a family-friendly approach, as well as diversity management in companies have a positive impact on participation in remote/hybrid work schemes (Bae et al., 2019). Managerial support and support by others in terms of an employee's family needs can be both an enabler to adopting remote/hybrid work arrangements by employees (Gutman et al., 2022). Compassionate leadership, that takes into account the different levels of stress of employees engaging in flexible working arrangements, also plays an important role in the success of FWAs (Hosoi et al., 2021). Apart from support, knowledge sharing and information flow can be either an enabler or a barrier to effective remote/hybrid work arrangements. Knowledge-sharing by managers is shown to decrease the likelihood of burnout on employees who prefer WFH (Gutworth et al., 2023). Apart from managerial support, generally perceived organizational support (POS), defined as the degree to which employees believe the organization values their contributions and well-being decreases the likelihood of employees who prefer WFH experiencing burnout (Gutworth et al., 2023).[16]

[16] Although Gutworth et al. (2023) looked into mandatory WFH in the context of the COVID-19 pandemic, their results have important implications for companies that are planning to implement fully or partially virtual modalities.

In fact, the same study (Gutworth et al., 2023) found that lack of support and expected resources had more of a negative impact on employees who otherwise preferred to work from home. Apart from direct managers, support by top management has a positive impact on the adoption and outcomes of remote work modalities (Chatterjee et al., 2022).

Support by the organization can come in various forms, and employees with family obligations see childcare as both an enabler and a barrier to remote work adoption by employees, depending on the support offered by the organization (Gutman et al., 2023).

Company size and infrastructure

Size of a company seems to play a role in how well remote/hybrid work arrangements are implemented, with smaller companies facing more challenges (Benedic, 2024). Well-designed organizational policies and strong support by top management serve as catalysts for adopting remote work flexibility and for maintaining organizational operations especially in unforeseen circumstances (e.g. COVID-19 pandemic) (Chatterjee et al., 2022). In fact, the presence but also consistent application of hybrid working policy is seen as important in successful remote working (Gutman et al., 2023).

Flexibility and Familiarity with Remote Work

Familiarity with remote work practices leads business professionals to assign more importance to telework's impact on organizational aspects, not always understood by professionals with limited experience in remote work (Caraiani et al. 2023). Also, greater workplace and work time flexibility in a company has a great impact on remote work flexibility (Chatterjee et al. 2022), which in its turn has a positive impact on organizational behaviour (i.e. job satisfaction and employee productivity) (Chatterjee et al. 2022). Finally, both have a positive impact on organizational performance (Chatterjee et al. 2022).

Trust, Team Cohesion, and Empowerment

A high trust culture will define the success or failure of remote/hybrid work arrangements (Beno, 2022; Garro-Abarca et al. 2021). In fact, higher levels of trust in meeting objectives are found to have a positive impact unlike more control, which makes employees feel 'watched' (Garro-Abarca et al. 2021). Managers themselves report on trust as an important aspect of remote work, especially because this new work paradigm leads them to relinquish traditional methods of control (Korkeakunnas et al., 2023). A comparative study, exploring whether employee trust differed with leaders leading virtually compared to leaders leading face-to-face teams found that, while there are no significant differences, in virtual leadership, trust does not happen organically, but e-leaders need to visibly display behaviour and establish and sustain work-place relations (Fischer and Walker, 2022).

Cohesion, team member empowerment and communication lead to a higher trust culture (Garro-Abarca et al. 2021). To secure trust and cohesion, research from the managers' perspective highlights the need to establish 'cultural controls' in virtual teams, such as training and opportunities for informal communication and socialization (Noto et al., 2023), given that opportunities for casual conversation are diminished in the digital context, despite their importance in team cohesion and trust-building (e.g. Beno, 2022; Birkinshaw et al., 2021; Buła et al., 2024; Korkeakunnas et al. 2023). In lieu of more traditional modes of performance and other forms of control, autonomy and flexibility of employees feature as key drivers for successful remote work implementation and working in virtual teams (Noto et al., 2023). Also, team cohesion has a positive impact on team performance (Garro-Abarca et al. 2021). Specifically with reference to hybrid teamwork and its success, a study in agile methodology in managing remote working software engineers, showed that

empowering team members has a positive impact on the effectiveness of team performance (Garro-Abarca et al. 2021).

Communication, Technological and Other Skills

Virtual team communication is an important factor and employees in virtual teams seek the improvement of the frequency and quality of communication as having a direct impact on task completion, suggesting that initial instructions might not be enough (Garro-Abarca et al. 2021). Communication is also strongly associated with task features and uncertainty, showing that better communication mitigates uncertainty (Garro-Abarca et al. 2021). Technological skills can be seen as both an enabler and a barrier in the adoption of remote work (Gutman et al., 2023), as their lack can make it difficult for some to adjust to a hybrid work environment, which is highly dependent on the command of certain technologies. Finally, self-management skills are seen as an enabler to adopting remote work (Gutman et al., 2023).

4.2.3.2 Challenges

Managerial Resistance and Organizational Size

A study in the USA drawing on responses from the 2013 Federal Employee Viewpoint Survey identifies managerial resistance to telework as a factor in preventing eligible workers from choosing to participate in telework schemes (Bae et al. 2019), explaining an observed discrepancy between eligibility and participation in remote work. The reasons for this discrepancy seemed to be managerial resistance, and, by extension, reluctance on behalf of employees.

A case study by Benedic (2024) in the consulting sector identifies the size of the company as an antecedent in the effectiveness of remote work, looking specifically at small companies, defined as those that typically have less than 50 employees. According to Benedic, small companies already suffer from a lack of attractiveness compared to larger companies that have more formalized structures and organization. This lack of formalized structures creates a number of challenges to leadership, especially poignant in smaller teams, such as limitation of informal exchanges amongst employees and natural connections. Benedic (2024) also identifies coordination challenges of hybrid work teams as a great challenge for small companies. Despite the size of the company, lack of face-time can lead to difficulties in coordination of a team (Buła et al., 2024).

Leadership and Communication Challenges

Crucially, the dissolution of leadership by managers is a real risk in a hybrid work context, as distance mediates a leader's charisma and capacity to exert and maintain influence. Another reason for the dissolution of leadership in managing remote teams might be the lack of comprehension on behalf of managers of the needs (material, psychological, social or other) of employees (Benedic, 2024). In smaller businesses, these are exacerbated by lack of formalization and standardization (Benedic, 2024). This inability to identify employees' needs in due time might be linked to general miscommunication that can occur when communicating virtually (Beno, 2022) and could be linked to a threat in team cohesion (Beno, 2022). Another aspect that might threaten team cohesion and pose a challenge for managers is cultural or generational diversity, which might create issues such as miscommunication (Beno, 2022).

Bureaucracy, Policy and Misalignment of Practices

FWAs, including remote or hybrid working, can be challenging to implement or challenged by misalignments amongst HR practices and FWAs cannot be implemented without comprising a policy- e.g. FWAs being

available to existing personnel and not to new hires (Williams, 2019). Williams (2019) also found that in some cases, the presence of both formal and informal access to FWAs created tension, but some supervisors preferred it due to the bureaucratic processes associated with formal FWAs.

Creativity and Performance Monitoring

In remote/hybrid teams, managing employees working across different time zones (Smite et al., 2023; Beno, 2022; Buła et al., 2024) is identified as a challenge for managers, who need to arrange a strict timetable for meetings that works for all employees (Beno 2022). Moreover, remote work and teleconferencing have been associated with lower creativity scores (Birkinshaw et al. 2021). Similarly, from a managerial perspective, managing a remote or hybrid workforce, leads to difficulty monitoring performance, with easier avoidance of accountability and delayed awareness of peer conflict (Buła et al., 2024). Implicit forms of surveillance and monitoring, such as 'being in the office' are challenged and new modes of monitoring emerge that lead to self-disciplining. Still they can sometimes be considered intrusive and constant monitoring (Hartner-Tiefenthaler, et al., 2021). The general lack of face-time and 'missing' of 'water-cooler chatter' has also been identified by numerous studies, although by different names (e.g. Beno, 2022; Birkinshaw et al., 2021; Buła et al., 2024; Korkeakunnas et al. 2023) as both a hindrance to cultivating organizational cohesion and loyalty, but also as a hindrance to creativity.

Sense of Community

Responding meaningfully to employees' or colleagues' emotional or other needs is difficult through merely online communication, as it is found difficult to establish and sustain human connections (Korkeakunnas et al. 2023). This goes hand in hand with building and sustaining business culture and trust, for which socialization is crucial (Noto et al., 2023).

Infrastructure and Workspace Issues

While generally a dematerialization of office infrastructure is anticipated when companies switch to a remote/hybrid work model, a challenge that has been highlighted in implementing hybrid work is the lack of appropriate spaces in the offices and at home (Gutman et al., 2022)

4.2.4 Impact of Remote Work on Company Outcomes and Management

4.2.4.1 Impact of Remote Work on Companies

Implementation of remote/hybrid work makes even smaller companies more attractive, creating opportunities for them to attract more talent and cultivates loyalty (Benedic, 2024). Conversely, the shift to remote or hybrid work within a company significantly affects how operations and processes are conducted and can potentially cause operational challenges until these new work models are clearly established. As a case in point, asynchronous communication and different time zones can often lead to slower planning and decision making (Buła et al., 2024) from an organizational perspective, but from the employee perspective can lead to feelings of boredom and lack of motivation (Buła et al., 2024). On the other hand, other studies highlight that telework has led to quicker decision-making at the expense of joint and well thought-out decisions (e.g. Korkeakunnas et al. 2023). It is evident that a balance must be achieved.

The implementation of remote or hybrid working arrangements (including monitoring, performance evaluation, operational and other processes) in a company depends greatly on its human capital, their seniority level, experience with remote work, etc. A study drawing on business services employees across a variety of countries found that compared to entry level professionals, executive business professionals identify more complex performance criteria for evaluating telework, gave more importance to organizational communication and used more digital technology tools (Caraiani et al. 2024). Those who had more telework experience assigned more importance to the quality of teamwork and organizational communication and used more digital technology tools (Caraiani et al. 2024). Factors identified as positive contribute positively to goal achievement during telework and impact positively organizational performance (e.g. performance criteria, evaluation of work, telework impact on job performance), behaviour (e.g. job satisfaction and professional isolation) as well as culture (communication, networking, training, rewards and recognition) (Caraiani et al. 2024). Simultaneously, negative factors might negatively impact organizational behaviour but positively impact organizational performance, bringing to the forth very complex dynamics of telework (Caraiani et al. 2024).

4.2.4.2 Impact of Remote Work on Managerial Roles and Effectiveness.

The roles, skills and characteristics of managers, as well as the demands placed on them, are evolving in a modern labour market where they are required to adjust to multiple working modalities (remote, hybrid, in the office). The complexity of their responsibilities is further heightened by the need to manage mixed teams (remote and in office members). This evolution comes with both positive changes and challenges. On the one hand, managers find it difficult to disconnect (Birkinshaw et al. 2021) and find that their work-life balance might suffer (Birkinshaw et al. 2021). On the other, they also note increased productivity (Birkinshaw et al. 2021) as they have more time to focus and reflect.

Positive and negative implications of remote/hybrid work modalities are also observed on the level of operations. For instance, meetings are more structured, but the process is more time-consuming and sensitive issues cannot be sufficiently addressed through remote meetings. This is due to the fact that managers do not have access to all managerial levers they can typically rely on, such as informal levers of influence. For instance, it is more difficult to 'read the room' in virtual management due to the limited availability of relevant cues, such as body language (Birkinshaw et al., 2021). This applies to all employees, but managers suffer more as they cannot get informal feedback on how people are feeling and what is happening.

Managers themselves can offer very important insight on their role and performance, potentially leading to the identification of strategies for optimizing remote work management. In a self-evaluation exercise amongst managers in the knowledge sectors, primarily across the USA and the UK, managers consistently evaluated their management task effectiveness as higher in the virtual environment when it came to cognitive (e.g. solving problems, personal time management, etc.) and task-based work (e.g. completing tasks, making decisions) but lower when it came to people-based work (e.g. fostering creativity, getting the best from their team, dealing with difficult situations, etc.) (Birkinshaw et al., 2021). However, managers view their role as more essential in the virtual setting and they identify much of the work they do as non-delegable (Birkinshaw et al., 2021). The literature also suggests differences between low and middle-level managers, with lower-level managers perceiving more benefits from remote work and middle-level managers experiencing more challenges with remote work limitations, with the former reporting much higher on-task concentration and

the latter reported limited team communication as an important limitation of remote work (Kowalski and Slebarska, 2022).

At least within the COVID-19 pandemic, managerial styles experienced a shift towards more controlling and structured management (Birkinshaw et al. 2021) and managers were stuck between a mode of 'contracting and reviewing' output - which places emphasis on results and not people- and an 'inspiring and enabling' mode- which places emphasis on empowering individuals (Birkinshaw et al. 2021). Korkeakunnas et al. (2023) also report higher emphasis on results on the part of managers, rather than the means through which results were achieved, supported also by Noto et al. (2023). As, generally, a strong culture of trust has been found to be the way forward (see e.g. Beno, 2022), despite the fact that the larger autonomy associated with remote/hybrid work creates discomfort among managers, a more 'inspiring and enabling' model of managing employees should be sought in the future (Birkinshaw et al. 2021). Cultivating a culture of trust is deemed highly important (Hartner-Tiefenthaler et al., 2021), to avoid feelings of surveillance and mistrust to develop, which will damage organizational culture. By extension, as more employee autonomy is sought, new approaches to performance management should be implemented (Hartner-Tiefenthaler et al., 2021; Noto et al., 2023).

In terms of monitoring performance, more traditional implicit control practices, such as an employee's physical presence at the office and signs of 'doing work' are replaced through evaluation based on output and completion of structured tasks (Hartner-Tiefenthaler et al., 2021). This output-oriented form of control might lead to less supervisors/managers needed but, at the same time, technology appears as a means of constant surveillance (Hartner-Tiefenthaler et al., 2021). A balance between manager input and feedback, on the one hand, and technological solutions, on the other, seems to be necessary in this shift to remote work.

4.2.5 Best Practices in Remote/Hybrid work management

This section identifies some organizational decisions that have been found or are suggested to have a positive impact on leading and managing remote/hybrid teams, as follows:

Careful design of hybrid work policy (Birkinshaw et al., 2021)—this means that policies should address and consider both positive and negative telework factors (e.g. concentration, coworkers availability, information availability, interruptions, etc.) through investing in digital infrastructure, addressing isolation, offering adaptable solutions and fostering communication (Caraiani et al. 2023);

Clarity and consistency of hybrid work framework (Benedic, 2024; Birkinshaw et al., 2021; Chatterjee et al., 2022; Hosoi et al., 2021)—this might involve committing to specific remote work tools homogeneously (Benedic, 2024), clear instructions about availability and presence of team members and employees (Benedic, 2024), or specific rituals to secure team cohesion (Benedic, 2024) and to replicate informal influence strategies present in face-to-face interactions (Birkinshaw et al., 2021). Clarity and consistency are crucial, as lack of clear and well-structured policies might mitigate the positive effects of remote work on performance (see Chatterjee et al., 2022). Also, if policies are not uniformly adhered to, this might lead to employee concerns regarding equity and transparency (Gutman et al., 2022). Overall, clarity and consistency address issues of equity and justice, as in some cases, feelings of injustice emerge when some employees cannot telework due to the nature of their task (Korkeakunnas et al., 2023). Remote or hybrid working policies are relevant, especially in the post-COVID era, as many employees observed that their productivity was higher at home,

which led to them questioning the presence in the office paradigm. From a managerial perspective, making employee's presence in the office meaningful to give employees motivation is deemed very important (Korkeakunnas et al. 2023).

Organizational infrastructure to support hybrid working is also crucial (Gutman et al., 2022), which could vary from offering technical training and support, to equipment, psychological support and helping employees balance working from home and the office and other infrastructure support (physical resources, child care provision, etc.).

Supporting managers (Benedic, 2024) through strategies that alleviate their workload has also been found as an effective strategy to optimize company operations—e.g. in remote work pairing one less experienced employee with a more experienced one (Benedic, 2024) or 'buddy systems' and team-building for employees (Gutman et al., 2022). General guidance for managers on how to implement hybrid or remote working policies is also deemed important (Gutman et al., 2022). The literature also suggests that, as more technology-based and output-based forms of control take over, it is important that managers' uncertainties about their role in a remote work setting are addressed and managers develop new skills (Hartner-Tiefenthaler et al., 2021).

Shifts in management and control practices (Noto et al., 2023) are part of a successful transition to remote work that is tailored specifically to managing virtual teams. Noto et al. (2023), through interviewing twenty managers in companies in different countries, document a shift from traditional forms of controls and performance monitoring, necessitated by virtual teams. In terms of performance management, there is a shift to a more outcome and results-based performance monitoring (management by objectives), also corroborated by Korkeakunnas et al. (2023). Lack of physical proximity in terms of maintaining efficiency, collaboration, culture and sense of belonging is addressed through a set of administrative mechanisms (governance, ICT software, online meetings, team integrators) and cultural mechanisms (training and socialisation) (Noto et al., 2023). Overall, embracing the freedom of virtual work can enhance productivity and motivation. Managers should set clear objectives, delegate proactively, and shift to output-based performance measures (Birkinshaw et al. 2021). Apart from managing employees, it is important for businesses and organizations to reconsider the role of managers. Creating development pathways for managers and adopting more 'agile' principles and methodologies (Birkinshaw et al. 2021) is shown to be more effective in managing remote or hybrid teams, as managers need to let go of more traditional approaches to management where processes are more centralized and administrative responsibilities should be delegated to team leads (Buła et al., 2024).

Maintaining team cohesion through e.g. collective breaks or online social connection opportunities (Benedic, 2024; Beno, 2022; Buła et al, 2024), opportunities for regular feedback from employees to manager (Beno, 2022) is very important in maximizing a team's efficiency and, by extension, securing loyalty. Generally, opportunities for socialization (e.g. online breaks) lead to better team cohesion (Beno, 2022). It is generally suggested for companies to invest in intra team cohesion building (Garro-Abarca et al. 2021), while collaboration tools, such as Google docs, Microsoft Teams and robust intranet also carry the potential to cultivate team cohesion (Hosoi et al., 2021).

Sustaining organizational culture (Benedic, 2024; Buła et al., 2024), through e.g. taking advantage of office presence to cultivate a company's culture, values and mission (Buła et al., 2024) is a good organizational strategy to adopt. Another solution proposed, would be for companies to adjust their hiring practices and opt for employees who are more open and flexible (Buła et al., 2024). Also, research suggests that managerial practices that respect and exercise knowledge sharing- i.e. how managers share information and

communicate-will deter employees who prefer WFH arrangements from considering leaving the organization (Gutworth et al., 2023). This is in line with psychological contract theory that suggests that lack of support and flexibility might be considered a breach of the psychological contract between employer and employee (Gutworth et al., 2023). On a broader and more fundamental level, firmly embedding flexible working arrangements into a company's organizational culture is important for coherence, given the anticipated increase in these arrangements (Hosoi et al., 2021).

Managing different cultures, which gives rise to issues such as language barriers, interpreting messages, etc. should be part of remote/hybrid team management (Beno, 2022). This might be implemented, for instance, through robust HR policies.

Addressing issues of trust and employee empowerment also leads to best managerial practices in remote and hybrid work. Implementing policies that revolve around **trust** rather than monitoring (Beno, 2022) will lead to better remote/hybrid work management. Also, to address the generally noted **lack of creativity** associated with remote/hybrid work, research suggests that assigning challenging tasks to employees can boost creativity (Birkinshaw et al. 2021; Buła et al., 2024). Besides, increasing awareness of factors that foster creativity and companies investing on nurturing employees' personal creativity are beneficial (Buła et al., 2024).

HR practices are crucial in remote/hybrid work implementation. HR departments can be crucial in the effective and fair implementation of remote work or flexible working arrangement, for instance through support for implementing differentiation practices or supporting managers in offering and managing FWAs including remote/hybrid or WFH work or through policy alignment. Tailoring HR policies to the needs and preferences of employees- will moderate potential employee disengagement and turnover intentions in WFH arrangements (Gutworth et al., 2023). For instance, some employees with lower preference for WFH might be more receptive to more transnational benefits (such as vacation time, etc.) than those with a stronger preference for WFH (Gutworth at al., 2023), which might shape the strategies of fully remote companies. Successful HR practices for implementing FWAs and remote/hybrid work include aligning FWA policies with organizational goals (e.g. diversity, cost reduction, etc.), providing advisory support for managers (on e.g. negotiating FWAs) as well as training (e.g. unconscious bias workshops) (Williams, 2019). Also, simplifying the implementation and management of FWAs through employing technological solutions by HR departments is found crucial (Williams, 2019).

Outcome:
The digital era, marked by the rapid increase in remote and hybrid work arrangements, necessitates innovative management and leadership models. Successful remote work implementation hinges on supportive leadership, well-designed policies, effective communication, and robust organizational infrastructure. While challenges such as managerial resistance, creativity, and performance monitoring persist, adopting best practices and fostering a culture of trust can enhance productivity, employee satisfaction, and organizational resilience. As remote work becomes an enduring aspect of the modern workplace, organizations must adapt and evolve to meet the dynamic needs of their workforce, ensuring long-term sustainability and success.

4.3 Aspects of remote work policies and legislation

The adoption of telework by many companies worldwide and the increased number of employees working in remote positions impose the need for the regulation of policies and legislation protecting employees' rights while also considering company benefits. Many employees are experiencing the positive effects of teleworking, such as increased flexibility and a better work-life balance. However, issues such as cybersecurity, compliance and effective employee management require regulatory attention. This seems to be an urgent necessity given that the current framework, including the legislation of countries with remote workers, the companies offering telework and the policies applied by companies offering teleworking, does not address the present reality successfully. Therefore, the necessity for developing an up-to-date legal framework and corporate regulations that protect employees and promote efficiency emerges.

4.3.1 Cybersecurity and Compliance

The adoption of teleworking especially after the COVID-19 pandemic brought significant changes and left companies with no time to adjust. As a result, security and protocol gaps emerged, leading to an abrupt increase in cyberattacks. Data indicate a 600% increase in the US and a 300% increase globally (Borkovich and Skovira, 2020). The factors that may lead to successful cyberattacks include human error, social engineering attacks, the habit of forwarding work email to personal email, as well as a lack of relevant knowledge and training (Burke, 2020; Kelly, 2017; Mitnick and Simon, 2002; Sadler, 2020, as cited in Borkovich and Skovira, 2020). Given the importance of the issue, Borkovich and Skovira (2020), after conducting an extensive literature review on the factors leading to remote work success, suggest the implementation of the “6 Essential WFH Culture (C) Factors”. These factors include: control and monitoring of solutions targeting to protect companies, the use of collaboration tools offered by Skype, Google and Zoom, ensuring the timely and transparent communication of roles, responsibilities, and regulations to all employees, ensuring that employers are aware of the cost-saving characteristics of remote working, making use of all the Cloud-related privileges while also holding the responsibility of securing cloud data and ensuring that issues of cybersecurity become part of the employees’ and corporate’s culture (Borkovich and Skovira, 2020). The authors recommend the initiation of a “WFH Cybersecurity Knowledge Management Program” (Borkovich and Skovira, 2020, p. 243) that includes the training of all remote workers on cybersecurity issues as a major step towards the decrease of successful cyberattacks.

While the numbers of cyberattacks increase, the opposite trend is observed regarding misconduct cases by remote workers. Cumming, Firth, Gathergood and Stewart (2023), analyzing data from UK bank employees and security misconducts, report fewer cases of misconduct among WFH employees. Specifically, they found that WFH traders were less likely to break security protocols, a finding with significant economic implications due to the high cost caused by violations in this field. Additional economic growth might come from increased trust in financial markets, leading to overall market stability, and the reallocation of funds used for managing violations to positive activities for the companies and their staff. Simultaneously, productivity seems to be unaffected by WFH context. Although this study was conducted in one institution and its findings cannot be used for generalizations, still, it indicates a potential that needs to be further analysed. According to the researchers, the monitoring of the tools used by traders in real-time, the lack of colleagues who might affect each other negatively, and the behavioral shift of teleworkers appreciating the less stressful environment, contributed to lower misconduct, as an outcome of increased responsibility being projected by the employees (Cumming, Firth, Gathergood and Stewart, 2023). The positive reaction of the employees to the WFH context

could be the foundation for a smooth collaboration between companies and teleworkers when it comes to policy making.

4.3.2 Regulatory and Social Security Challenges

4.3.2.1 Social Security issues and adaptability in the EU context

When it comes to social security issues in the EU, each member state has different regulations. For WFH employees who live and work in the same country, this is not a problem. However, several issues arise for those who work for companies based in different countries than the ones they live in (Aceto, 2024). According to the Coordination Regulation EC 883/2004, individuals can only make use of a single social security scheme. The recent adaptation (Multilateral Framework Agreement) introduced to cover teleworkers' needs, includes Article 3, which states that a teleworker whose working time in their non-residence area exceeds 50% of their total work time, is entitled to the legislation that applies in the state for which they work (Aceto, 2024). However, such interventions are still inadequate to serve teleworkers' real needs as they do not cover all the existing dimensions. Also, the fact that not all states have signed the Framework Agreement (Aceto, 2024) is indicative of the regulatory gaps.

Lockwood and Nath (2021) emphasize the difficulty of ensuring that the legal aspects of teleworking are handled properly by organizations without creating ethically challenging contexts for the protection of the employees' privacy. For instance, in the UK context analysed by the researchers, there are laws (e.g. Human Rights Act 1998, Data Protection Act 2018, Investigatory Powers Regulations 2018 and the Equality Act 2010, Non-binding European Framework Agreement on Telework 16/07/2002) that protect employees (Lockwood and Nath, 2021). However, indiscriminate monitoring raises doubts about actual employee protection and whether the law is applied effectively. Given the extensive and continuous monitoring possible due to the adoption of relevant technology, as well as several legal cases proving extensive monitoring, the researchers recommend developing specific monitoring policies that will be known and accepted by the employees (Lockwood and Nath, 2021).

4.3.2.2 Legal inadequacy

The review of the Rome I-Regulation and the Posting of Workers Directive by Stan Bruurs (2023) reveals that the current legal framework is inadequate for the current context and reality of teleworking in the EU. The gaps relate to the lack of regulations for employees without a fixed physical location or permanent address or the cases where the physical location and permanent address are in different countries. The unique characteristics of teleworking, different from those of migration, indicate a strong need for adjustments to ensure the protection of employees' rights. The author emphasises the need to develop the current legal framework by also considering the viewpoints of the involved stakeholders apart from officials and legal experts (Bruurs, 2023).

Dingel and Neiman (2020) estimated that in the USA about 37% of jobs could be entirely remote. Given the similarities between the US and the European context, the numbers reveal the need for regulation of the current framework as a future rise in the number of remote workers seems to be very possible. However, it should be noted that WFH jobs include better-paying positions, mainly in managing and similar services which also come with specific geographical characteristics. Overall, teleworking is more feasible for developed countries with more educated staff (Dingel and Neiman, 2020)

The issues revealed by the unsatisfactory application of legal issues and procedures are further understood when studied together with the adaptability to teleworking by EU countries. The study by Bălăcescu, Pătrașcu and Păunescu (2021) in 30 European countries extends from excellent adaptability (Northern and North-Western countries) to poor adaptability (Southern and South-Eastern countries), indicating that heterogeneity is a defining factor leading to diverse adaptability. Factors like digital skills of employees and respective training are important as they can improve and increase digital transformation (Bălăcescu et al., 2021).

Ollo-López, Goñi-Legaz, and Erro-Garcés (2021) utilizing the Technology Acceptance Model (TAM) and the Technology–Organization–Environment (TOE) model, studied the adoption of telework by different countries in Europe and the factors contributing to it. Factors leading to higher rates of telework include family responsibilities, with single employees being less eager to adopt it compared to parents, and the effort to minimise commuting times. Additionally, highly qualified employers seem to prefer it. External factors affecting teleworking rates include infrastructure and a positive organisational culture. The existence of a clear legal framework also increases rates, especially when combined with a culture of high levels of individualism. The authors also adopt the androgyny theory, claiming that breaking role stereotypes (Hughes and Seta, 2003, as cited in Ollo-López, Goñi-Legaz, and Erro-Garcés, 2021, p. 655) seems to have a positive impact on telework.

4.3.2.3 Challenges faced by teleworkers

The life of digital nomads seems to be much more complicated than the idealized version held by the public. Their reality involves a continuous effort to overcome the bureaucracy of the states they live in and the corporations they work for (Cook, 2022). From an anthropological perspective, this reality leads to the adoption of neoliberal lifestyles (Cook, 2022). This means that teleworkers combine self-projection with the principles of a free-market lifestyle, where they reject the rules of the societies they live in, while promoting their individual needs, creating the paradox of rejecting the bureaucracy that allows them to exist (Cook, 2022).

4.3.2.4 Workplace Culture and Telepressure

The concept of telepressure describes the state where employees remain available for work-related communication even after work hours (Barber and Santuzzi, 2015, as cited in Barber, Santuzzi and Hu, 2023). Despite some companies having formal policies discouraging work-related communication outside of work hours (Society of Human Resource Management, 2012, as cited in Barber, Santuzzi and Hu, 2023), it is unclear whether these policies effectively help the staff. Research findings indicate that employees feel less pressure when they control their availability, a supportive work environment promotes a higher level of work culture, reducing telepressure, while supportive family environments also reduce employees' anxiety (Barber, Santuzzi and Hu, 2023).

Despite the fact that many of the studies on the social aspect of teleworking were conducted during the COVID-19 lockdown, which created a completely different context, the issues raised by these findings are worrying regarding new forms of inequality among socially less privileged teleworkers. Findings reveal that racial and social factors lead to differing teleworking experiences, with those in higher positions enjoying more privileges, and variations in the extent of employees' supervision during work hours (Ewers and Kangmennaang, 2023). Technostress seems to affect younger workers, while work-life imbalance is pronounced, especially for women (Ewers and Kangmennaang, 2023).

4.3.2.5 Conflict Prevention

Downes, Daellenbach and Donnelly (2022) focus on the changes that need to be introduced when it comes to organisational control for remote teams. They argue that apart from productivity and behavior, attitude also needs to be evaluated. The traditional control frameworks that have been used so far need to be extended to integrate attitude control, as this aspect could prevent the development of conflict. To achieve this, they suggest focusing on clan control which includes the idea of attitude control (Downes, Daellenbach and Donnelly, 2022).

4.3.2.6 Sustainability

Eriksson et al. (2022) examined sustainable work as an outcome of digital management systems (DMSs) and remote work conditions by studying white-collar employees in Sweden during the COVID-19 pandemic. They found that sustainable work conditions are enhanced by a functional and reliable DMS, flexibility arrangements when employed for the workers' benefit, and boundary management that protects personal life and work-life balance. Additionally, sustainability is promoted by trust and the existence of a supportive team and management. Conversely, unreliable technical support and continuous technical issues seem to hinder productivity and sustainability. Overall, companies have to focus on both the technology that supports teleworking and the relational and personal levels to realise the positive impact of teleworking.

4.3.2.7 Technological Recommendations

Ferreira and colleagues (2021, p.19) extensively analysed the prerequisites for remote work (RW) adoption by organisations, recognising the existence of realistic managerial difficulties. They created a set of recommendations for companies wishing to adopt RW. According to the researchers, organisations need to ensure that they have carefully addressed technological issues related to the employees' equipment while maintaining control over the technology used by always searching and finding the technology that maximises the potential of their field. Also, they need to protect their employees from feelings of isolation by fostering a sense of teamwork through the use of video and regular meetings. Team managers need to promote team cohesion and maintain productivity. In order to establish all these, it is necessary to train employees in RW culture while also ensuring that their work-life balance is preserved (Ferreira et al., 2021).

4.4 Remote work impact on productivity, society and job satisfaction

Remote work has emerged as a defining feature of contemporary employment, propelled largely by the COVID-19 pandemic. As organisations have adapted to this new paradigm, its impacts on productivity, job performance, and satisfaction have sparked widespread debate. This analysis explores these diverse effects, by examining key determinants such as compensation practices, personal attributes, job complexity, and organisational support. Also, the study highlights the often-contradictory findings across various research efforts, underscoring the multifaceted nature of remote work's influence on employees. From technological infrastructure to social support, from work-life balance intricacies to mental well-being considerations, remote work presents a complex landscape of challenges and opportunities.

By investigating gender disparities, socio-economic inequalities, and the role of perceived organisational support, we aim to contribute to the ongoing discourse on the future of work in a post-pandemic world by providing a nuanced understanding of how remote work reshapes not only workplace dynamics but also broader societal structures and individual experiences in the digital age.

4.4.1 Exploring Productivity In Remote Work: Diverse Impacts And Key Determinants

4.4.1.1 The multifaceted impact of remote work on productivity, job performance, and satisfaction

The shift to remote work has yielded varied impacts on productivity and job performance, with contrasting findings emerging from different studies. For instance, Abeille et al. (2022) highlight that knowledge workers often find productivity enhanced in disturbance-free environments, such as during airplane travel. However, this finding contrasts sharply with Bielinska-Dusza et al. (2023), who reveal that IT workers in Poland experience a negative gap in expectations versus reality in remote working, affecting productivity across several dimensions, including career development and adaptive factors. Moreover, compensation practices play a critical role, as fair compensation positively influences productivity, especially as emerged during the COVID-19 pandemic (Aggarwal et al., 2023). Nevertheless, it seems that self-control traits, rather than compensation, are significant predictors of productivity during remote work (Baumann et al., 2023). These discrepancies suggest that financial incentives are important, yet personal attributes and the ability to manage distractions are equally crucial. Furthermore, job satisfaction among remote workers varies significantly. While Ahmadi et al. (2022) report high levels of satisfaction among Swedish academics working from home, Balgiu (2023) identify significant challenges in managing work-life boundaries and time, often leading to decreased well-being and productivity. Such contradictory findings underscore the complex interplay between job satisfaction and productivity in remote settings. Notwithstanding, the pandemic's impact on remote work arrangements has fundamentally altered perceptions of work. While some authors maintain that telework is likely to remain common following the pandemic (Auton and Sturman, 2024), others caution that this shift necessitates a deep cultural change within organisations (Fregnan et al., 2022). In fact, cognitive demands and job complexity have nuanced effects on job performance in remote settings. For example, it appears that productivity increases when similar tasks are performed consecutively (Abeille et al., 2022). This highlights the importance of task structure, with Golden and Gajendran (2018) further arguing that telecommuters with high job complexity see improved performance, especially when their work involves low interdependence and social support. Thus, while task similarity can enhance productivity, job complexity and independence are equally significant factors.

Self-efficacy and personal attributes also play crucial roles. Interestingly, Baumann et al. (2023) contend that low self-control individuals experience a positive adjustment to remote work, contrary to traditional views that high self-control is always beneficial. This challenges the findings of Aggarwal et al. (2023), who emphasise the importance of regular performance appraisals and self-esteem in boosting productivity. These divergent perspectives indicate that personal adaptability and flexibility may sometimes outweigh structured performance management practices. Moreover, job demands and resources critically influence telework satisfaction and performance, with high job demands negatively impacting telework satisfaction, while job resources such as technical support positively affect outcomes (Auton and Sturman, 2024). On the other hand, it appears that teleworking enables better work-life balance by breaking up the day’s tasks into manageable

segments, even in circumstances of high workload demand (Ahmadi et al., 2022). These contrasting findings suggest that while job resources are essential, the ability to manage work-life boundaries remains a critical determinant of telework success. Additionally, the importance of training and development is underscored by both Aggarwal et al. (2023) and Labrado Antolín et al. (2022). They assert that telework experience and frequency significantly influence self-reported productivity. However, the persistent fear of job loss among non-EU workers, as reported by Alassaf et al. (2023), indicates that without job security, even well-trained employees may struggle to perform effectively. This highlights the need for comprehensive support systems that address both skill development and job security.

4.4.1.2 Determinants of efficiency in remote work: technological and social support, knowledge spillovers, and team dynamics

Technological support, home office setups, and social support appear to be pivotal in determining the efficiency of remote work. Namely, Auton and Sturman (2024) reveal that home office comfort and technical support are positively associated with telework satisfaction and performance. Conversely, Abeille et al. (2022) report that the limitations of mobile ICT, such as small device sizes, often restrict productivity. Nonetheless, social support plays a key role in remote work efficiency as it emphasises the importance of solidarity and mutual support among colleagues in addressing teleworking challenges (Ahmadi et al., 2022). Yet, Golden and Gajendran (2018) maintain that extensive telecommuting can be beneficial for individuals with low social support, as it reduces reliance on interpersonal interactions. This dichotomy indicates that while social support can enhance job performance for some, others may thrive in more autonomous remote work environments. Hence, to manage 'digital employees' (Parry and Strohmeier, 2014) effectively, new capabilities are necessary (Fregnan et al., 2022) even if Baumann et al. (2023) suggest that adaptability and flexibility may sometimes outweigh technological prowess during times of transition and uncertainty.

Relatively with knowledge spillovers and peer effects in remote work settings, peer influences and knowledge flows are stronger in office settings, suggesting a potential disadvantage of remote work in fostering collaborative learning (Frakes and Wasserman, 2021). Nonetheless, Aggarwal et al. (2023) argue that digital workplace environments can enhance communication and engagement, leading to increased output. This highlights a critical tension between the benefits of physical proximity and the potential of digital platforms to facilitate knowledge exchange. Yet, Angelici and Profeta (2024) note that smart work could introduce negative spillover effects within teams, necessitating careful assessment, because remote work determines unexpected challenges, impacting team cohesion and knowledge sharing (Borghouts et al., 2022). It seems, therefore, that while remote work can enable individual productivity, it may simultaneously hinder collective team performance. Still, access to global projects appears to be a key attribute of workplace attractiveness, suggesting that opportunities for international collaboration can enhance job satisfaction (Bielinska-Dusza et al., 2023).

4.4.2 Well-Being, Health, and Work-Life Balance

4.4.2.1 Remote work realities: implications for mental health and work-family integration

Remote work can enhance mental well-being by reducing commuting time and providing greater autonomy over one's schedule, as noted by Aczel et al. (2021). However, this transition has also introduced new stressors impacting affective, psychosomatic, cognitive, social, and professional well-being (Charalampous et al., 2021). This multidimensional impact suggests that remote work's benefits are not universally experienced. For some employees, the flexibility and trust from employers can lead to positive emotions and a healthier lifestyle. In other instances, employees may struggle with the lack of physical workspace ergonomics (Aegerter et al., 2021). Moreover, increased stress due to the confluence of work and family responsibilities not only affects mental health but also can lead to physical health issues over time (Adisa et al., 2021). Consequently, the relationship between employee needs and work arrangements becomes crucial for maintaining employee health, as pointed out by Jones et al. (2023).

Maintaining a balance between work and family life within remote work settings is at times a challenging task, even if the normalisation of flexible working is seen as an organisational change aimed at fostering family-friendly practices (Abendroth, 2022). As COVID-19 pandemic reveals, such challenges principally affected women since they experienced intensified role conflicts due to the lockdown, which necessitated managing remote schooling and increased domestic duties (Adisa et al., 2021; Feng and Savani, 2020). While this retraditionalisation of gender roles underscores the entrenched societal expectations placed on women, the lack of separation between work and home life further complicates achieving a work-family balance, leading to negative spillovers from the family to the work domain (Huml et al., 2023). The transition to parenthood also introduces time-based work-to-family conflicts, which differ by gender. While men experience an increase in such conflicts, women often reduce their working hours, further entrenching gender disparities in the workforce (Abendroth, 2022).

4.4.2.2 Challenges and coping strategies in remote work: isolation, technostress, and organisational support

On the downside, remote working is seen as a possible cause for professional isolation, technostress, and burnout, originating from the loss of communication and social exchange with colleagues and supervisors (Aegerter et al., 2021). Namely, technostress, a term describing the stress induced by ICT (Atanasoff and Venable, 2017), has been identified as a critical factor leading to burnout, with Consiglio et al. (2023) contending that techno-stressors determine depressive moods and anxiety symptoms. While interventions such as virtual nature experiences may potentially reduce stress and increase focus among remote workers (Ch et al., 2023), they are not universally effective for all aspects of creativity, indicating that more comprehensive solutions are needed to address the multifaceted nature of remote work challenges. Additionally, Dechawatanapaisal (2023) notes the role of personal resilience in buffering against the adverse impacts of perceived isolation on job embeddedness and life satisfaction. Also, in line with the importance of psychological well-being, Bareket-Bojmel et al. (2023) explore the implications of loneliness and hope in remote work, finding that enhancing hope can activate job engagement even among lonely employees.

To this end, coping strategies and family-supportive supervisor behaviours cannot be overstated in the context of remote work. Starting from effective time management, this assists in establishing clear boundaries between work and home spheres (Ahmad et al., 2022). Next, the emotional support extended by organisations to their employees provide a buffer against the pressures of balancing work and family life. Namely, family-supportive supervisor behaviours are crucial in fostering a supportive work environment as it can significantly reduce burnout and enhance employee retention and engagement (Atkins et al., 2023; Chambel et al., 2022). Flexibility and an understanding attitude from supervisors help employees navigate the challenges of remote work, contributing to positive organisational outcomes. In fact, as Gillet et al. (2022) illustrate, there is a complex relationship between work centrality and personal well-being. While high work centrality can enhance work engagement, it may also lead to lower family satisfaction, highlighting the need for balanced approaches that consider both professional and personal domains. Consequently, the effectiveness of remote work largely hinges on the availability and quality of organisational resources and leadership. In particular, Adamovic et al. (2021) emphasise the significant role that virtual work self-efficacy and climate play in facilitating remote work adoption. Moreover, Buonomo et al. (2023) highlight the necessity of fostering a sense of trust and belonging among remote workers to enhance job satisfaction and performance. This is complemented by their findings on the benefits of compassionate leadership, which utilises interpersonal relationships to improve remote work outcomes. According to Gerich (2023), organisations with a tradition in telework arrangements are better equipped to offer effective remote work support. Thus, management practices and the degree of autonomy afforded to employees are critical determinants of engagement in remote work settings. For instance, Appelgren (2021) discusses how Swedish media leaders, based on their experience during the COVID-19 crisis, applied the practice to run shorter, more efficient meetings that were found to improve productivity. However, Allen et al. (2021) highlight the challenge of overcoming negative stereotypes associated with flexible work arrangements (FWAs), especially among older workers. Increased access to FWAs can mitigate these stereotypes, but the effectiveness of such policies depends on their consistent implementation and acceptance across the workforce.

4.4.2.3 Role of perceived organisational support and its effect on work-life balance and job satisfaction

Perceived organisational support plays a vital role in achieving work-life balance and enhancing job satisfaction. In fact, as Ferreira and Gomes (2023) argue, organisations promoting flexibility, autonomy, and a supportive remote work culture can significantly improve employees' work-life balance and overall job satisfaction. Expanding on this, Bainbridge and Townsend (2020) illustrate the complex relationships between flexible work practices, disclosure behaviour, and perceived support. They find that greater availability and utilisation of flexible work practices are positively associated with perceived support among employees with caregiving responsibilities. Nonetheless, by considering the impact of caregiving responsibilities on employee attitudes, the authors note that employees with such responsibilities may fail to develop positive beliefs about the helpfulness of flexible work practices due to a lack of relevant workplace referents. Yet, disclosure of caregiving responsibilities can lead to greater utilisation of flexible work practices, ultimately improving perceptions of fairness and support. This also underscores the need for organisations to design inclusive HRM policies that cater to diverse employee needs. While Beno (2021) adds that hybrid workplace cultures that blend on-site and remote work can foster positivity and effectiveness, contributing to higher job satisfaction,

Henke et al. (2022) show that remote work can enable healthier lifestyles and workforce participation, further enhancing job satisfaction.

The perception of fairness and organisational identification is crucial for nurturing a positive remote work environment with mutual understanding and decentralised leadership being key to successfully implementing remote working. However, the shift to decentralised leadership can lead to challenges in maintaining consistent support and fairness across the organisation. The potential for perceived contract breaches further complicates this dynamic, leading to affective reactions and mistrust between employees and employers (Adekoya et al., 2022). Consequently, Fischer and Walker (2022) highlight the importance of trust and reciprocity demonstrated by behaviours characterised by honesty, communication, and reliability.

4.4.3 Productivity, Job Satisfaction, and Socio-Economic Inequalities

A study by Cewińska and Striker (2023) underscores the complex impact of remote work on employee lifestyle, by indicating that remote work leads to greater managerial interference, affecting nearly 40% of respondents . This disproportionately concerns women, who often bear the brunt of household and caregiving responsibilities, as also supported by Dimian et al. (2023), who argue about the subsequent mental health challenges and reduced job satisfaction among female remote workers. Thus, socio-demographic factors significantly influence attitudes towards remote work, with disparities evident not only across gender, but also race and educational attainment. Indeed, Asfaw (2022) highlights persistent racial disparities in teleworking opportunities, with structural issues hindering equitable access for racial minorities. The unequal distribution of remote work opportunities exacerbates existing inequalities, as Black and Hispanic workers face more significant barriers due to lower educational attainment levels and systemic biases in the workplace. Indeed, Fan and Moen (2023) provide a critical perspective on how remote work can disrupt institutional norms and improve job conditions for some, while reinforcing inequalities for others. Women of colour, in particular, face disadvantages when returning to traditional office environments, which often entail stricter monitoring and reduced schedule control. Cewińska and Striker (2023) further illustrate the complexity of remote work acceptance, noting that formalised employee behaviours and lower teamwork levels can hinder acceptance of diverse lifestyles within remote work settings. This indicates that the success of remote work arrangements depends heavily on workplace culture and the extent to which it accommodates diverse employee needs. Lastly, Ewald et al. (2023) discuss the flexibility stigma associated with remote work, where workers who use flexible arrangements for caregiving are perceived as less productive and committed. Unsurprisingly, this stigma disproportionately affects women, reinforcing gender disparities in the workplace.

4.4.4 Technological and Structural Challenges

4.4.4.1 Balancing work time control and ICT use: productivity, overtime, and remote work challenges

The intersection of work time control and ICT use presents a complex landscape of benefits and challenges, especially when considered alongside overtime work. As noted by Barabaschi et al. (2022) relatively with Italian SMEs during the COVID-19 pandemic, ICT software training adequacy is vital for enhancing productivity. Notwithstanding, the negative repercussions of ICT use outside regular working hours cannot be overlooked. Edvinsson et al. (2022) highlight that higher ICT use outside standard working hours correlates with more overtime work and a greater need for recovery. This finding underscores a critical trade-off: while flexible work

arrangements can enhance work time control, they simultaneously pose risks of overwork and burnout. Yet, the work by Golden and Eddleston (2020) challenges the notion that telecommuting hinders career success by highlighting specific contexts where it can be beneficial. Extensive telecommuters experience more promotions in environments where remote work is common and when they engage in additional work beyond their regular hours. Higher salary growth is observed for those who combine extensive telecommuting with increased face-to-face supervisor interactions and supplemental work. These findings offer a nuanced view of telecommuting's impact on career advancement, suggesting that under certain conditions, it can actually enhance professional success. In other circumstances, as highlighted by Rahimipour Anaraki et al. (2022) in the case of virtual healthcare professionals, there is a struggle to maintain work-family boundaries, which exacerbate professional demands. This is consistent with findings from Bezzina et al. (2021) that flexibility in work arrangements can improve employee well-being and motivation, but only if managed properly to avoid blurring the lines between work and personal life. Furthermore, one of the primary challenges in remote work relates to infrastructure in terms of outdated technology and network disruptions, indicating a pressing need for technological upgrades to support remote work effectively (Rahimipour Anaraki et al., 2022), together with a robust governance and standards to ensure the successful implementation of remote work policies (Bezzina et al., 2021). To this end, Barabaschi et al. (2022) emphasise the importance of shared objectives and an agile approach that promotes delegation and coordination among team members. This shift necessitates a change in mindset and leadership style, fostering a culture of self-organisation and remote supervision that can adapt to the demands of a remote work environment.

4.4.4.2 Employee Preferences and Experiences in Telework and Hybrid Models Post-COVID-19

The COVID-19 pandemic has profoundly reshaped employee preferences for teleworking and hybrid work models, creating a spectrum of attitudes and experiences that organisations must navigate. Asgari et al. (2023) highlight a dichotomy in employee preferences, where pro-technology and pro-online learning attitudes positively influence telework preferences, while factors such as a dislike for telework and a preference for in-person interactions negatively impact these preferences. Interestingly, Asgari et al. (2023) also found that employees who reported increased productivity during the pandemic are more inclined to prefer telecommuting in the future. Contributing further to this analysis, Chen et al. (2023) examine how workplace resources and individual characteristics influence the work-from-home (WFH) experience. Their research indicates that employees with sufficient resources and fewer home distractions exhibit better productivity and job satisfaction. Conversely, for those with caregiving responsibilities, the inverse association between WFH and work distraction is less pronounced, suggesting that personal circumstances heavily influence telework experiences. The implications of flexible employment policies are further explored by Dixon et al. (2019), showing that such policies can enhance work-life balance and promote health by allowing employees to control their schedules. However, they also highlight a paradox where increased flexibility can lead to longer working hours and blurred work-life boundaries. Still, Azeem and Kotey (2021) argue that flexible work arrangements significantly boost innovation in small and medium enterprises (SMEs), particularly in competitive markets.

4.4.4.3 Emerging Trends and Challenges in Post-Pandemic Work Arrangements

As organisations navigate the post-pandemic landscape, several trends and predictions for work arrangements emerge. Ballantine et al. (2022) argue that the pandemic has provided an unprecedented opportunity for HR functions to foster a positive culture around FWAs. However, achieving broader acceptance of FWAs, particularly at senior levels, requires a radical shift from "a "can't do" culture to one that exemplifies "how can we promote FWAs for all?"" (p. 1285). This transition necessitates a critical examination of organisational cultures and the barriers that hinder the adoption of FWAs. Further complicating the future of hybrid working, Daley (2023) presents an uncertain outlook, especially in fields such as social work where in-person interaction is traditionally deemed essential. The study reveals a divide in opinions, with some predicting a return to full-time office work while others remain uncertain about future arrangements. On the other hand, Davis et al. (2022) highlight the importance of organisational identification in implementing effective FWA policies. Their research shows that negative perceptions of work changes and co-worker use of FWAs can significantly impact job satisfaction and perceptions of fairness. This suggests that for FWAs to be successful, organisations must ensure transparency and inclusivity in policy implementation to prevent resentment and disengagement among employees.

The importance of social interaction and a positive work environment is crucial for employees, particularly the younger generation, in preferring onsite work over remote options (Hampel and Hampel, 2023). As the authors contend, even if the pandemic has introduced novel communication practices in WFH settings, psychological safety in remote leadership takes more time, thoughtful planning, and intention than in traditional office settings. This presents a potential conflict where the benefits of remote work in terms of flexibility are offset by the need for social connectivity and team cohesion. Lastly, it is imperative for organisations to consistently reevaluate their training and development programs to equip the workforce with fundamental remote work capabilities as, for instance, communication skills, by ensuring such programs are inclusive and accessible to all employees (Gu and Zhong, 2023).

Outcome:

Remote work presents a complex landscape of productivity, job performance, and satisfaction, with impacts varying significantly based on individual and organisational factors. Research reveals that personal traits like self-control and adaptability, along with robust organisational support, often outweigh traditional factors such as compensation in determining remote work success. However, persistent gender disparities and socio-economic inequalities remain significant challenges, particularly in balancing professional and domestic responsibilities. While technological advancements enhance productivity and connectivity, they also risk overwork and technostress. Organisational policies fostering resilience, emotional support, and a positive remote culture are crucial for sustaining employee well-being and engagement. The future of work likely holds hybrid models, necessitating a shift in organisational cultures towards greater flexibility and inclusivity.

Addressing the challenges of remote work demands a multifaceted approach that considers individual differences, gender issues, technological capabilities, and organisational support structures. This comprehensive strategy is key to maximising the benefits of remote work while mitigating its inherent challenges in the shifting landscape of employment. As organisations navigate this transition, continuous re-evaluation and adaptation will be essential to harness.

5. Regional conditions and Policies across Europe

5.1 Introduction

This section synthesizes data from a diverse array of reports and statistical resources to provide a broad and brief overview of regional conditions that might enhance or inhibit the adoption of remote work across regions and sectors. The primary geographical region studied here is the EU and Europe at large. The key parameters studied are as follows:

- Broadband availability and digital infrastructure: examining the accessibility, cost and quality of broadband internet across different regions;
- Cost of living: the economic viability of residing in various regions in the EU, looking at housing cost overburden rates and capacity to meet living costs.
- Quality of life and good life enablers: differences in quality of life reported between rural and urban populations based on accessibility of health and education, transport and reported self-satisfaction.

Before assessing these parameters, the analysis extends to a comparative examination of sectors and job profiles to explore which sectors and job profiles have the highest potential for remote work. This comparison is aligned with national data on human capital and economic indicators, particularly focusing on eight countries from which the project's use-cases are derived. The countries included in this comparative study are Greece, the Netherlands, the UK, Austria, Germany, Switzerland, Italy and Türkiye.

In the end, this sections draws on the remote work policies currently implemented in the countries studied by R-Map and beyond to see what sort of interactions emerge between policies, existing infrastructure and other regional conditions and how policies might act as enablers or barriers for remote work and its potential impact on urban and rural regions.

This structure approach allows for a robust outline of regional conditions that make specific states and sectors more amenable to remote work, offering insights into the factors that make specific locations and sectors more conducive to remote or hybrid work.

5.2 Remote Working Policies

5.2.1 Introduction

Telework, which is the term most often used in the policy documents consulted for this report, is linked to broader policy areas at the EU level, which link to the goal of digitalization. The EU Digital Strategy is an overarching framework bringing together previous and future policies on the digital transformation of business and society through facilitating the digitalisation of the public sector, enhancing broadband infrastructure and cyber security, developing ICT skills and capabilities and aiming at the creation of a single digital market for the improvement of life and the sustainability of the society in the Union (European Commission, 2022f). The Digital Agenda for Europe includes as action areas the formation of a 'vibrant' digital single market, policy recommendations for fast and ultra-fast internet access and enhancement of digital literacy skills (European Commission, 2010). The Digital Single Market Strategy for Europe sets out the

formation of a conducive environment for telework by addressing, among others already mentioned above, the harmonization of regulations around employment and enhancement of data protection and privacy (European Commission, 2015). The latter aligns with the notion of EU 'digital sovereignty' as developed in the 2030 Digital Compass: the European way for the Digital Decade on targeting the enhancement of EU capabilities in the relation to cyber security, technological sovereignty, economic development through digital markets and safe teleworking digital spaces by 2030 (European Commission, 2021). Finally, regulations on cyber security, including the goal to create a common policy framework impact greatly telework (European Commission, 2019). In view of the current security environment as it has been shaped since the start of the pandemic and the Russian invasion in Ukraine, make the concept of 'digital sovereignty' of particular importance to the EU.

Prior to the pandemic, telework was very loosely defined, if at all, across the EU, mainly based on the adoption of the 2002 EU Framework Agreement on Telework (EU-LEX, 2005). With the advent of the pandemic and the mandatory rolling lockdowns during 2020 and part of 2021, there was a dramatic increase in teleworking, creating a need to consider additional issues in relation to its implementation, such as the right to discontent or the protection of mental health and wellbeing (Eurofound, 2021). The 2002 EU Framework Agreement on Telework, a non-binding regulatory framework, which was adopted by most EU members at the beginning of the 2000s, formed the basis at large for the national policies that were followed during the pandemic. The main categories under the framework can be found in the table below.

Voluntary nature of teleworking	telework is voluntary for the worker and the employer concerned. Telework may be required as part of a worker's initial job description or it may be engaged in as a voluntary arrangement subsequently. In both cases, the employer provides the teleworker with relevant written information in accordance with Directive 91/533/EEC
Employment conditions	teleworkers benefit from the same rights as comparable workers at the employer's premises. These rights are guaranteed by applicable legislation and collective agreements. In order to take into account, the particularities of telework, specific agreements may be necessary
Data protection	the employer is responsible for taking the appropriate measures to ensure the protection of data used and processed by the teleworker for professional purposes. The employer informs the teleworker in particular of any restrictions on the use of equipment and of sanctions in the case of non-compliance
Privacy	the employer respects the teleworker's privacy. If any kind of monitoring system is put in place, it needs to be proportionate to the objective and introduced in accordance with Directive 90/270 on visual display units
Equipment	as a general rule, the employer is responsible for providing, installing and maintaining the equipment necessary for regular telework unless the teleworker uses his/her own equipment. The employer has the liability, in accordance with national legislation and collective agreements, regarding costs for loss and damage to the equipment and data used by the teleworker
Health and safety	the employer is responsible for the protection of the occupational health and safety of the teleworker in accordance with Directive 89/391 and relevant

	daughter directives, national legislation and collective agreements. In order to verify that the applicable health and safety provisions are correctly employed, the employer, workers' representatives and/or relevant authorities have access to the telework place, within the limits of national legislation and collective agreements. If the teleworker is working at home, such access is subject to prior notification and his/her agreement. The teleworker is entitled to request inspection visits.
Organisation of work	within the framework of applicable legislation, collective agreements and company rules, the teleworker manages the organisation of his/her working time. The workload and performance standards of the teleworker are equivalent to those of comparable workers at the employer's premises
Training of teleworkers	teleworkers have the same access to training and career development as comparable workers at the employer's premises and are subject to the same appraisal policies as these are their workers. Teleworkers receive appropriate training targeted at the technical equipment at their disposal and at the characteristics of this form of work organisation.
The collective rights of teleworkers	teleworkers have the same collective rights as workers at the employer's premises. No obstacles are put to communicating with workers' representatives.

As the EU framework is a non-binding document, its adaptation by member states has been done in various forms depending on the manner in which telework or related concepts had a statutory definition. Other parameters include the degree of involvement of the social partners, the existence of collective agreements or alignment with related existing EU policies, such as the General Data Protection Regulation on data and privacy protection (General Data Protection Regulation, 2018). Finally, issues that arose during the pandemic and the resulting rolling lockdowns restricting the mobility of citizens inside their home country or abroad, led to the adoption of policies related to remote workers, such as in the case of Switzerland in relation to non-Swiss EU nationals, where laws such as the ones related to social security, were relaxed (The Swiss Confederation, 2023a). These specific measures were abolished by 2022, although their practice formed the basis for the 2023 EU framework agreement, which regulates remote working and social security (PwC Switzerland, 2023). Steps like the latter showcase attempts for a move towards more integration in the EU Single Market.

The framework defines telework as ‘any form of organising and or performing work using information technology, in the context of an employment contract/relationship, where work, which could also be performed at the employer’s premises, is carried out away from those premises on a regular basis (EU-LEX, 2005). This creates a specific manner in which telework is interpreted by member states and thus is reflected in their respective national regulatory and legislative frameworks, which is most often via contractual agreements under the national Labor law. There are some parameters in the 2002 EU Framework Agreement on Telework, which determine the perception of the definition of telework is understood as a work arrangement instead of a labour contract and only employees with an employment contract for employment on a regular basis are relevant (Eurofound, 2022a). This means that categories of remote workers, such as digital nomads or self-employed workers are in principle overlooked. This is evident in the contents of the framework, which mainly addresses provisions, obligations and rights linked to the employment contract or

the relationship between employer and employee. Furthermore, telework is exclusively understood as ICT enabled (Eurofound, 2022a). This by definition covers specific industries and professions and excludes others such as manual or artisan workers.

This section starts with an overview of the adaption and implementation of the 2002 EU Framework on Telework in the national legislative farmwork of various EU member states in order to showcase differences and similarities. Then it moves beyond the EU to investigate the impact of EU conditionality in non-EU member states telework regulations linked to the EU Single Market via different economic and political ties: the United Kingdom, an ex-EU member with a Trade and Cooperation Agreement, Switzerland, a European Free Trade Association (EFTA) member, and Türkiye, an EU candidate state, with a Customs' Union with the EU and as of late, a participant in the Digital Europe Programme.

5.2.2 EU Member States

Austria

In Austria the legal term used instead of telework is 'home office work', as defined in the Home Office Act (Government of Austria, 2021) highlighting that telework is perceived only as taking place in the employee's home, excluding other venues, such as cafes, libraries etc. The regulatory framework does not cover mobile work (Eurofound, 2022a). Legal regulations (Government of Austria, 2021) came into effect on April 1st, 2021 through amendments of different pieces of legislation (including the Employment Contract Law Amendment Act, the Labour Constitution Act, the Employee Liability Act and the Labour Inspectorate Act). Before the introduction of the amendments in 2021 and the implementation of the EU Framework Agreement on Telework before, general labour legislation and both collective (Kollektivverträge) and company agreements (Betriebsvereinbarungen) applied in full to teleworkers, despite the fact that telework was not specifically defined under labour contract law. Various sectoral collective agreements concluded before and after the introduction of the Framework Agreement, contained provisions on telework such as stipulating the voluntary character of teleworking, working time, employee health, equipment and costs, information and training, data protection and employee rights (Commission of the European Communities, 2008).

Prior to adopting the EU Framework Agreement on Telework, various social partners (such as the Austrian Trade Union Confederation (ÖGB), the Austrian Economic Chamber (WKÖ), the Federation of Austrian Industry (IV) and the Austrian Association for Public and Social Economy (VÖWG)) proposed to draft a joint recommendation, which was never materialised as they failed to reach an agreement. Nonetheless, the three Austrian employers' organisations (WKÖ, IV and VÖWG) published non-binding guidelines (Leitfaden) on implementing the Framework Agreement in Austria (Commission of the European Communities, 2008).

The April 2021 federal law introducing amendments to the existing labour law and the concept of 'home office' is very broad leaving many important aspects of telework regulation to the social partners to deal with through collective agreements at the sectoral and company levels (Eurofound, 2022a). As of 2024, the Ministry of Finance and Social Affairs, the accident insurance providers, the social partners and the Federation of Austrian Industries agreed on amending the 2021 Home Office Act The review of the draft law ran until May 2024. The amendments are expected to introduce a Teleworking Law, which will expand the Home Office Act to include working from various locations beyond the home of the employee (Fellner wratzfeld partner, 2024).

Definition of teleworking	Federal Law Gazette I No. 61/2021 § 2h (1). *Home office work occurs when an employee regularly performs work at home*.
Voluntary nature of teleworking	According to Federal Law Gazette I No. 61/2021 § 2h (2), working from home must be agreed in writing between the employee and the employer. Section 4, clarifies further the conditions for terminating the contract.
Employment conditions	Under Labour contract law, all rights of employees are fully applied to teleworkers.
Data protection	Data protection is regulated under the Austrian data protection act (Datenschutzgesetz, short DSG), which supplements the Data Protection Regulation (GDPR). (The Austrian Data Protection Authority, 2024).
Privacy	Employee monitoring and surveillance are regulated under Labour Constitution Act (ArbVG). § 96 ArbVG, highlights the necessity of the works council's consent when introducing control measures and technical systems for monitoring employees in order to protect human dignity, provided that these measures (systems) affect human dignity, in order for them to be legally effective. Otherwise, the employer is obliged to remove them. (Eurofound, 2023a). For companies with works council, monitoring and surveillance tools may be used only if an agreement has been reached with works council. In the case of companies without works council, the use of these tools can only be legal with the consent of the employee. (Eurofound, 2023a). The Labour Inspection Act 1993, Federal Law Gazette No. 27/1993, last amended by the Federal Law Gazette I No. 100/2018, included paragraph 10 in Section 4, the regulation that the labour inspectorate bodies are not authorized to enter the homes of employees working from home in order to carry out their duties.
Equipment	According to Federal Law Gazette I No. 61/2021 § 2h (3), The employer must provide the digital work equipment required for regular home office work, unless agreed otherwise in the contract.
Health and safety	The Austrian General Social Security Act covers health and safety, including accidents that occur at home.
Organisation of work	The framework for the conditions for working from home is established in the addition to the Labour Constitution Act, Federal Law Gazette No. 22/1974, last amended by the Federal Law Gazette I No. 170/2020, Section 97.
Training of teleworkers	Not specified to teleworkers.

The collective rights of teleworkers	Depending on the industry, there are some collective bargaining agreements. Also there is the possibility of agreeing on a works council agreement on the conditions of working from home.

Germany

Definitions of telework in Germany cover both home-based employment and mobile work. Teleworking was defined in law with the amendment of the Workplace Ordinance (ArbStättV) in November 2016 in Section 2 Paragraph 7 as 'Teleworking places are permanently set up computer workstations in the private area of employees, for which the employer has agreed with the employee on a weekly working time schedule' (Deutscher Bundestag, 2017). This means that teleworking covers work carried out by the employee for a company via a computer workstation provided and set up by the employer outside the premises of the company. On the other hand, mobile work or mobile teleworking or mobile office, is a concept which is still not legally defined. Mobile work resembles teleworking in the sense that it is work provided to the employer online and away from the company's premises. Nonetheless, 'it is neither tied to the office nor to the home workplace' (Deutscher Bundestag, 2017). This does not mean that mobile work is not permitted. While telework is regulated largely by various laws, mobile work is partly covered by laws and is regulated by collective agreements or individually at the company level.

Germany implemented the EU Framework Agreement on Telework on July 2002 with the support of the Confederation of German Employers' Associations (BDA) and the German Trade Union Confederation (DGB), which adopted a joint declaration welcoming the EU framework and encouraging social partners and sectoral and company levels to take part in devising rules (Commission of the European Communities 2008). Nonetheless, it seemed that the role of social partners has been limited. As is often the case, telework is basically regulated through company agreements (Betriebsvereinbarungen, Firmentarifverträge). Various trade unions and the local public employer organisation VKA have drawn up model agreements which are being used as a basis when the employer and worker representatives launch negotiations. Teleworkers are considered to be covered by the general labour law in Germany by both the Federal Government and the social partners (Commission of the European Communities 2008). On the contrary, works councils seem to have far-reaching rights beyond their consultation role, including the right of co-determination when it comes to several aspects of telework, such as work organization and digital surveillance. Co-determined conditions of telework are often recorded at company-level workplace agreements (Betriebs- /Dienstvereinbarungen) (Eurofound, 2022a). In late 2020, the Ministry of Labour and Social Affairs proposed a Mobile Work Act that included the right to telework 24 working days a year (with a five-day week). This draft act did not reach consensus and thus remained a draft bill (Eurofound, 2022a).

Definition of teleworking	Teleworking was defined in law with the amendment of the Workplace Ordinance (ArbStättV) in November 2016 in Section 2 Paragraph 7: *Teleworking places are permanently set up computer workstations in the private area of employees, for which the employer has agreed with the employee on a weekly working time and the duration of the facility*. *The form of work known as mobile working (also known as mobile teleworking or mobile office) has not yet been legally defined. This type of work resembles teleworking, as in the fact that it is conducted online,*

	outside the company but it is neither tied to the office nor to the home workplace (Deutscher Bundestag, 2017).
Voluntary nature of teleworking	There are no regulations regarding the voluntary nature of teleworking. If it is not part of an existing contract, the employee can request it. It is in the discretion of the employer to accept or deny the request.
Employment conditions	Teleworkers are usually employed in a normal employment relationship as full-time or part-time employees and thus the same employment conditions apply to them as to all other company employees.
Data protection	Securing sensitive company data or secrets is regulated, when applicable, by a special employment contract provision between the employer and the employee.
Privacy	The Federal Data Protection Act (BDSG) regulates the protection of personal Data but it is not applicable to the protection of company data.
Equipment	According to the Workplace Ordinance (ArbStättV), the employer is responsible to equip the employ with a work station. This does not apply to the case of mobile work. Workplace Ordinance does not apply to mobile work.
Health and safety	According to the Occupational Safety Act (ArbSchG) Section 3, Paragraph 1, Sentence 1 ArbSchG and Section 4 No. 1 ArbSchG, it is the responsibility of the employer to organise the work place in such a way to avoid risk to life and health, including offering preventative care as per Section 5 No. 1 ArbMedVV. Section 15 ArbSchG states that the employee has a duty to cooperate and the duty to protect themselves during both telework and mobile working. The measures for the design of computer workstations for home office are outlined in the Workplace Ordinance (ArbStättV) § 2 Paragraph 3 ArbStättV Appendix (No. 6) to ArbStättV. This regulation does not apply to mobile workers.
Organisation of work	ArbZG and in particular Sections 3, 4 ArbZG (working hours and rest breaks), Section 5 ArbZG (rest periods), Section 16 Para. 2 ArbZG (employer's obligation to keep records; if necessary, delegation of the obligation to record overtime to employees) regulate the organization of work during both telework and mobile working.
Training of teleworkers	According to the Workplace Ordinance (ArbStättV) Section 6 ArbStättV the employer must provide employees with sufficient and appropriate information based on the risk assessment about the intended operation of the workplace and other related issues. This does not apply to mobile working.

The collective rights of teleworkers	Teleworkers and mobile teleworkers are employees within the meaning of Section 5 Paragraph 1 Sentence 1 of the Works Constitution Act. Whenever necessary, works council can be involved, especially regarding occupational safety, social and personnel matters.

Greece

The Greek regulatory framework uses the term telework to define remote provision of dependent work using ICT, on a full-tine, part-time or rotational basis, which can also be offered at the employer's premises (4808/2021 Art.67. par.1). There is no specific mention of mobile work (Eurofound, 2022a). Teleworking in Greece is largely based on the 2002 Framework Agreement on Telework (EU-LEX, 2005), which was signed on 12 April 2006 by the Greek General Confederation of Labour (GSEE) for the trade unions, and the Hellenic Federation of Enterprises (SEV), the National Confederation of Hellenic Commerce (ESEE) and the Hellenic Confederation of Professionals, Craftsmen and Merchants (GSEVEE) for the employers, binding on all employees and employers (Commission of the European Communities, 2008). Prior to the adoption of the 2002 Framework Agreement on Telework, the only framework in Greek Labor Law pertaining to telework, but without addressing its specificities was Article 1 of Act 2639/1998 (Commission of the European Communities, 2008).

Before the pandemic the EU Framework Agreement on Telework was implemented in Greece via cross-sectoral, non-binding agreements, i.e. agreements providing only non-binding recommendations and guidelines for low-level collective bargaining (Eurofound, 2022a). After the outbreak of the pandemic Greece followed the overall trend of updating the Labour Law on teleworking in order to tackle more specific issues, such as the right to disconnect and the coverage of expenses assumed by the employees while teleworking (Eurofound, 2022a). Law No. 4808-19-06-2021 (Government Gazzete of the Hellenic Republic, 2021) was passed as part of a comprehensive labour market reform. The reform was not consolidated with stakeholders and this created a strong opposition from trade unions, which disagreed with issues including but not limited to teleworking, such as strike rights and flexibilization of working time (Eurofound, 2022a). GSEE, drawing from the French and Spanish regulatory frameworks among others, requested a better regulated telework regime, including an updated definition of telework, enhanced protection of teleworkers through collective employment agreements and the right to disconnect (General Confederation of Labour, 2021).

Definition of teleworking	4808/2021 Art.67. par.1. *Teleworking is the remote provision of the employee's dependent work with the use of technology, under full-time, part-time, rotational or other form of employment contract, which could also be provided at the employer's premises*.
Voluntary nature of teleworking	4808/2021 Art.67. par.2. *Teleworking is agreed between employer and employee, upon hiring or by modification of the employment contract*. Paragraph 3 refers to exceptions to the above including teleworking based on the decision of the employer for reasons of protection of public health or upon request of the employee based on a documented risk to their health.

	The employee can request arbitration from the Labor Inspectorate, according to Article 3B of Law 3996/2011 (A' 170), in case there is a disagreement with the employer.
Employment conditions	According to 4808/2021 Art.67. par.5. the employer is obliged to inform the employee of the teleworking conditions within 8 days of the start of the employment.
Data protection	According to 4808/2021 Art.67. par.5. the employer is obliged within 8 days of the start of the employment to inform the employee of the obligation to protect the professional data.
Privacy	According to 4808/2021 Art.67. par.8. the employer is allowed to check the employee's performance only in a manner that respects their private life and it adheres to the protection of personal data. The use of camera to monitor employee performance is prohibited.
Equipment	According to 4808/2021 Art.67. par.4. the costs of teleworking, including equipment and repair of damages should be assumed by the employer, unless otherwise agreed upon.
Health and safety	4808/2021 Art.67. par.9. refers to the obligation of the employer to inform the employee about the policy of the company, regarding health and safety at work, including the right to disconnect, as stated in 4808/2021 Art.67. par.10.
Organisation of work	4808/2021 Art.67. par.7. refers to the obligation of the employer to inform the employee about the policies of the company.
Training of teleworkers	4808/2021 Art.67. par.7. states that teleworkers have the same rights and obligations as the comparable workers within the premises of the business or holding, in particular, when it comes to training and their professional development.
The collective rights of teleworkers	4808/2021 Art.67. par.7. states that teleworkers have the same rights and obligations as the comparable workers within the premises of the business or holding, in particular, in relation to workload, assessment criteria and procedures, rewards, access to business-related information and participation in unions.

Italy

In Italy, teleworking is defined by policies and legislation as "agile" or "smart working", emphasizing organizational flexibility, voluntary agreements, and the use of remote working tools such as laptops and smartphones. This mode of working is designed to provide workers with greater autonomy while ensuring they receive the same economic, regulatory and health safety treatment as their colleagues who work on-site.

The concept is underpinned by voluntary agreements between the employer and employee, formalized in written agreements as required by Articles 19 and 21 of Law No. 81/2017. Companies can submit individual smart working agreements via the Ministry of Labour and Social Policies' IT platform. These agreements, required to be in writing, cover aspects such as duration, location, performance monitoring, and compliance with data protection laws. During Covid-19, priority for agile working was given to fragile workers, female workers post-maternity leave and workers with disabled children. Workers with children under 14 have also had the right to agile working if compatible with their job during Covid-19. As agile working days lack fixed hours, it allows autonomy within set objectives, with measures for ensuring disconnection times. Employers are responsible for providing the necessary technological tools for agile working and must ensure these tools meet security standards, including encryption, authentication, and VPN use. They must also promote training and awareness initiatives to protect the tools used for remote work and manage data breaches effectively. If employees use their own tools, minimum security criteria must be established, and potential expenses compensated. Public organizations are required to develop detailed plans for telework adoption, specifying employee eligibility and ensuring compliance with collective agreements. These plans must address data protection, privacy, equipment provision, health and safety, work organization, and training for teleworkers. Public administrations are encouraged to set annual teleworking targets and experiment with agile working forms, ensuring employees' rights and freedoms are protected, both remotely and on-site.

Definition of teleworking	The definition of agile working or smart working emphasises organisational flexibility, the voluntariness of the parties signing the individual agreement and the use of instrumentation that enables remote working (such as, for example, laptops, tablets and smartphones). Agile workers are guaranteed equal treatment - economic and regulatory - with their colleagues who perform their work in ordinary ways. Law No. 81/2017 (Presidency of the Council of Ministers, 2024) Remote Working, defined as **the flexible articulation in time and place of subordinate work**. Legislative decree AC. N. 2233B, 2017
Voluntary nature of teleworking	As of 15 November 2017, companies signing individual smart working agreements will be able to submit them via the special IT platform made available on the Ministry of Labour and Social Policies' services portal. Law No. 81/2017 (Presidency of the Council of Ministers, 2024) The initiation of agile work requires the stipulation in writing of the individual agreement, as defined by Articles 19 and 21, Law No. 81/2017 (Presidency of the Council of Ministers, 2024) and as established by collective agreements, where regulated. Focus on: the duration of the agreement, which may be either fixed-term or open-ended; b) the alternation between periods of work inside and outside company premises; c) the places, if any, excluded for the performance of work outside company premises company premises; d) aspects relating to the performance of work outside company premises, also with regard to the forms of exercise of the employer's managerial power and conduct which may give rise to the application of disciplinary sanctions in compliance

	with the discipline provided for in collective agreements; "National Protocol on Agile Work in the Private Sector", 2022
Employment conditions	Amended Article 18 of the Jobs Act, inserting paragraph 3-bis, according to which the employer entering into agreements for the performance of work in agile mode, had to give priority to Smart Working requests made by female workers in the three years following the end of the mandatory maternity leave period and to those of workers with children with disabilities. Budget Law 2019, n. 145 (Ministry of Economy and Finance, 2019). Agile Working is a right for those with children under 14. The text specified that the information obligation provided for in Articles 18 to 23 of Law No. 81 of 22 May 2017 (the Jobs Act on self-employment) (Presidency of the Council of Ministers, 2024) remained in force, and that this modality had to be compatible with the characteristics of the performance in agile work, it was also decided that it could also be carried out through the employee's IT tools if they were not provided by the employer. Art. 96 Relaunch Decree, 14 may 2020 1. Without prejudice to legal and collective agreement provisions, the working day carried out in agile mode The working day carried out in agile mode is characterised by the absence of a precise working time and by autonomy in the performance of the performance within the framework of the objectives set, as well as in compliance with the organisation of activities assigned by the manager to guarantee the company's operability and the interconnection between the various company functions. 2. Work in agile mode may be articulated in time slots, identifying, in any case case, implementing the provisions of the regulations in force, the disconnection band in which the worker does not perform work. Specific technical and/or organisational measures shall be taken to guarantee the disconnection time slot. "National Protocol on Agile Work in the Private Sector", 2022 Senate approved the extension of agile working to 31 December 2022 for fragile workers, public and private, even without an individual agreement. Legislative decree 9 august 2022, n. 115

	The right to agile Working for super-fragile workers remains. This is until at least 31 December 2023. This right is also recognised in the private sector only for workers who have children under the age of 14. This is provided that the work activity can be performed remotely and that the other parent does not work or does not benefit from social security. Again, in the private sector, it has also been extended to frail workers, again on condition that the activity is compatible with agile working. Legislative Decree 132/2023.
Data protection	The initiation of agile work requires the stipulation in writing of the individual agreement, as defined by Articles 19 and 21, Law No. 81/2017 (Presidency of the Council of Ministers, 2024) and as established by collective agreements, where regulated. Focus on: the forms and methods of monitoring work performance outside company premises, in compliance with the provisions of both Article 4, Law no. 300 of 20 May 1970 (Stat. Lav.), as amended and supplemented and by the legislation on the protection of personal data "National Protocol on Agile Work in the Private Sector", 2022
Privacy	The employer promotes the adoption of company policies based on the concept of security by design, which provide for the management of data breaches and the implementation of appropriate security measures that include, but are not limited to, encryption where appropriate, the adoption of authentication and VPN, the definition of backup plans and malware protection. The employer promote training and awareness-raising initiatives for workers both on the use, safekeeping and protection of the tools used to render the service, and on the behavioural precautions to be to be adopted in the performance of work in agile mode, including the management of data breaches. The social partners agree on the need to adopt a code of ethics and good conduct The social partners agree on the need to adopt a code of ethics and good conduct for the processing of workers' personal data in agile mode, to be submitted to the envisaged judgement of conformity by the Italian Data Protection Authority. "National Protocol on Agile Work in the Private Sector", 2022
Equipment	The initiation of agile work requires the stipulation in writing of the individual agreement, as defined by Articles 19 and 21, Law No. 81/2017 (Presidency of the Council of Ministers, 2024) and as established by collective agreements, where regulated. Focus on:) the working tools; 1. Unless otherwise agreed, the employer shall, as a rule, provide the technological and necessary for the performance of work in agile mode, in order to

	ensure the availability to the worker of instruments that are suitable for the performance of work and secure for access to company systems. 2. Where the parties agree on the use of the worker's own technological and computer tools they shall establish the minimum-security criteria and requirements to be implemented and may agree on possible forms of compensation for expenses. 3. The costs of maintenance and replacement of the equipment provided by the employer, necessary for the activity performed by the employee in agile mode shall be borne by the employer, who remains the owner of the equipment. itself, which remains its owner. 4. In the event of breakdown, theft or loss of the equipment and in any case of supervening impossibility to carry out the work, the employee shall promptly notify his/her supervisor and, where appropriate, activate the company's data breach management procedure. Where it is established that negligent conduct on the part of the employee resulting in damage to the equipment provided, the latter shall be liable. If it is still not possible to resume agile work within a reasonable time, the employee and in a reasonable period of time, the employee and the employer must agree on how to completion of the work, including returning to the company premises. "National Protocol on Agile Work in the Private Sector", 2022
Health and safety	The initiation of agile work requires the stipulation in writing of the individual agreement, as defined by Articles 19 and 21, Law No. 81/2017 (Presidency of the Council of Ministers, 2024) and as established by collective agreements, where regulated. Focus on: protection of workers in the event of occupational accidents and illnesses, also considering the remote working swtting, in accordance with the procedures outlined by national accidents of the job agency (INAIL). Circular n. 48/2017
Organisation of work	The initiation of agile work requires the stipulation in writing of the individual agreement, as defined by Articles 19 and 21, Law No. 81/2017 (Presidency of the Council of Ministers, 2024) and as established by collective agreements, where regulated. Focus on: (f) the rest periods of the worker and the technical and/or organisational measures necessary to

	ensure the disconnection "National Protocol on Agile Work in the Private Sector", 2022
Training of teleworkers	The initiation of agile work requires the stipulation in writing of the individual agreement, as defined by Articles 19 and 21, Law No. 81/2017 (Presidency of the Council of Ministers, 2024) and as established by collective agreements, where regulated. Focus on: training activities that may be necessary for the performance of work in agile mode "National Protocol on Agile Work in the Private Sector", 2022
The collective rights of teleworkers	1. The performance of work in agile mode does not alter the system of individual and collective individual and collective trade union freedoms defined by law and collective bargaining. 2. The social partners undertake to identify modalities for the enjoyment of these rights, such as, for example the remote exercise of the same trade union rights and freedoms as employees who work in the same rights and trade union freedoms as those enjoyed by employees working on company premises, without prejudice to the possibility for the agile worker to exercise these rights also in the presence of the company. rights also in presence. "National Protocol on Agile Work in the Private Sector", 2022

The Netherlands

Telework in the Netherlands was initially defined as ‘activities on behalf of the relevant department in the home of the public servant, for which information and communication technology is used’, as defined in Art 1 of the June 2001 framework agreement on telework for civil servants (Van het Kaar, 2008). This definition was quite narrow as it referred only to civil servants and was location specific to the home of the employee. According to the Central Statistical Office (Centraal Bureau voor de Statistiek), the definition of a teleworker is as ‘someone who works outside the premises of their employer on a regular basis and has access to the information and communication technology (ICT) of the company’ (Van het Kaar, 2008). In essence this means that a teleworker can be location independent, but still needs to be linked to the ICT of the employer.

The Dutch law does not yet have a single legal framework on rules regarding remote working. The practice is regulated through different legal frameworks. The two most relevant ones are the Flexible Working Act (Wet flexibel werken) and Occupational Health and Safety (OH&S). The Flexible Working Act is a provision under the Working Conditions Act (arbeidsomstandighedenbesluit), which define rights that generally apply to all employees without making a specific distinction for teleworks Eurofound, 2022a). Occupational Health and Safety (OH&S) derives from the Working Conditions Act (Arbowet), the Working Conditions Decree

(Arbobesluit) or the Working Conditions Regulations (Arboregeling). Occupational Safety and Health catalogues play an important role regarding its enforcement (European Agency for Safety and Health at work, 2024).

In the Netherlands, multi-employer collective bargaining is very central in regulating employment conditions. In this respect there are at least 15 sectoral collective agreements regulating provisions of telework (Eurofound, 2022a). Likewise, social partners play an equally important role, mainly through the Labour Foundation, which is a cooperative body of the social partners under private law and serves as a platform for preparing and conducting national-level negotiations. The adoption of the EU Framework on Telework in 2003 was facilitated via this platform, including the recommendation of the Labour Foundation for the involvement of works councils in discussions about issues pertaining to provision of equipment, work-life balance, data protection and privacy (Commission of the European Communities, 2008).

A common misconception is that work from home is a legal right in the Netherlands, based on a legislative initiate that was approved by the House of Representatives in July 2022, amending the 2016 Flexible Work Act allowing employees to be able to ask for more flexible hours as well as more independent workplace location (Eurofound, 2022a). This would make the Netherlands the first country to make remote work a legal right. Nonetheless, there is no such entitlement as the draft law did not receive the support by the Senate in 2023. The employee can request to work from home and the employer can reject it, but the employer needs to give a valid reason for declining the request (Netherlands Enterprise Agency (RVO), 2024a).

Definition of teleworking	A teleworker is *someone who works outside the premises of their employer on a regular basis and has access to the information and communication technology (ICT) of the company* (Van het Kaar, 2008)
Voluntary nature of teleworking	Under the Flexible Working Act Art 2, employees who have worked for more than 6 months for a company are allowed to request to work remotely, unless remote working is part of their employment contracts. The employer has the right to decline by giving a valid reason (Netherlands Enterprise Agency (RVO) 2024a).
Employment conditions	Teleworkers are usually employed in a normal employment relationship as full-time or part-time employees and thus the same employment conditions apply to them as to all other employees.
Data protection	Work Council Act/ General Data protection regulation/ GDPR implementation act compliance (Netherlands Enterprise Agency (RVO) 2024b).
Privacy	Employers can monitor employee's productivity through tracking software throughout their remote work day, as long as they comply with the EUs General Data and Protection Regulation. Before being monitored, employers need to inform employees. When companies have a works council, according to article 27 (1) (k) (l) the company must ask the works council for permission in relation to the processing and protection of personnel and arrangements aimed at or suitable for

	observing or checking the presence, behaviour or performance of the staff. When the work council does not approve, the employer is not allowed to check (Eurofound, 2023b).
Equipment	According to the Flexible Working Act, when the employee requests to work from home, employers are only required to give the employee general recommendations and information to create a safe working environment. When the employer asks the employee to work from home, the employer does need to provide a safe environment for the employee (Netherlands Enterprise Agency (RVO) 2024c).
Health and safety	All rules derive from the Working Conditions Act (Arbowet), the Working Conditions Decree (Arbobesluit) or the Working Conditions Regulations (Arboregeling). The Netherlands Labour Authority, Ministry of Social Affairs and Employment is responsible for enforcing the legislation. Occupational Safety and Health catalogues play an important role regarding enforcement.
Organisation of work	Working hours are regulated by the Working Hours Act (The Netherlands Labour Authority, Ministry of Social Affairs and Employment, 2024)
Training of teleworkers	Generally, the employer should provide training to the employee when needed
The collective rights of teleworkers	Social partners and works councils play a significant role in shaping the employment conditions for remote work.

5.2.3 Non-EU States on the EU Periphery

The United Kingdom: The case of a former EU state with an EU Trade and Cooperation Agreement

The United Kingdom (UK) adopted the 2002 EU Framework on Telework in 2003, in a non-binding manner via the publication of a brochure entitled 'Telework Guidance' intended to provide advice on issues of teleworking (Department of Trade and Industry, 2003). The brochure was drafted jointly by the Confederation of British Industry (CBI), the Trades Union Congress (TUC) and the UK branch of CEEP, and published the Department of Trade and Industry, which has now been replaced by Department for Innovation, Universities and Skills and Department for Business, Enterprise and Regulatory Reform. Prior to the adoption of the EU Framework on Telework, there were no legislative measures specific to telework in the UK, but rather general labour laws a number of whom also applied to teleworkers (Commission of the European Communities, 2008). Brexit meant that the UK had no obligation to consult the 2002 EU Framework on Telework any longer, nonetheless as the UK adopts best practices globally, it also aligns many times with EU regulations.

There is no single definition of telework in the UK by law. Remote working and working from home are defined as 'working from anywhere other than the employee's usual workplace. It can include working from home'

under Flexible Work (The Government of the United Kingdom, 2024a). Other definitions include **hybrid working** 'where the terms of engagement require workers to spend some of their contracted hours in their employer's workspace but allow flexibility for where they work the remainder of their contracted hours and **distance/home working** 'where the terms of engagement allow a worker to perform their duties in an agreed location of their choosing (usually their home). With distance/home working, either there is no requirement to work from an employer's workspace, or no employer workspace is available' (The Government of the United Kingdom, 2024b).

The Code of Practice on requests for flexible working relates to the statutory right to request flexible working under the Employment Rights Act 1996, and its amended versions. The specific Act recognises as statutory request, a request for a change in the employment terms and conditions of an employee linked to work schedule and place of work (Advisory, Conciliation and Arbitration Service (ACAS) 2024). The Code is issued under sections 199 and 200 of the Trade Union and Labour Relations (Consolidation) Act 1992 and was came into effect by order of the Secretary of State on 6 April 2024. It replaces the 'Acas Code of Practice on handling in a reasonable manner requests to work flexibly' which was issued in 2014. It is considered best practice to allow the employee to be accompanied, should they wish to (Advisory, Conciliation and Arbitration Service (ACAS) 2024).

The Code outlines a framework for regulating the employee-employer relationship pertaining to flexible working highlighting the voluntary nature of the arrangement. According to the code, the employee has a legal right to request remote working. The employer is obliged to give a valid reason for declining such a request based on the impact that such a decision would have on the operations of the workplace. In case of an employer rejects the request by the employee, it is recommended that the employee should be able to appeal the decision (Advisory, Conciliation and Arbitration Service (ACAS) 2024). The Equality Act 2010 covers requests for remote working based on disability (The Government of the United Kingdom, 2010). Employment conditions are regulated between the employer and the employee when the request for flexible work is granted (Advisory, Conciliation and Arbitration Service (ACAS) 2024).

The Health and Safety at Work Act (HSWA), which extents to all employees, including remote workers, states that the employer has the duty to do their best, within reasonable limits, to protect the health, safety and welfare of their employees (The Government of the United Kingdom, 2011). Furthermore, health and safety of the employees is regulated by the Management of Health and Safety at Work Regulations 1999 (Government of the United Kingdom, 1999), which requires employees to conduct risk assessments and the Health and Safety Regulations 1992, which require employers to conduct workstation assessments (The Government of the United Kingdom, 1992).

Employers have the right to monitor employees provided that the employee is aware of the process and monitoring adheres to the Data Protection Act 2018 (The Government of the United Kingdom, 2018) and the General Data Protection Regulation (General Data Protection Regulation, 2018). Privacy is regulated by the Article 8 of the Human Rights Act 1998 protects the right to respect for a private and family life The Government of the United Kingdom, 1998).

The EU-UK Trade and Cooperation Agreement (The Government of the United Kingdom, 2021), into force since January 1, 2021, regulating among other issues cooperation on trade, security and protection of citizens, while it does not specifically address telework, it does provide regulations on various sectors which either directly or indirectly facilitate cross-border telework. These relevant provisions pertain, among others to trade, especially digital trade and services and data protection regulations.

The Swiss Federation: The case of a European Free Trade Agreement (EFTA) non-EU state

The EU Framework on Telework does not directly apply to Switzerland, as it is not an EU member state. Nonetheless, the Swiss regulatory framework and practices are very often tailored to the EU framework due to Switzerland's political, economic and trade ties with the EU, as well as cross-border remote working agreements with EU countries. Telework is not a legal right in Switzerland. In the 2023 Framework Agreement on changes to the social security coordination rules for teleworkers to facilitate cross-border teleworking between the member states, to which Switzerland has opted-in, teleworking is defined as 'work-related activities that can be performed by a person either from the employer's premises or at a different location and is based on information technology to remain connected to the employer's or business's working environment as well as stakeholders and clients in order to fulfil the employees' tasks' (PwC Switzerland, 2023).

Telework is regulated in Switzerland under more general legal frameworks extended to all employees. The Code of Obligations, part of the Swiss Civil code, covering the nature of employment contracts (The Swiss Confederation 2024); Federal Labour Act (Arbeitsgesetz, ArG) regulating the working hours and health and safety (The Swiss Confederation 2021); the New Federal Act on Data Protection (nFADP) on the protection of data and management, which as stated on the government website, is quite similar to the EU GDPR (The Swiss Confederation, 2023b). In all, Switzerland's regulation framework aligns with the EU Framework Agreement on Telework in most cases including the voluntary nature of the agreement, the employer's obligation to guarantee a safe and healthy environment for employee, employees' monitoring, privacy and data protection etc.

When it comes to remote work in Switzerland for nationals of the EU or from those from the EFTA area, EU/EFTA nationals working for an employer based abroad in Switzerland remotely do not qualify as "salaried workers" as per the Agreement on Free Movement of Persons (AFMP). Furthermore, should an activity in Switzerland have an influence or impact on the Swiss economy, then such an employer would need to cover its employees via a secondment set-up (e.g. mandate in Switzerland, contract with Swiss client, etc) (PwC Switzerland, 2021). Furthermore, issues regarding social security, tax and labor laws must be clarified in the employment contract to avoid any misunderstandings for both the employer and the employee (The Swiss Confederation 2024b). This does not apply to non-EU-EFTA nationals.

In 2023, Switzerland joined Austria, Belgium, Croatia, The Czech Republic, Finland, France, German, Ireland, Italy, Liechtenstein, Lithuania, Luxemburg, Malta, The Netherlands, Norway, Polland, Portugal, Slovenia, Slovakia, Spain and Sweden in opting-in the 2023 Framework Agreement, is a supplementary agreement stemming from the rights as stated under Art. 16 of EU Reg. No 883/2004 (PwC Switzerland, 2023). The Framework Agreement facilitates cross-border employees to work remotely by offering social security coordination, flexibility and a unified definition for telework.

Türkiye: The case of an EU candidate state with an EU Customs' Union agreement

The 2002 EU Framework Agreement on Telework does not apply to Türkiye as it is not an EU member state. Nonetheless, the country is a candidate member state since 1999 and thus it has a very close relationship with the EU when it comes to adopting EU laws and regulations (European Commission, 2024a). Furthermore, EU and Türkiye have a Customs' Union agreement since 1995, which includes a trade in services (European Commission, 2024b). The modernization of the EU-Türkiye Customs' Union is currently under discussions.

On March 10, 2021 Türkiye adopted, the Remote Working Regulation (Ministry of Family, Labor and Social Services, 2021) which mirrors the EU framework on telework. Remote working is defined as 'an employment

relationship established in writing, based on the principle that the employee performs their work at home or outside the workplace via ICT, within the scope of the work organization established by the employer' (Art 1c). Art 5a states that the employment contract includes all the terms and conditions regulating the employment conditions. Supply and use of materials related to employment are provided by the employer, unless it is stated otherwise in the contract. The duration of work and the working hours are decided between the employee and the employer in the employment contract. This includes cases where an employee switches from in office work to remote working (Art 9.1). The voluntary nature in agreeing on the employment contract by both sides is highlighted. Data protection is discussed in Art 11, where the employer is obliged to inform the employee about the rules and regulations to be followed. The employee has the obligation to follow these rules. Occupational health and safety training needs to be provided to the employee wherever applicable by the employer, who is responsible for securing safety conditions (Art 12).

Working remotely from Türkiye as a foreign national is not illegal but some restrictions apply after a period of three months in relation to social security enrolment rules and obtaining a work permit (International Bar Association, 2021).

In September 2023, Türkiye joined the Digital Europe Programme (Delegation of the European Union to Türkiye, 2023). This milestone gives access to the country to the Digital Europe Programme with the prospect of enhancing cooperation between Türkiye and the EU in economic and technological development, including that for small and medium-sized enterprises and thus laying the ground for future partnerships in remote work.

Outcome

Telework in the EU is closely connected with broader EU policy goals linked to digitalisation. Related policies have been in force for over a decade now but the advent of the pandemic and its socio-political and economic impact geared policy priorities towards the vision of an integrated digital market. Furthermore, the shaping of the current geopolitical environment after the Russian invasion in Ukraine, added a security parameter and urgency, expressed in concepts such as the need for 'digital sovereignty' of the EU. The signing of the 2023 EU framework agreement is a first step towards materialising the idea of a common digital market. Telework is affected by these larger policies as issues directly related to its implementation are highlighted, such as improvement of broadband infrastructure and internet speed, data and privacy protection, alignment of national and sectoral policies around employment, training and cyber security.

Either loosely, as per the example of the United Kingdom, prior to Brexit, which used the 2002 EU framework as guidance for best practices, or in the form of a legislative framework clearly defining telework mirroring the EU framework, like in the case of Greece, social partners in all the case studies used in this analysis welcomed the implementation of the framework. This is a non-binding framework, which was used for formulating national and sectoral policies. Definitions of telework and related concepts across the EU are based, to a different extent, on the it. Definitions vary from teleworking (e.g. Greece), to home-office (e.g. Austria), to agile working (e.g. Italy) and mobile work (e.g. Germany, in addition to telework). Employment can be full-time, part-time or rotational. The array of different definitions highlights the rigidity of the law when it comes to the location of the teleworker, i.e. their home or any other location, for example a coffee shop. Nonetheless, teleworking entails an element of flexibility when it comes to location, be it location-specific or not, and to the working hours.

Another common parameter is that full rights under labour law are applied largely in all countries to teleworkers with dependent employment contracts. Specific rules might apply to other types of teleworking means and manners of employment relationship, such as for example digital platforms in Greece. Furthermore, telework refers to ICT related employment only, thus excluding manual, artisan and related jobs from teleworking or self-employed professionals. Social partners and works councils play a role depending on the country or the sector. In general, employees with dependent employment contracts are represented by their respective trade unios, as their in-office colleagues, by default.

The voluntary nature of telework is another element in policy, which practically results in the essence of the relationship between the employee and the employer being defined in the employment contact. The employment contract is finalised only when both parties agree to the employment conditions. Other elements that the contract might entail, include obligations which are generally considered to be the obligation of the employer, such as providing work related equipment or covering costs. Finally, the contract includes the working hours. Occupational health and safety, usually fall under related national legal frameworks and they highlight the responsibility of the employer. Data protection and privacy fall under regulations linked to GDPR and related policies.

Non-EU countries that have pollical, economic or trade ties with the EU, align their telework policies with the EU framework and in some cases, they mirror it, like in the case of Turkey, because of EU conditionality. All three countries used in this analysis have a different type of involvement with the EU. The example of Switzerland opting-in the 2023 EU framework agreement showcases that access to a potential single digital market could be extended to non-EU partners in areas linked to digitalization policies, including remote work.

5.3 Country Sectors and Digitalization

If the knowledge economy is the most conducive to remote work, then the map generated by ESPON seen in Figure 5.3.1[17] gives us an initial indication of how remote work possibilities might be shaped like in the countries studied, although data covers years 2018 and 2019. From the R-map use-case countries covered by ESPON, it appears that Greece is overall less competitive without potential with low incidence of knowledge economy. Southern Italy belongs to the same category, while Northern Italy fares as less competitive with potential in knowledge economy. Apart from the region of Vienna, which is highly competitive, Austria appears as competitive and active in knowledge-related economies. Germany, the Netherlands and the UK have regions that are highly competitive and active in knowledge-related economies. Finally, Switzerland appears to be overall highly competitive. This suggests that countries such as Switzerland, the Netherlands, the UK, Germany and Austria have economies that might be more conducive to remote work compared to Greece and Italy. There is no data on ESPON relating to Türkiye. However, according to an index developed by İzmen et al. (2021) with a maximum value of 5, knowledge intensive jobs (% of the workforce) Türkiye is assigned the value of 2.34, which shows moderate activity in the knowledge economy.

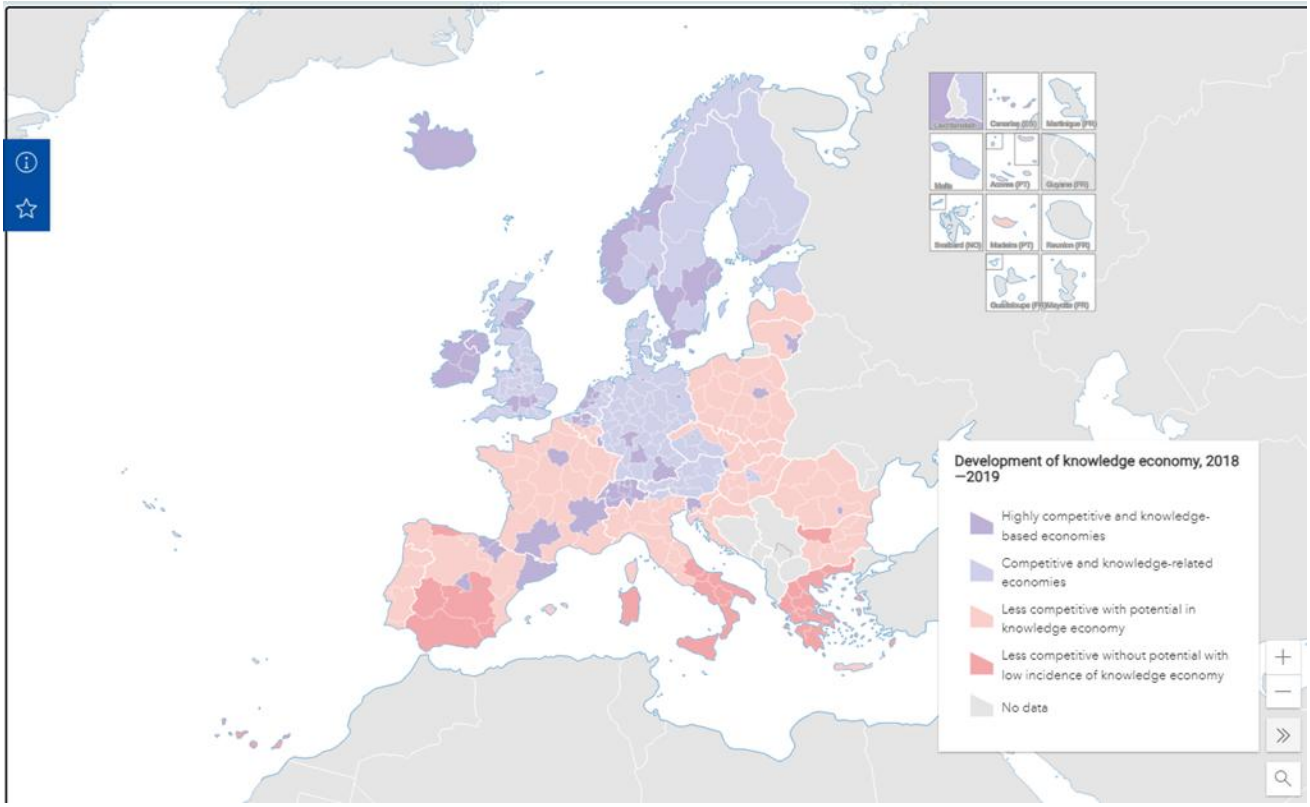


Figure 5.3.1 Development of knowledge economy, 2018—2019 Map
Origin of data: ESPON EGTC, © ESPON

[17] The interpretation of ESPON material does not necessarily reflect the opinion of the ESPON Monitoring Committee.

The knowledge economy intertwined with the digitalization of markets and industries allow for further growth opportunities for remote or hybrid work. Digital transformation and digitalization have shaped the future of work and play a crucial role in enabling and sustaining remote work practices (see e.g. Schilirò 2021, Kraus et al. 2023 and Bartulis 2024). Drawing information from the Digital Economy and Society Index country reports generated by the European Commission, Table 5.3.2 compares five EU countries of the total eight use-case countries of R-map to assess their digital intensity. Compared to the EU average, Greece shows the lowest digital intensity across all indicators apart from using ICT for environmental sustainability. Through the Digital Transformation Bible 2020-25,[18] Greece aims for 90% of SMEs to achieve some basic levels at least of digital intensity. The Netherlands leads in various indicators, surpassing significantly the EU average on cloud adoption and social media, while the government approved investments in 2021 in AI and quantum computing, among others with the goal of supporting their digital transition. Italy has a remarkable high share in the use of e-invoices, as a result of legislative intervention and performs well in the use of cloud services. Italy's national plan ''Transition 4.0'[19] is the main tool to support the uptake of digital technologies by businesses and their recovery and resilience plan funding scheme aims to boost a national network of technology transfer centres (including European Digital Innovation Hubs). Austria performs overall quite well across most indicators and is undertaking various initiatives to enhance the adoption of advanced technologies, including the 'Quantum Austria'[20] project to support high performance computing and quantum research. Finally, Germany exhibits a balanced performance across almost all indicators. It has launched several business and application initiatives as well as projects in quantum computing and with its 'SME digital' initiative,[21] it supports businesses and SMEs in their digital transformation.

Indicator	Greece (%)	Netherlands (%)	Italy (%)	Austria (%)	Germany (%)	EU Average (%)
SMEs with at least a basic level of digital intensity	39	75	60	64	59	55

[18] See Ministry of Digital Governance (2001) Digital Transformation Bible 2020-2025. Available a thttps://digitalstrategy.gov.gr/en/. [Accessed 9 June 2024].

[19] See https://www.italiadomani.gov.it/en/Interventi/investimenti/transizione-4-0.html [Accessed 9 June 2024].

[20] See https://www.ffg.at/en/quantum-austria [Accessed 9 June 2024].

[21] See Federal Ministry for Economic Affairs and Energy (2019) "SMEs Digital Strategies for the digital transformation." Berlin, Germany. Available at: https://www.bmwk.de/Redaktion/EN/Publikationen/Mittelstand/smes-digital-strategies-for-digital-transformation.pdf?__blob=publicationFile&v=5 [Accessed 10 June 2024]

Electronic information sharing	35	43	32	45	38	38
Social media	29	49	27	38	30	29
Big data	13	27	9	9	18	14
Cloud	17	60	52	29	32	34
AI	4	13	6	9	11	8
ICT for environmental sustainability	65	64	60	70	57	66
e-Invoices	NA	25	95	22	18	32
SMEs selling online	20	23	13	22	19	18
e-Commerce turnover	11	15	9	10	10	12
Selling online cross-border	7	13	7	16	10	9

Table 5.3.2 Comparative Data on Digital Index indicators for Greece, Netherlands, Italy, Austria, Germany and the EU. Data drawn from DESI reports on individual countries

While there is no comparable data on the digital intensity of the UK provided by the European Commission, the UK Digital Strategy (2022)[22] highlights the aim of the UK to strengthen its place as a global science and technology superpower. To address challenges in SMEs technology adoption, the Department for Digital, Culture, Media and Sport[23] has supported the programme Digital Boost which offers free mentoring on SMEs and Charities to boost digital skills. The government, among other actions, has invested more than £147 million in promoting digital adoption across various sectors and regions and developed the National AI Strategy to promote AI adoption across sectors and regions, especially in sectors with low AI maturity. Furthermore, according to the OECD Digital Economy Outlook 2024, the UK's Information and communication technology

[22] See https://www.gov.uk/government/publications/uks-digital-strategy/uk-digital-strategy#enhancing-the-uks-place-in-the-world [lAccessed 10 June 2024].

[23] Since then, the Department has been replaced by the Department for Science, Innovation and Technology and Department for Culture, Media and Sport.

(ICT) sector was set to experience the highest growth amongst OECD countries at a rate of 11.96%. Switzerland, another of the R-map use-case countries was also set to experience high growth at a 9.97% rate. Furthermore, Switzerland has developed its own digital transformation plan, the Digital Switzerland Strategy 2023, which is organized around the pillars of education and skills-i.e. securing that businesses and individuals have advanced digital skills; security and trust-i.e. boosting cybersecurity; framework-i.e. securing digital competitiveness and remaining competitive in the ICT sector; infrastructure- i.e. promoting resilient physical and digital infrastructure, and digital public services-i.e. Offering digital public services for businesses and making services digitally available for the public.

İzmen et al. (2021) in their report on Türkiye's digital transformation entitled "Türkiye's Digital Transformation Index 2021" highlight that Türkiye's digital transformation has shown steady growth from 2019 to 2021. When it comes to technology adoption by companies Türkiye has shown improvement in 2021. The authors use an index with the maximum value of 5 and assess the country's absorption of technology at the company level with 3.97, ICT use for business-to-business transactions at 3.82 and Impact of ICTs on business models at 3.91 and Impact of ICTs on organizational models at 4.02.

Overall, SMEs and businesses with high levels of digital intensity are better equipped to support and sustain remote or hybrid work arrangements. For instance, Greece, whose SMEs exhibit lower levels of adoption of digital tools, is more likely to face challenges compared to the Netherlands who lead in cloud adoption and AI use. Digital intensity is also crucial to attracting talent that can work remotely.

Now, this report will examine projections or data on growth of various relevant sectors per use-case country. While information on EU countries is readily available, for the most part comparable and homogeneous, this is not the case for Switzerland, Türkiye and the UK.

Greece

According to Cedefop (2024a), the highest projected increases in employment in Greece between 2022 and 2035 will be in the sectors of Wholesale and Retail Trade (+68,200 jobs), Health and Social Care (+40,200 jobs) and Construction (+30,800 jobs), while a decrease will occur in Agriculture, Forestry and Fishing. Conducive to remote work sectors like ICT Services are projected to grow moderately (+21,200 jobs) while Administrative Services and Professional Services are projected to decline. At the same time the sectors which exhibit the highest employment share of high-tech occupations by the same year are ICT Services (31.3%),—where jobs such as software development and data analysis can be performed remotely—Energy Supply Services (19.4%)—where many high-tech and administrative tasks can be done remotely—and Professional Services (17%)—where jobs such as consulting and other such advisory roles can be performed remotely. On the other hand, Accommodation and Food, Agriculture, Forestry and Fishing and Administrative Services exhibit very low shares of high-tech jobs, most of which require physical presence.

As seen in Figure 5.3.2, which examines the top requested skills in Greece based on 2022 job postings, it seems that some skills associated with remote work prevail, as in 'Using digital tools for collaboration, content creation and problem solving (34.9%). At the same time, skills, such as 'Accessing and analysing digital data' (11.8%) and 'Analysing and evaluating information and data' (7.3%) are relatively underrepresented. Although these skills demands do not directly indicate the availability or prevalence of remote/hybrid working arrangements, they are competencies that can be performed remotely and their presence might suggest a growing potential for more remote work opportunities, if we consider that data handling and digital literacy are integral to remote work.

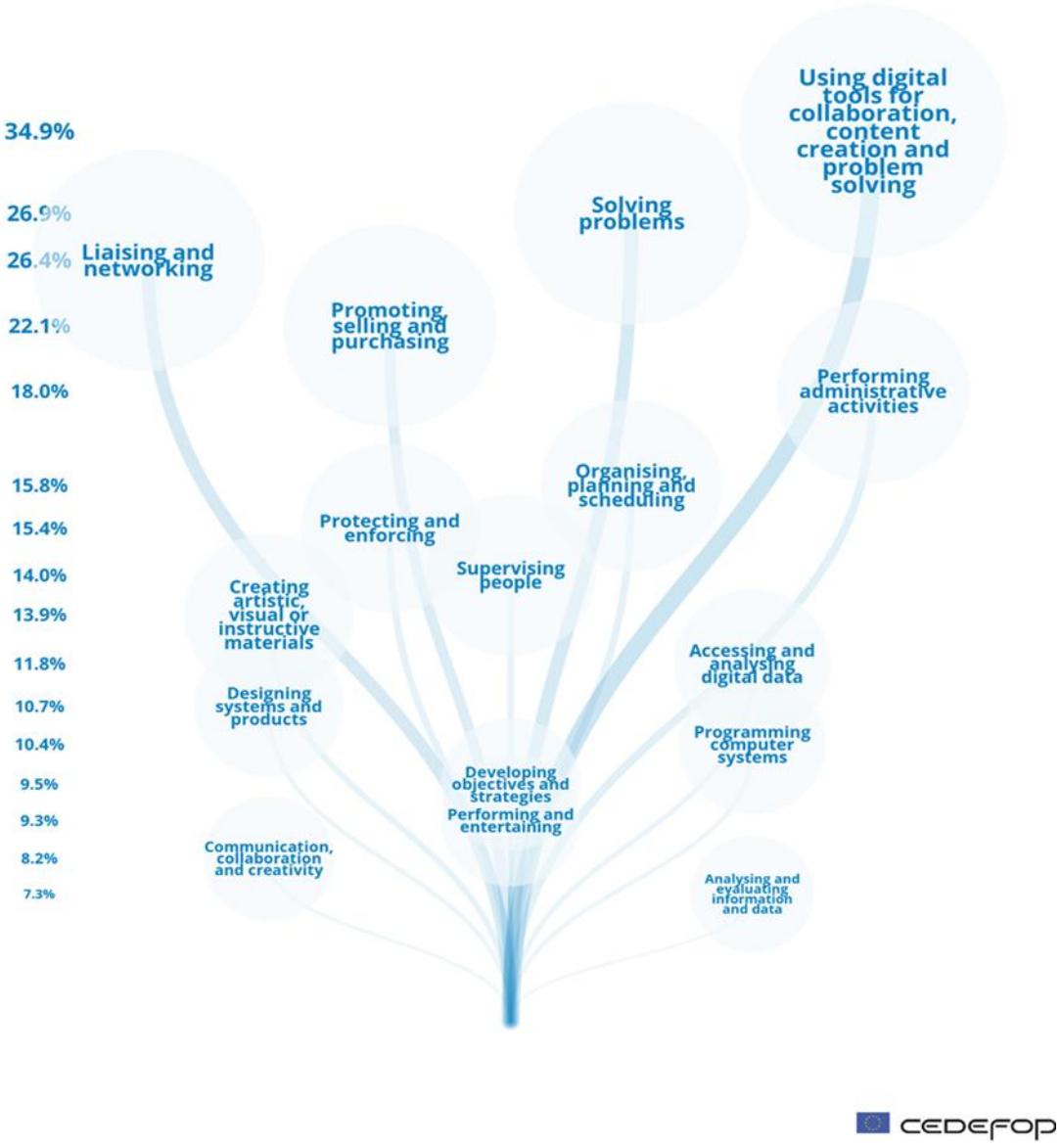


Figure 5.3.2 Most requested skills in online job ads in Greece in Skills in 2022 (ESCO level 2)
Reproduced from Cedefop (2024a)

Germany

According to Cedefop (2024b), the highest projected increases in employment in Germany between 2022 and 2035 will take place in the sectors of Health and Social Care (+817,100 jobs) and Education (+358,800 jobs), while the sectors will the highest employment decline, amongst others, will be Manufacturing (-506,900 jobs), and Wholesale and Retail Trade (-440,500 jobs). Finance and Insurance will also experience decline (-119,600 jobs). In terms of remote work, depending on the job role, there is potential for remote work in the growing sectors, although far more moderately in Health and Social Care. The sectors which exhibit the highest

employment share of high-tech occupations by 2035 are ICT Services (47.9%), Water and Waste Treatment (33.1%) and Energy Supply Services (27.7%), unlike Accommodation and Food (1.1%), Health and Social Care (1.3%) and Arts, Recreation and Other Services (4.4%). The ICT sector is inherently suited for remote work and the high employment share of high-tech jobs therein indicates that a significant portion of employees could perform their job remotely.

Italy

Based on CEDEFOP's country profile (2024c), the top three sectors with the highest employment growth projected for Italy between 2022 and 2035 are Accommodation and Food (+263,400 jobs), Health and Social Care (+208,000 jobs) and Arts, Recreation and Other Services (+173,700 jobs), while the largest decline is noted in Agriculture, Forestry and Fishing (-393,000 jobs), Manufacturing (-145,400 jobs) and Public Sector and Defence (-79,900 jobs). At the same time, the highest employment share of high-tech occupations by 2035 is projected to be enjoyed by the ICT Services sector (63.1%), Energy Supply Services (40.6%) and Water and Waste Treatment (27.1%) and the lowest share by Accommodation and Food (0.3%), Arts, Recreation and Other Services (1.6%) and Agriculture, Forestry and Fishing as well as Administrative Services (1.7%). If we consider the possibility of remote work within these high-tech sectors, ICT Services are especially conducive to it, although e.g. challenges emerge in providing IT support remotely.[24] In the Energy Supply and Water and Waste Treatment Sectors, activities such as monitoring and data collection and analysis, amongst others could be performed remotely.

As seen in Figure 5.3.3, which examines the top requested skills in Italy based on 2022 online job postings, it seems that some skills associated with remote work prevail, as in 'Using digital tools for collaboration, content creation and problem solving (27.4%). Skills, such as 'Accessing and analysing digital data' (9.5%) and 'Analysing and evaluating information and data' (9.9%) are also represented in the data although not to the same degree. As discussed in the case of Greece, while this data is not explicitly presented, discussed or associated with remote or hybrid work, such skills are generally positively associated with remote work possibilities and opportunities.

[24] See e.g. https://www.htl.london/blog/remote-working-and-its-impact-on-it-support [Accessed 11 June 2024].

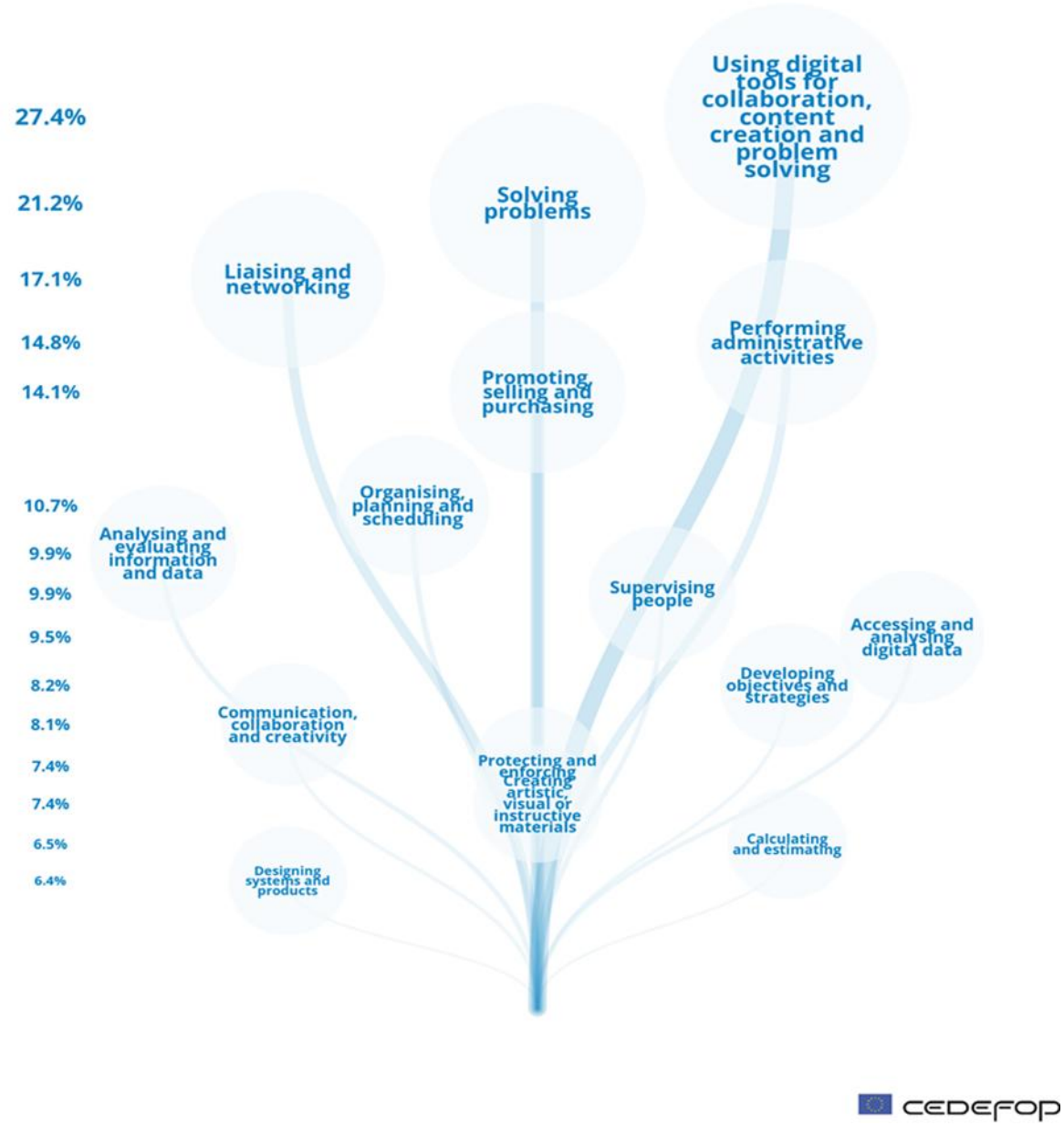


Figure 5.3.3 Most requested skills in online job ads in Italy in Skills in 2022 (ESCO level 2)
Reproduced from CEDEFOP (2024c)

The Netherlands

In the Netherlands, according to CEDEFOP (2024d), the largest employment growth for the period 2022-2035 will take place in the following sectors: Health and Social Care (+104,400 jobs), Accommodation and Food (+91,700 jobs) and Professional Services (+52,200 jobs). Decrease is projected in the following sectors: Administrative Services (-140,300 jobs), Agriculture, Forestry and Fishing (-105,800 jobs) and Wholesale and

Retail Trade (-32,600 jobs). If employment share of high-tech occupations by economy sector is considered, then the top sectors projected to involve high-tech occupations by 2035 are ICT Services (62.2%), Mining and Quarrying (49.4%) and Energy Supply Services (28.0%). The ICT sector overall facilitates flexible working arrangements, and its availability attracts global talent. When it comes to Mining and Quarrying and Energy Supply Services, high-tech roles such as automation and remote monitoring could encourage remote work. Overall, occupations and sectors with high digital intensity carry remote or hybrid work potential. Finally, professional services, which will see a growth are conducive to remote work, as reported by Eurofound (2022) and 30.9% of the workforce in the Netherlands is currently employed under this category, while 16.6% as associate professionals (CEDEFOP 2024d).

As seen in Figure 5.3.4, which examines the top requested skills in the Netherlands based on 2022 online job postings, it seems that some skills associated with remote work prevail, as in ‘using digital tools for collaboration, content creation and problem solving (23.5%). Skills, such as ‘accessing and analysing digital data’ (6.4%) and ‘analysing and evaluating information and data’ (5.2%) are also represented in the data although not to the same degree. Unlike the other countries examined so far, creating artistic, visual or instructive materials is also quite high (13%), which can be done digitally and remotely, depending on the specific nature of the job.

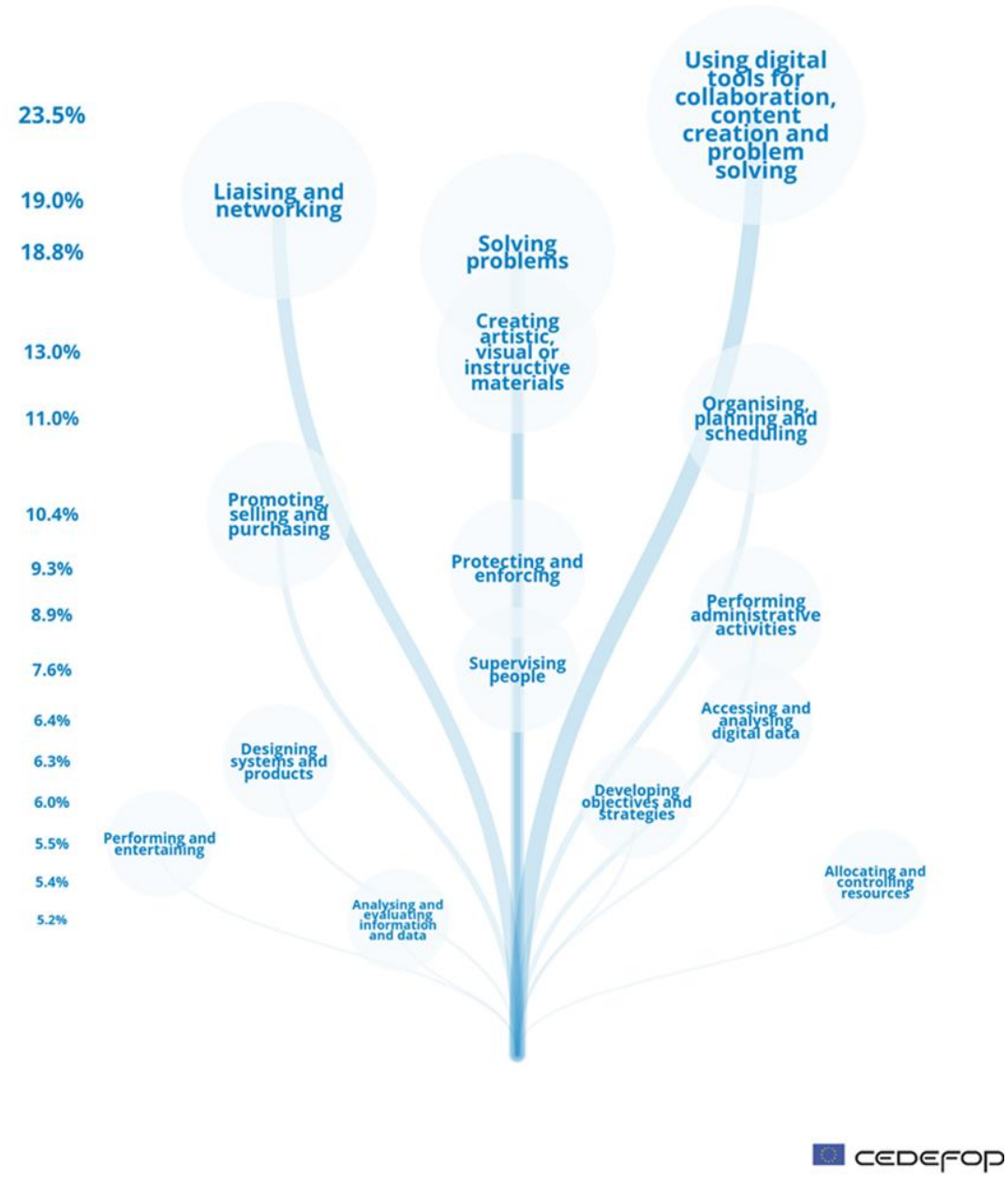


Figure 5.3.4 Most requested skills in online job ads in Netherlands in Skills in 2022 (ESCO level 2 Reproduced from CEDEFOP (2024d)

Austria

According to CEDEFOP (2024e), the following sectors will experience the largest employment growth for the period 2022-2035: Accommodation & food (+62,100 jobs), Accommodation and Food (+91,700 jobs), Health and Social Care (+61,200 jobs), Wholesale and Retail Trade (+50, 200 jobs) and Professional services (+47,700 jobs). The largest decrease is projected in the following sectors: Agriculture, Forestry and Fishing (-55,100 jobs), Transport and Storage (-32,400 jobs) and Manufacturing (-19,900 jobs). If employment share of high-tech occupations by economy sector is considered, then the top sectors projected to involve high-tech

occupations by 2035 are ICT Services (49.7%), Energy Supply Services (35%) and Manufacturing (20.2%). As already established, remote or hybrid work is generally accessible for the ICT Services sector, and when it comes to Energy Supply Services, remote monitoring or digital management can be practiced remotely or in hybrid mode. Manufacturing, however, in the case of production involves on-site work. The sectors with the least high-tech occupations for Austria are Accommodation and Food (0.8%), Administrative Services (1.9%) and Public Sector and Defence (5.1%). In Administrative services, however there is great flexibility for remote or hybrid work.

As seen in Figure 5.3.5, which examines the top requested skills in Austria drawing on online job postings in 2022 some skills associated with remote work prevail, as in 'Using digital tools for collaboration, content creation and problem solving (24.8%) and 'Creating artistic, visual or instructive material (25.8%), 'Accessing and Analysing Digital Data' (7.8%). Of course, almost all the skills highlighted in online job postings in all the countries examined so far could be associated with remote work, but the most prevalent are highlighted here.

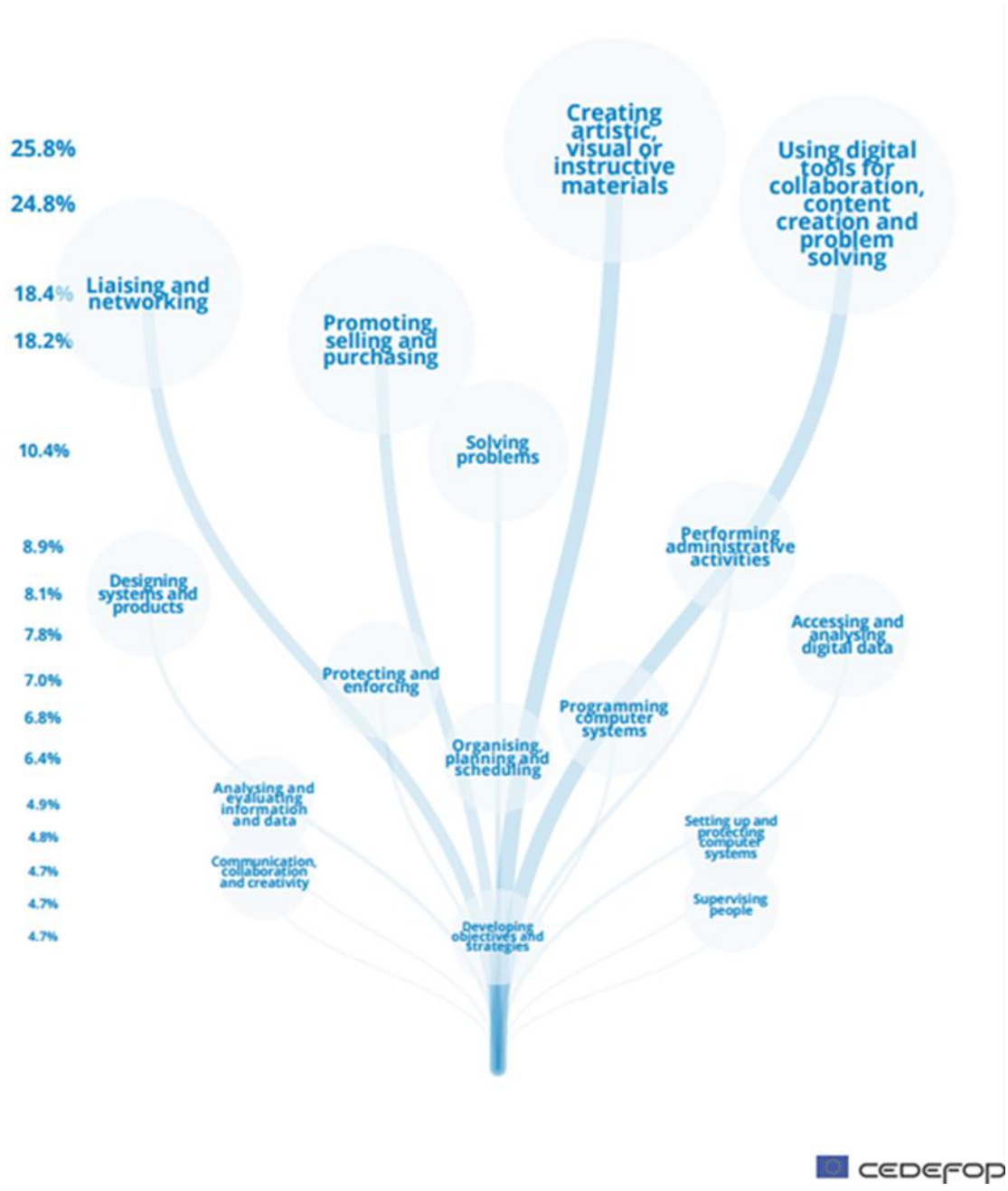


Figure 5.3.5 Most requested skills in online job ads in Austria in Skills in 2022 (ESCO level 2)
Reproduced from CEDEFOP (2024e)

Switzerland

CEDEFOP does not provide similar data on Switzerland, as it provides statistics and data on EU countries. However, Switzerland is one of the top 10 countries in the world in GDP per capital, while 74% of its GDP is

generated by the services sector, 25% by industry, while agriculture accounts for less than 1%. The vast majority of Swiss businesses are SMEs with fewer than 250 employees.[25] According to data provided by the Federal Statistical Office of Switzerland, on employment (in full-time job equivalent per sector)[26] for the first quarter of 2024, most employment was in the sectors of Health and Social Work activities, Manufacturing, Trade and Repair of Motor Vehicles and Motorcycles, Professional, Scientific and Technical activities and Education.

Switzerland has intensified efforts at digitalization on a national level and is a leader in technology. According to a report on the economic structure of Switzerland, prepared by the official Swiss organization for export and investment promotion (2019), Switzerland is leading AI research and applications and especially in healthcare hosting major tech companies and is home to leading robotics companies. It also benefits from advanced production processes and the digital transformation and is a hub for precision manufacturing. Also, it excels in blockchain technology boasting applications in finance and supply chain management, among others. Finally, it attracts major international firms in the ICT sector. All these paint a picture of, at least on the level of technological feasibility, an environment where remote operations are efficient and reliable (e.g. through blockchain). International firms, which are usually more keen and technologically adept for geographically distributed talent and opportunities, also create an ecosystem conducive to remote work. However, in comparison to other countries, according to a report by Deloitte,[27] family or privately-owned companies in Switzerland with investments in digital sectors or technologies are primarily made in three key areas: CRM, mobile devices and automation of business processes, unlike other companies on a global scale that invest in a far broader area of technology, such as 3D printing, cyber intelligence, cloud computing, enterprise application suites, etc.

United Kingdom

According to Panjwani (2023), drawing on data from the Office for National Statistics (ONS), the lion's share of the UK's economic output is enjoyed by the services industry, followed by the categories of construction and other and, finally, by manufacturing. If we look at the jobs available by industry (see Figure 5.3.6)[28], the vast majority belong to the services sector. A further breakdown of the sub-sectors that fall therein is offered in Figure 5.3.7,[29] with the largest sub-sectors in terms of employment being Health and Social Care, Retail and Wholesale, Professional and Technical, Education and Business Administration and Support. It must be noted that the data provided by the ONS provides further breakdown of industry intensity across various UK regions.

[25] See https://www.eda.admin.ch/aboutswitzerland/en/home/wirtschaft/uebersicht/wirtschaft---fakten-und-zahlen.html [Accessed 11 June 2024].

[26] See https://www.bfs.admin.ch/bfs/en/home/statistics/industry-services/businesses-employment/jobs-statistics.assetdetail.32008427.html [Accessed 11 June 2024].

[27] See https://www2.deloitte.com/ch/en/pages/private-market/articles/digital-transformation-swiss-family-and-privately-owned-businesses-advancing-and-investing-gingerly.html [Accessed 11 June 2024].

[28] Downloaded from https://commonslibrary.parliament.uk/research-briefings/cbp-8353/ [Accessed 11 June 2024].

[29] Downloaded from https://commonslibrary.parliament.uk/research-briefings/cbp-8353/ [Accessed 11 June 2024].

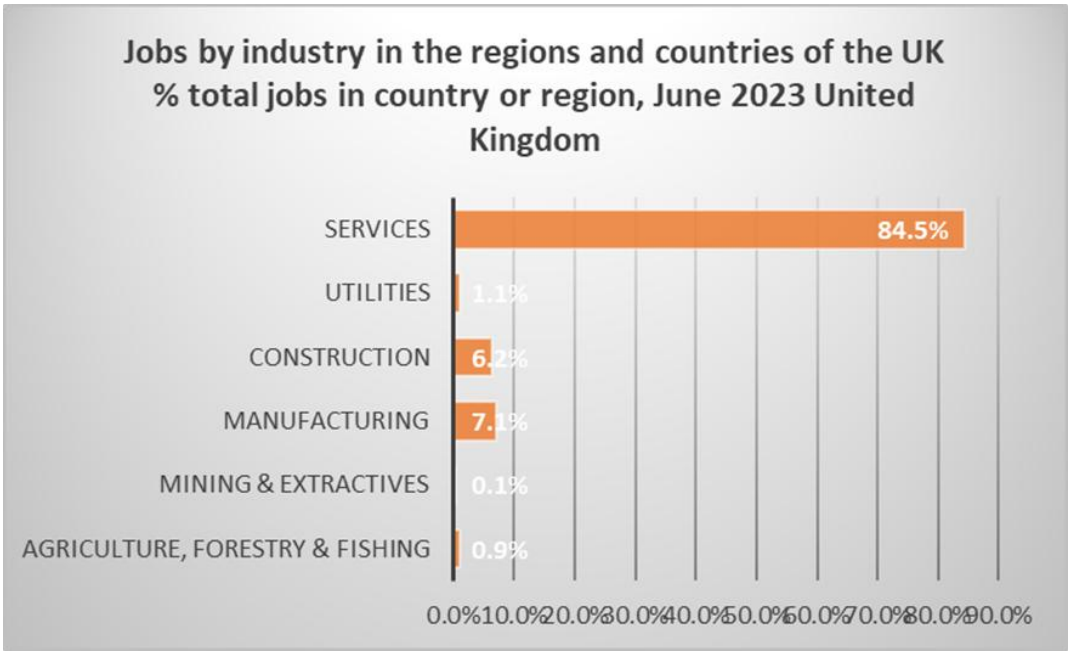


Figure 5.3.6 Jobs by industry in the regions and countries of the UK % total jobs in country or region, June 2023 United Kingdom.
Generated by author. Data taken from House of Commons Library

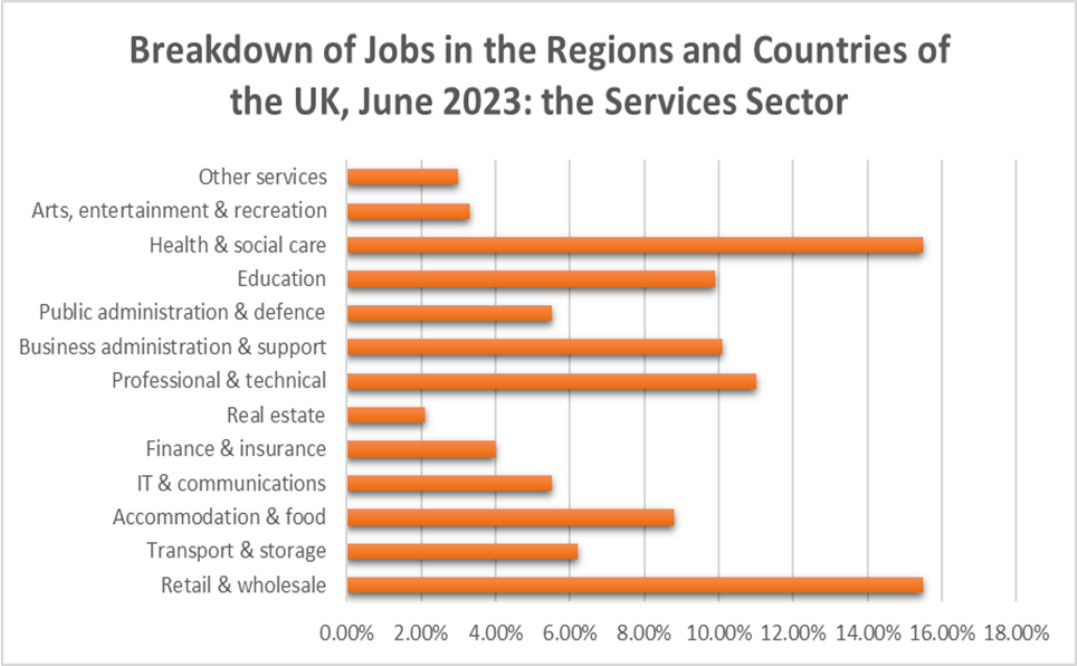


Figure 5.3.7 Breakdown of Jobs in the Regions and Countries of the UK, June 2023: the Services Sector
Generated by author. Data taken from House of Commons Library but normalized to correspond to 100% (of the Services sector)

As discussed in the case of other countries, depending on the job role, remote or hybrid opportunities can emerge in each of these sectors to varying degrees and the services sector, such as professional, public administration, etc. are especially conducive to remote work. Drawing on job listings posted on indeed.com for the UK, Vestd[30] found that Marketing, Media and IT had the highest percentages of jobs listed as remote at 13.52%, 13.14% and 10.61% out of the total listings per sector. The Energy sector, which although had the highest number of job listings offered limited opportunities for remote work (5.61%). Meanwhile, an analysis by the Department of Science, Innovation and Technology that looks into the UK Data Driven Market,[31] highlights the UK's more focused and prominent activities in the digital industry. The top services offered by the UK's data-driven companies are data infrastructure, software development, software as service, energy management and AI. All these advances can allow for more processes to be able to be performed remotely.

Türkiye

According to globalEdge, employment in Türkiye is higher in the services sector (56.3%), followed by Industry (26.5%) and, finally, Agriculture (17.12%). Drawing from data on the OECD , the share of real value added by sector to the economy per sector for 2022 in percentages is as follows:

- Industry (including energy): 30.2%
- Trade, repairs, transport, accommodation, food services: 29.6%
- Public administration, defence, education, health, social work: 10.3%
- Agriculture, forestry, fishing: 7.2%
- Construction: 5.4%
- Professional, scientific, support services: 5.1%
- Real estate: 3.8%
- Finance and insurance: 3.7%
- Information, communication: 2.6%
- Other services (ISIC Rev.4 R - U): 2.1%

When it comes to technology across sectors, which is largely an integral part of remote work, a survey on the digitalization of industry and Industry 4.0 carried out by the Istanbul Chamber of Industry shows that employers have various preoccupations with reference to the digital transformation in their sectors and how it will affect their firms. Some of the most prominent preoccupations are the lack of knowledge of practices, as well as lack of experience, reporting that most processes are carried out manually through simple digital tools. Over 40% of those surveyed suggest that corporate culture is not prepared for the transition while 30% worry that there is lack of competent staff. As it stands, in terms of technology awareness in smart production systems and integration levels in digital technologies only 22% of companies were found to have comprehensive knowledge and the top 3 sectors in awareness were electronics, software and materials.

[30] See https://www.vestd.com/remote-working-friendly-industries-uk [Accessed 11 June 2024].

[31] See https://www.gov.uk/government/publications/the-uk-data-driven-market/the-uk-data-driven-market [Accessed 11 June 2024].

According to the same report, Türkiye is carrying out numerous incentive programs to drive digital transformation in the industry focused on developing Industry 4.0 applications and implementing advanced technologies in firms. This means that Türkiye is investing in digitalizing and modernizing its economy, which could potentially lead to the existence of more flexible working arrangements.

5.4 Human Capital and Digital Literacy

In order to participate competitively in the shifting global market, but, crucially, to have access to remote and/or hybrid work arrangements, digital skills are necessary. According to Chan (2022) the adoption of digital technologies in the modern workforce has led to what are termed 'digital employees'. Employees, in their turn, leverage these technologies to improve their work life, operating, for instance, as Chan observes, through various mobile applications either in the office or away from the office. According to a study by Deloitte (2015), the need for manual labor is increasingly shrinking while technology advancements are rendering a series of occupations obsolete. At the same time, however, sectors where technology is being created are expanding, creating new occupations and roles. At the same time, it creates the needs for new skills in the digital economy and technology. In another report by Deloitte Global and the Global Business Coalition for Education (2018), it is highlighted that there is an increasing number of young people that lack the skills to participate in the workforce and employers find it difficult to find and retain talent that fulfills its needs in human capital, resulting in a global mismatch between a supply and demand. A variety of skills are highlighted in this report that vary from soft skills and technical skills to entrepreneurship and workforce readiness. In this latter category lie digital skills and the report makes the recommendation that investments are made in technological infrastructure to promote digital literacy, as well as training and upskilling in relevant skills. Technology literacy is highlighted as one of the top skills for being able to work remotely in the literature (see e.g. Henke et al. 2022). Levels of digital skills competency can therefore be indicative of the extent to which citizens are prepared to participate in the remote or hybrid workforce. Figure 5.4.1[32] provides an overview of how EU citizens, including Switzerland fare in terms of digital skills (data is unavailable for Iceland). Across all countries, individuals with high formal education have much greater levels of digital skills, apart from the Netherlands, Estonia, Finland and Denmark, where variations amongst individuals with no or low formal, medium formal or high formal education are not so pronounced.

[32] https://ec.europa.eu/eurostat/databrowser/view/isoc_sk_dskl_i21__custom_9882830/bookmark/table?lang=en&bookmarkId=ca727989-dcca-4872-9a11-051d8950f01e [Accessed 11 June 2024].

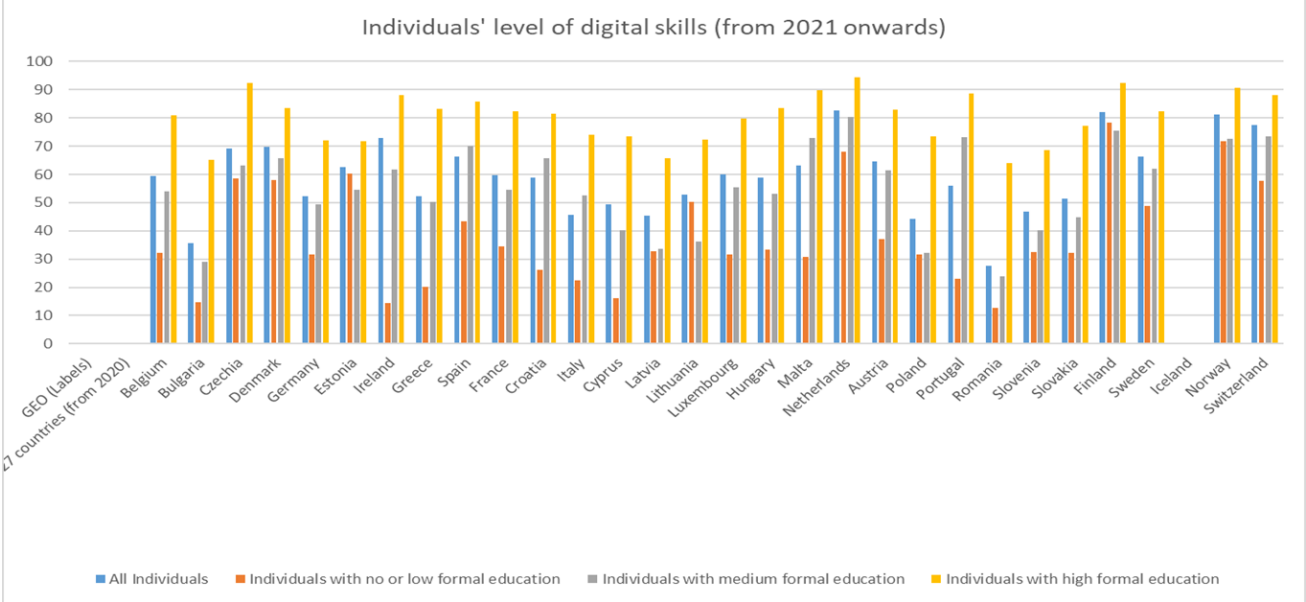


Figure 5.4.1 Individuals' level of digital skills (%) based on levels of formal education
Generated by author drawing on data from Eurostat.

The World Economic Forum, which developed the Global Competitiveness Index 4.0, as a comprehensive tool to measure the competitiveness of countries, includes 'Digital Skills among the Active Population' as one of the several pillars considered essential for country competitiveness. As seen in Figure 5.4.2,[33] out of the eight use-case countries, the Netherlands, Switzerland, Germany, the UK and Austria are well above the World median. At the same time, Greece and Italy are close to the world median, and Türkiye well beyond but with an upward trend. The Netherlands and Switzerland significantly outperform other countries.

[33] https://prosperitydata360.worldbank.org/en/indicator/WEF+GCI+EOSQ508 [Accessed 11 June 2024].

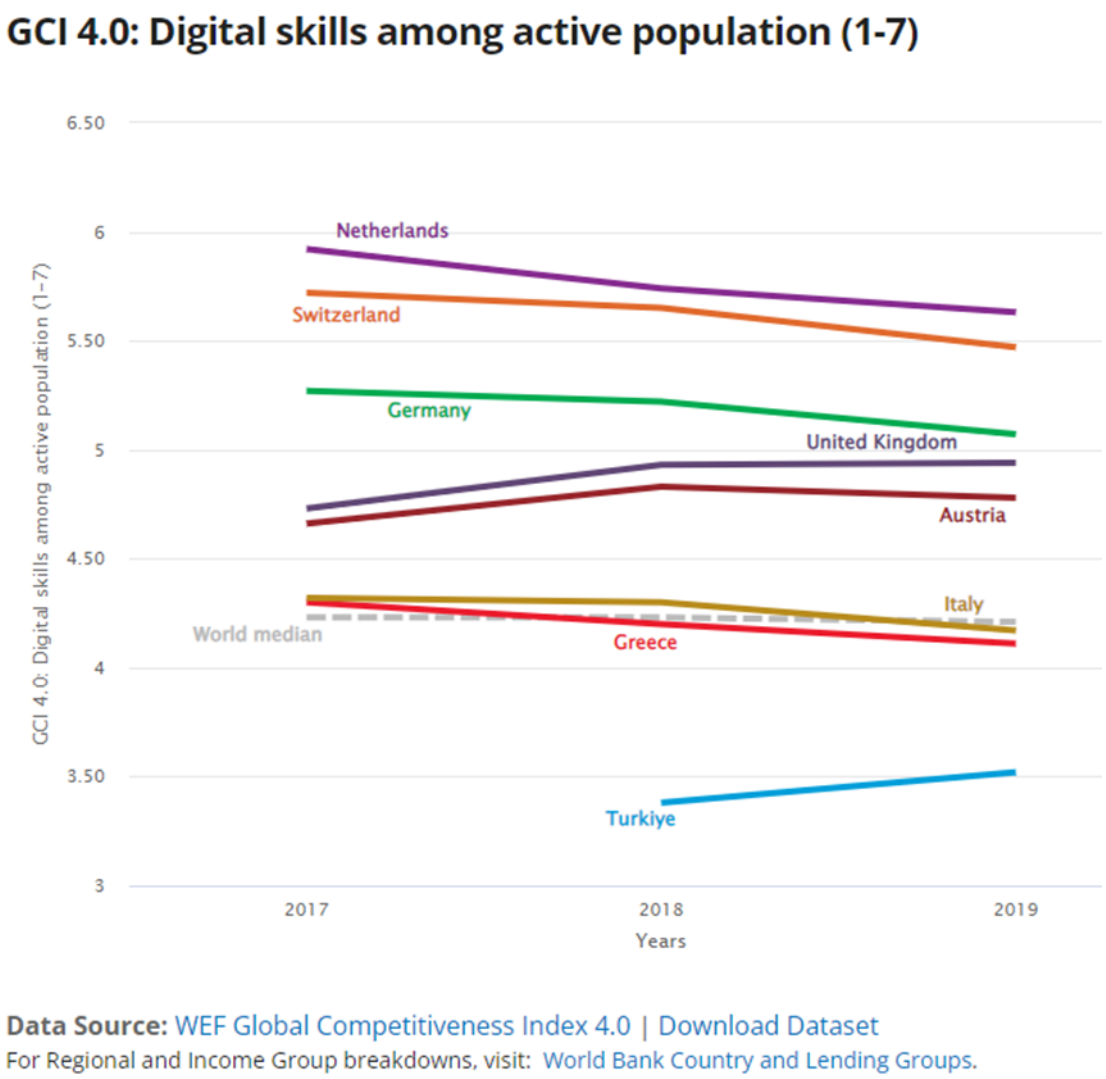


Figure 5.4.2 Digital Skills among active population: Netherlands, Switzerland, Germany, United Kingdom, Austria, Italy, Greece and Türkiye

Generated by the World Bank Group

According to Eurostat data (see Figure 5.4.3),[34] discrepancies in digital skills are noted in UK according to levels of urbanisation, with all recorded skills (above-basic communication and collaboration skills; above-basic information and data literacy skills; above-basic problem solving skills; above-basic digital content creation skills; above-basic safety skills) having a more pronounced presence in cities, compared to towns and suburbs and rural regions. This suggests that cities are more likely spaces to have individuals with the skillsets- at least those associated with digital literacy-to be more competitive and to engage in flexible working arrangements.

[34] https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20230320-2#:~:text=In%202021%2C%20just%20over%20one,above%2Dbasic%20overall%20digital%20skills [Accessed 11 June 2024].

This gap is not equally pronounced across all EU countries. For instance, Eurostat[35] records a shorter gap (of around 9%) in such digital skills between rural areas and cities in Italy, while that gap in Greece stands at around 16%.

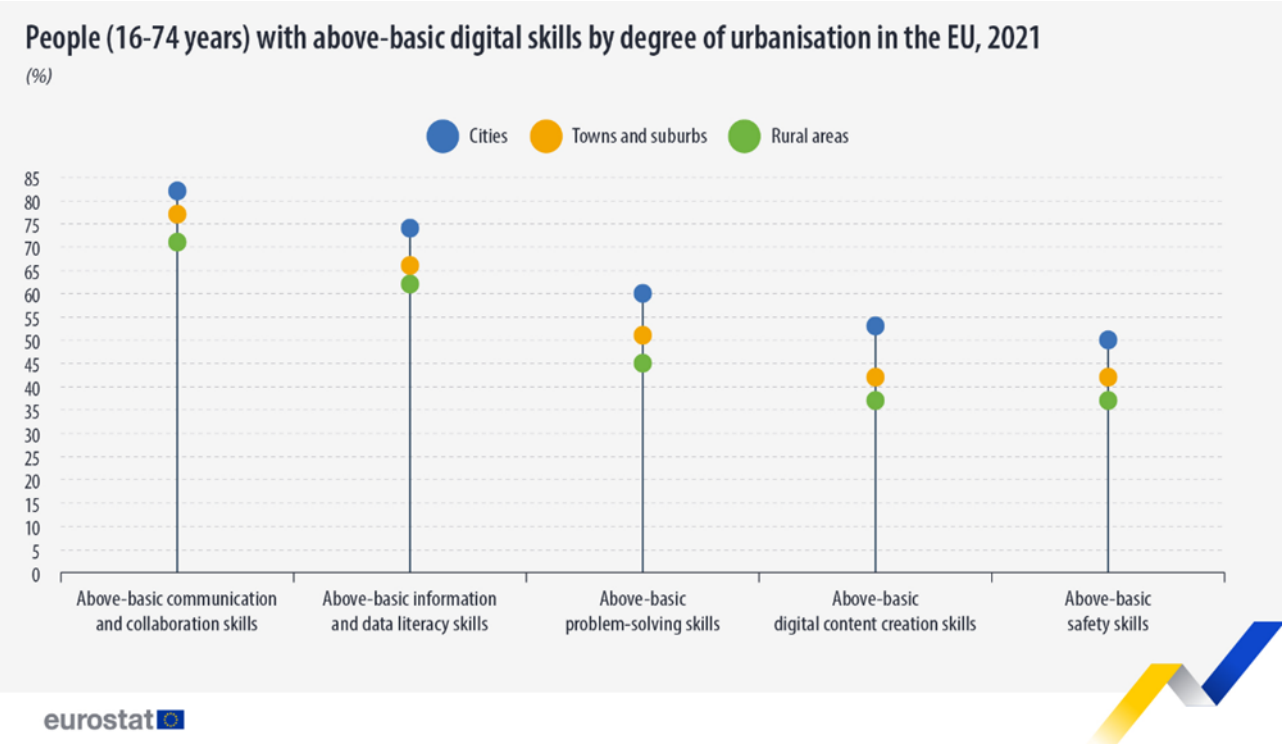


Figure 5.4.3 People (16-74 years) with above-basic digital skills by degree of urbanisation in the EU, 2021 Reproduced from Eurostat.

Drawing on the Digital Economy and Society Index 2022 individual country profiles, Table 5.4.1 and accompanying Figure 5.4.4, show that the Netherlands significantly outperforms the other countries in basic digital, above basic digital skills and basic digital content creation skills, with Italy ranking the lowest. Germany and Greece here seem to fall below the EU average. In terms of ICT specialists, again Netherlands leads, followed by Germany and Austria while Greece ranks lowest, albeit with the highest percentage of female ICT specialists. A large portion of enterprises in the Germany and the Netherlands provide ICT training, suggesting a strong support for digital skills development for employees, while Greece ranks the lowest. Germany leads in ICT graduates, suggesting a stronger and more robust ICT culture in the future.

[35] Eurostat (2023) EU digital skills divide: cities outpace rural areas. Available at https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20230320-2#:~:text=In%202021%2C%20just%20over%20one,above%2Dbasic%20overall%20digital%20skills [Accessed 11 June 2024].

Indicators	Germany	Austria	Greece	Netherlands	Italy	EU
at least basic digital skills	49%	63%	52%	79%	46%	54%
above basic digital skills	19%	33%	22%	52%	23%	26%
at least basic digital content creation skills	65%	75%	62%	83%	58%	66%
ICT specialists	4.90%	4.50%	2.80%	6.70%	3.80%	4.50%
Female ICT specialists	19%	19%	21%	18%	16%	19%
Enterprises providing ICT training	24%	18%	12%	24%	15%	20%
ICT graduates	4.90%	4.40%	3.50%	3.40%	1.40%	3.90%

Table 5.4.1 Human Capital, Digital Economy and Society Index: EU, Italy, Netherlands, Greece, Austria, Germany

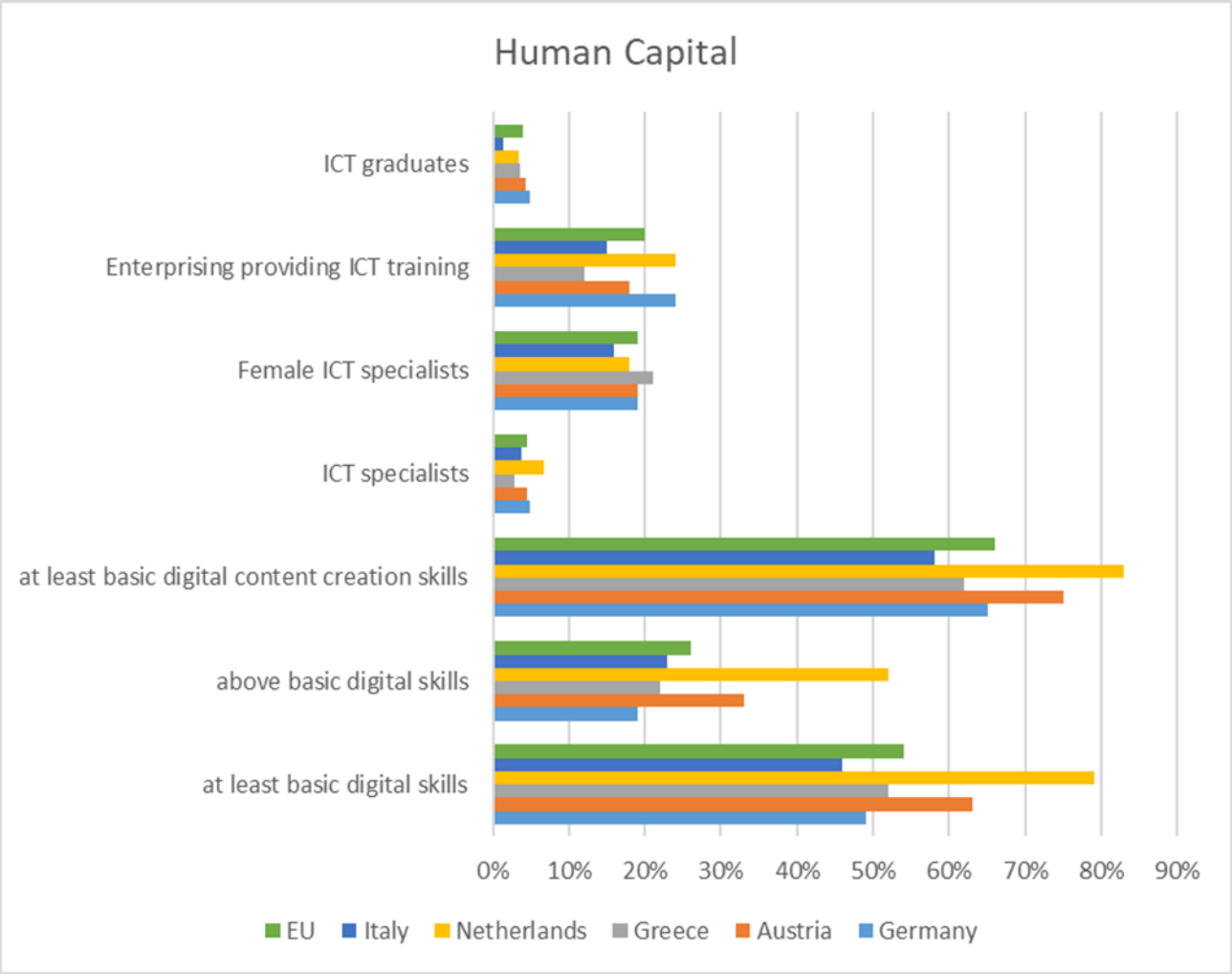


Figure 5.4.4 Human Capital, Digital Economy and Society Index: EU, Italy, Netherlands, Greece, Austria, Germany

There is no comparable data by DESI provided for the UK, or Türkiye. However, in the case of the UK, for instance, the Department for Education's Employer Skills Survey report (see IFF Research, 2023) found that there are skills shortages across various sectors reported by employers, one of which is 'digital skills'. Across all sectors studied looking at skills-shortage vacancies, a 32% shortage in digital skills is noted. Though the lack was less prevalent in Wales (28%) it stood at 32% in England, 32% in Northern Ireland and 33% in Scotland. What is more, based on a roadmap developed by Futuredotnow (2023), a coalition developed to tackle the digital gap in the UK workforce, there are stark variations in the specific digital skills observed in employees, with, e.g., employees self-reporting high levels of ability to communicate digitally (through email, microsoft teams, etc.) and low levels of being able to improve productivity using digital tools such as Trello or Slack or in areas such as problem solving and being legal and safe online. As far as Türkiye is concerned, a report by McKinsey (2020) identifies that roughly 50% of the work time is currently spent on activities which have high automation potential, which suggest a potential dynamic shift in the workforce and highlights a concomitant demand for digital, technological and further skills. The same report sees that in the next 10 years there will be a sharp increase of 22% in the demand for social skills, including entrepreneurship, advanced communication, as well as adaptability and continuous learning, and an even sharper increase of 63% in demand for technological skills, including basic digital skills and advanced data analysis. While digital and

technological skills are necessary for participating in the modern economy overall, they are especially vital for remote work as remote workers need to navigate digital communication tools, online collaboration platforms, and virtual work environments effectively.

5.5 Interim Discussion

From the countries discussed above, it can be deduced that an increasing digitally agile workforce is required. According to Cedefop's report *Setting Europe on course for a human digital transition: new evidence from Cedefop's second European skills and jobs survey* (2022), a structural shift towards remote and digital working has generated a large demand for digital skills in European economies, which applies to basic, specialised and advanced skills, varying from simple virtual communication skills to programming. The presence of human capital with digital dexterity, therefore, within each economy, is crucial for determining how viable remote work is, especially when assuming that no external talent is imported, the extent to which talent that can engage in remote work is generated and, ostensibly, the extent to which domestic companies can support remote or hybrid work. According to Sostero et al. (2020), sectors themselves have higher or lower teleworkability potential, with employees in IT and other Communication Services, Knowledge-Intensive Business Services and Education reporting much greater remote or hybrid work engagement than e.g. Other Manufacturing (distinct from high and medium-high tech manufacturing). Therefore, if the most active sectors per country are considered as discussed earlier, we can draw some conclusions about their capacity for remote work. However, there are a variety of other indices to consider. For instance, Sostero et al. (2020) also note that within the same sector larger companies are far more likely to adopt flexible work arrangements compared to smaller ones. For instance, in countries such as the Netherlands and Sweden, where the share of teleworkers is higher, between 30 and 40% of the workforce in knowledge-intensive business services is employed in larger firms. Therefore, the capacity to offer remote work on a national level, would also greatly depend on the size of businesses in each economy. Also, high-skilled, white-collar occupations, such as managers and professionals are far more likely to telework, despite the sector. Policy also plays a huge role in teleworkability potential. While the Nordic countries and Ireland have successfully embraced digital and remote work, Southern and Eastern Europe need improvements through policy intervention and investments in infrastructure and reskilling to catch up (Cedefop, 2022). The rural population, in particular, needs more digital skills. Therefore, targeted interventions in these areas are beneficial and necessary to unlock their full potential and ensure a more inclusive and resilient future.

Increasing the capacity of individuals and sectors for remote work is very important on another level, as well. At least 40% of European business leaders are planning to implement hybrid work models and 47% of European tech companies are now hiring remotely.[36] At the same time, high-tech industries face significant skill obsolescence with the need for new skills, while a great number of adult workers in the EU, Norway and Iceland report the need for knowledge and skills they do not currently possess, due to rapid digitalisation. A

[36] See https://wifitalents.com/statistic/remote-work-in-europe/ [Accessed 13 June 2024].

skills mismatch in the digital labour markets (see Cedefop, 2022) could be addressed by more access to remote work, assuming that concomitant policies are in place to support it.

5.6 Internet and Digital Infrastructure

Apart from sectoral composition of employment and other factors, Eurofound (2022a) identifies technical infrastructure (e.g. broadband accessibility) as a possible factor which might explain variations in the prevalence of telework noted across different countries, noting that infrastructure might also refer to the digital infrastructure provided by companies. Variation, according to the same report between cities and rural areas might also have to do with the availability of high-speed broadband which is more accessible in urban environments. This section looks at various aspects of digital infrastructure and especially broadband availability, as that is a determining factor in successful remote work.

According to statistical information generated by the International Telecommunication Union in Geneva exploring world ICT data for the periods 2005-2023, there has been an increase in internet penetration worldwide across both urban and rural areas. However, stark differences are noted between high-income and low-income economies, especially if rural environments are considered. As a case in point, the population covered by a mobile-cellular network in rural areas grew from 98.1% to 99% from 2015 to 2023 in high-income countries while the figures for low-income countries grew from 69.5% for 2015 to 85.7% for 2023. ITU (2023), more specifically, observes that throughout the world, 50% of individuals in rural areas use the Internet compared to 81% of those residing in urban areas. In Africa, those percentages stand at 23% and 57% respectively. In Europe, the gap is far less pronounced with 92% internet use recorded in urban areas and 88% in rural areas, given that Europe, overall, has a very high penetration rate. However, there is some variation amongst regions, as, according to Statista, internet penetration for Northern Europe as of April 2024 was at 97.4% of the population, 94.5% for Western Europe, 90.2% for Southern Europe and 88.4% for Eastern Europe. These numbers overall highlight that internet availability disparities alone might contribute significantly to unequal access to remote work opportunities and that digital inequality might exacerbate existing inequalities, especially in poorer regions, such as many African countries.

Availability of the internet is not only an issue of infrastructure but, of course, affordability. International Telecommunication Union (2024). According to the *The affordability of ICT services 2023* policy brief by the International Telecommunication Union, for 41 out of the 42 European countries explored, the price for data-only mobile broadband is equal to or less than 2% of the individual countries' Gross National Income per capita. This is the case also for fixed broadband for 37 out of the 42 countries. The price range is very different for African countries and the Americas. In the Americas, Arab States, Asia-Pacific regions, the prices are above 5% of the average income and in 18 African countries above 20%. Europe's internet services remain very affordable, comparatively. Figure 5.6.1 presents the affordability of fixed broadband and mobile data and voice basket as a percentage of GNI p.c. across the eight use-case countries of the R-Map project. Austria appears to have the most affordable fixed broadband and mobile data and voice basket, as opposed to Greece.

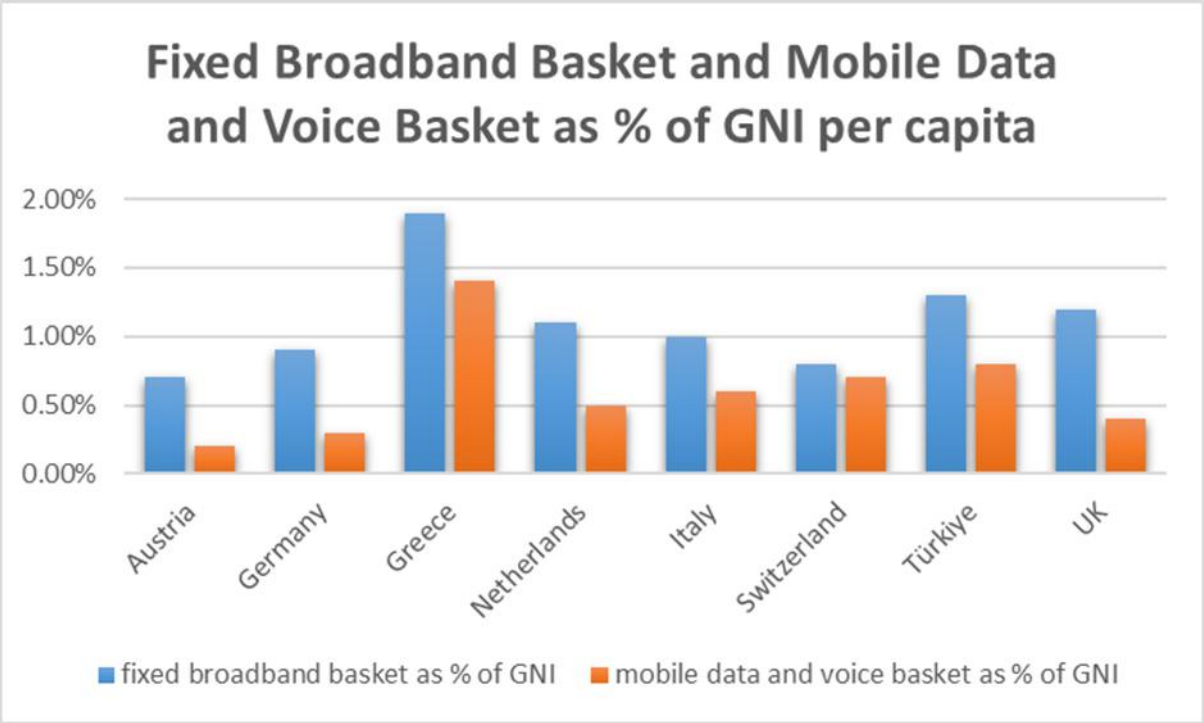


Figure 5.6.1 Fixed Broadband Basket and Mobile Data and Voice Basket as % of GNI per capita
Generated by author, based on data provided by the Digital Development Dashboard, ITU

Table 5.6.1 and Figure 5.6.2 below present more information on a variety of DESI indicators that are meant to measure the digital infrastructure of economies, of the available countries: Germany, Austria, Greece, the Netherlands and Italy, as well as the wider EU.

Indicators	Germany	Austria	Greece	Netherland	Italy	EU
Overall fixed broadband take-up	**82%**	**78%**	**82%**	**97%**	**66%**	**78%**
At least 100 Mbps fixed broadband take-up	**29%**	**18%**	**9%**	**47%**	**38%**	**41%**
At least 1Gbps take-up	**2.46%**	**<0.01%**	**<0.01%**	**<0.01%**	**7.06%**	**7.58%**
Fast broadband (NGA) coverage	**96%**	**93%**	**92%**	**99%**	**97%**	**90%**
Fixed Very High Capacity Network (VHCN) coverage	**75%**	**45%**	**20%**	**91%**	**44%**	**70%**

Fibre to the Premises (FTTP) coverage	**15%**	**27%**	**20%**	**52%**	**44%**	**50%**
5G spectrum	**100%**	**66%**	**99%**	**33%**	**60%**	**56%**
5G coverage	**87%**	**77%**	**66%**	**97%**	**99.70 %**	**66%**
Mobile broadband take-up	**87%**	**91%**	**76%**	**94%**	**80%**	**87%**
Broadband price index (score: 0-100)	**80.00**	**74.00**	**58.00**	**68.00**	**76.00**	**73.00**

Table 5.6.1 DESI (Digital Economy and Society Index) indicators for Germany, Austria, Greece, Netherlands, Italy and the EU.
Data drawn from Digital Economy and Society Index 2022 individual country profiles.

In terms of fixed broadband, the Netherlands, Germany and Greece have the highest take up, although Greece has the lowest take-up for high-speed broadband, while the Netherlands leads significantly there. Gigabit broadband is moderately adopted in Italy and across the EU but there is minimal adoption in Austria, Italy and the Netherlands. Greece also lags in VHCN coverage, with the Netherlands leading in this category, followed by Germany. The Netherlands and Italy lead in the fibre to premises category. In terms of 5G spectrum and coverage Germany has fully allocated its 5G spectrum and has very extensive coverage, while the Netherlands has almost complete coverage but low allocation of its 5G spectrum (33%).

High broadband take-up and coverage are conducive to remote work, so countries like the Netherlands, Germany and Austria would be particularly suited for remote work. Greece faces numerous challenges, both in terms of lower fixed and mobile broadband coverage and uptake, which would pose difficulties to remote workers. Greece scores lower than the other countries (see Figure 5.6.2), such as at least 100 Mbps fixed broadband takeup, fast broadband coverage, fixed VHCN coverage and fibre to premises coverage.

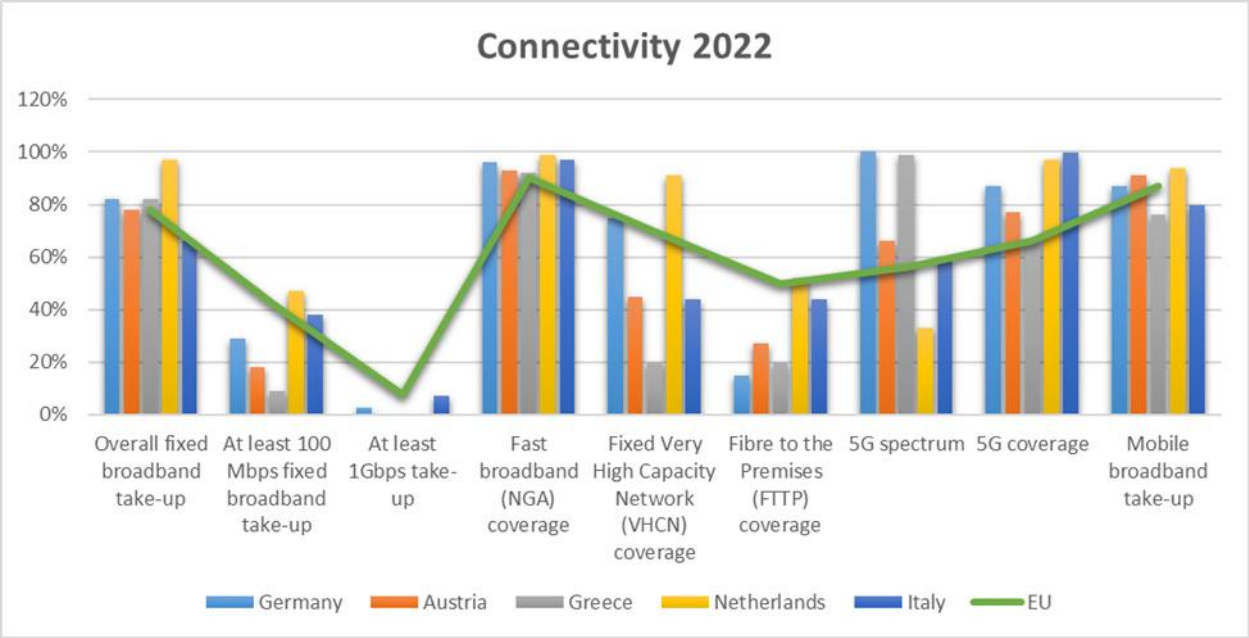


Figure 5.6.2 Connectivity Across Germany, Austria, Greece, Netherlands, Italy and the EU Data drawn from Digital Economy and Society Index 2022 individual country profiles.

Apart from the information presented above, when it comes to remote work, user experience and reliability of connectivity are crucial. According to data collected and analysed by Open Signal there is great variation in user experience across European countries, with broadband download and upload speeds differing widely. The Netherlands has the highest download and upload speed while Greece the lowest (see Table. 5.6.2; Figure 5.6.3; Figure 5.6.4).

Country	Broadband Upload Speed (Mbps)	Broadband Download Speed (Mbps)	Broadband Consistent Quality
Netherlands	50.00	104.4	79.3%
Switzerland	48.4	102.1	81.8%
UK	20.6	66.1	78.4%
Germany	18.8	61.8	74.8%
Italy	22.8	52.4	72.1%
Austria	15.5	49.7	71.4%

Greece	7.3	36.5	46.4%

Table 5.6.2 User Broadband experience: Upload, Download Speed and Broadband Consistent Quality Data taken from Opensignal

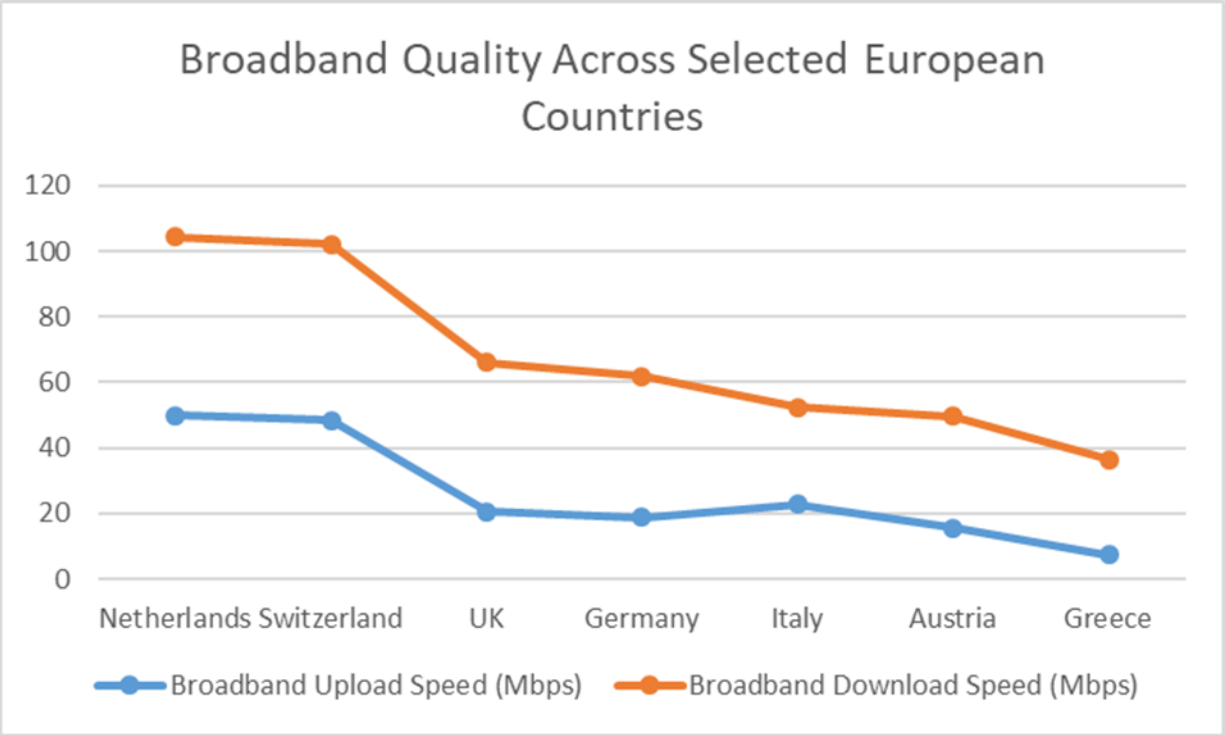


Figure 5.6.3 User Broadband experience: Upload, Download Speed

Opensignal, where the data is taken from, uses six key performance indicators to measure broadband consistency quality as follows: download and upload speed, latency, jitter, packet loss and time to first byte. High jitter, for instance, leads to poor voice and video communications quality, which would cause great difficulties for remote workers using e.g. teleconferencing tools. Again, Greece appears to have the most unreliable broadband quality, deviating substantially from the other countries studied and in fact has the lowest scores across all three categories of all European countries, not only comparatively to the use-case countries presented here. Substantial investment in infrastructures is, therefore, required.

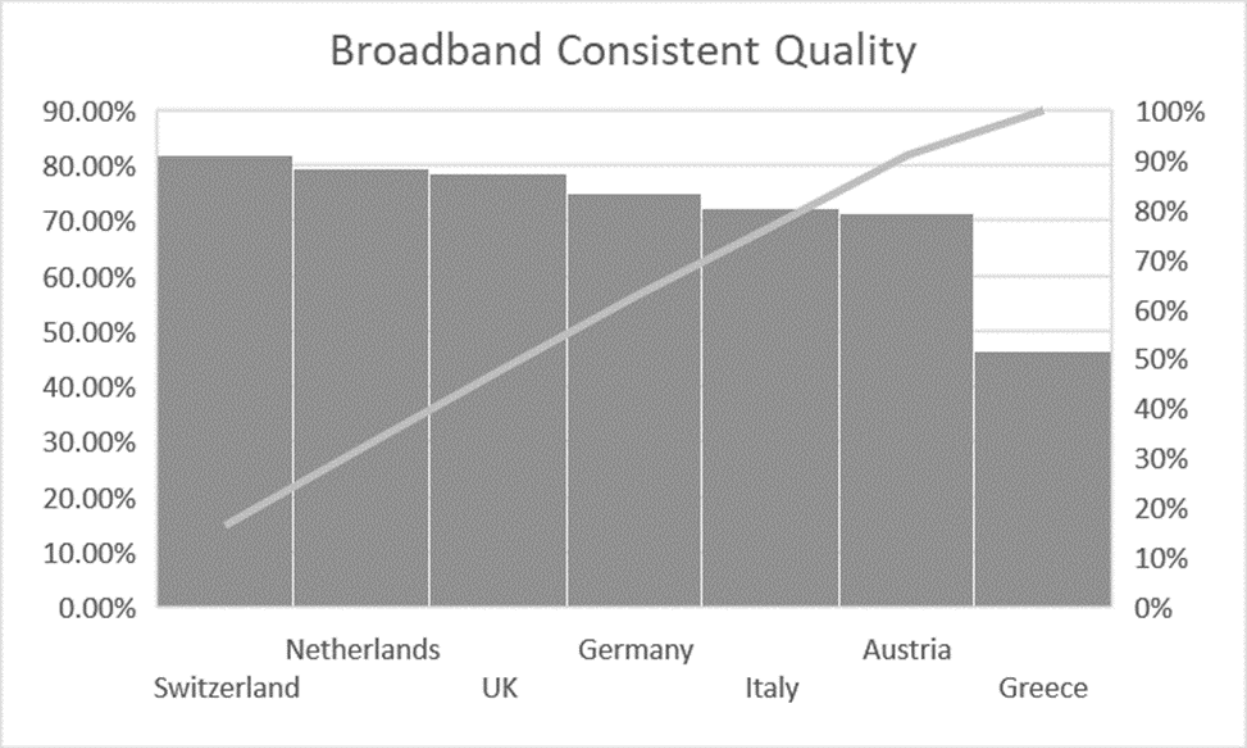


Figure 5.6.4 User Broadband experience: Broadband Consistent Quality

If we look at the use-case countries compared to OECD countries with reference to broadband speed subscriptions (see Figure 5.6.5),[37] we can draw the following conclusions. The Netherlands shows very low levels of low-speed connections (0.6%) and a very high percentage of access to 100 Mbps and 1Gbps speeds (31.8%), suggesting excellent broadband infrastructure. Germany has a moderate spread across all speed categories, with a significant portion having access to speeds between 100 Mbps and 1Gbps (18.7%), although gigabit speeds are limited (1.8%). Switzerland has a low percentage of low-speed connections and a high percentage of access to 100 Mbps and 1Gbps speeds (29.1%), as well as a relatively high percentage of users having access to gigabit speeds (10.4%). Italy exhibits a relatively good distribution of broadband speeds, with 4% of users accessing gigabit speeds while the majority of connections are above 100 Mbps speeds. Austria has a balanced distribution across speed tiers. Greece (18.7%) and Türkiye (16.9%) both have a high percentage of connections under 25/30 Mbps, with mid-and-high-range speeds underrepresented.

[37] See www.oecd.org/sti/broadband/broadband-statistics [Accessed 11 June 2024].

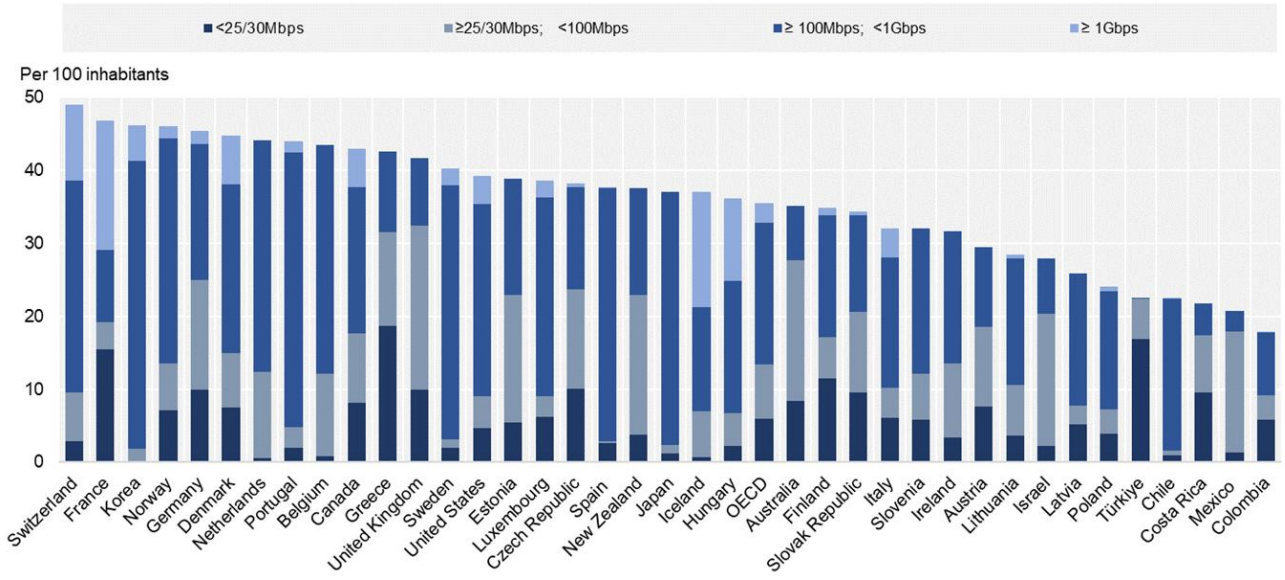


Figure 5.6.5 OECD Broadband statistics, Fixed broadband subscriptions per 100 inhabitants, per speed tiers, June 2023

If we consider connectivity in relation to the urban rural divide, a more nuanced picture emerges. As seen in Figures 5.6.6, 5.6.7, 5.6.8, 5.6.9, apart from cross-country variation, there is great variation in both fixed VHCN coverage and FTTP coverage between densely and sparsely populated regions. In the case of fixed VHCN coverage, there is a stark difference in the EU, with rural areas having much less coverage, but these differences are extremely pronounced in the case of Greece. The same is the case for FTTP coverage.

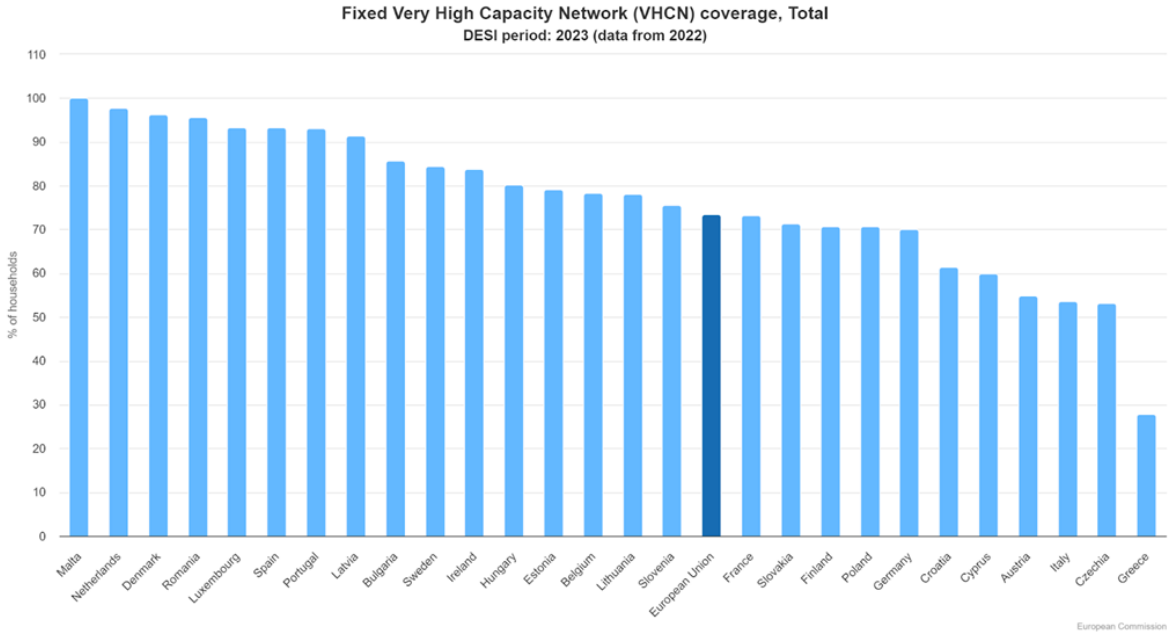


Figure 5.6.6 VHCN coverage, European Union, DESI 2023 Indicators
Generated by Digital Decade DESI visualization tool.

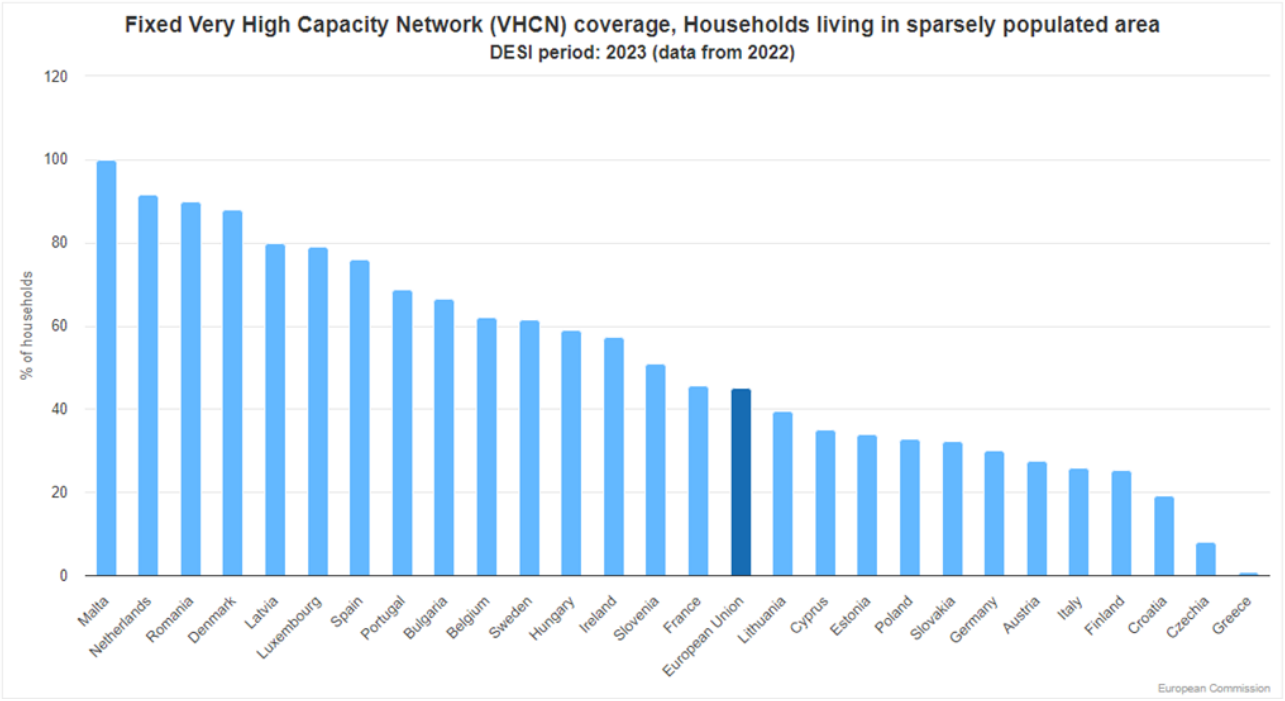


Figure 5.6.7 VHCN coverage, Rural Areas, European Union, DESI 2023 Indicators
Generated by Digital Decade DESI visualization tool.

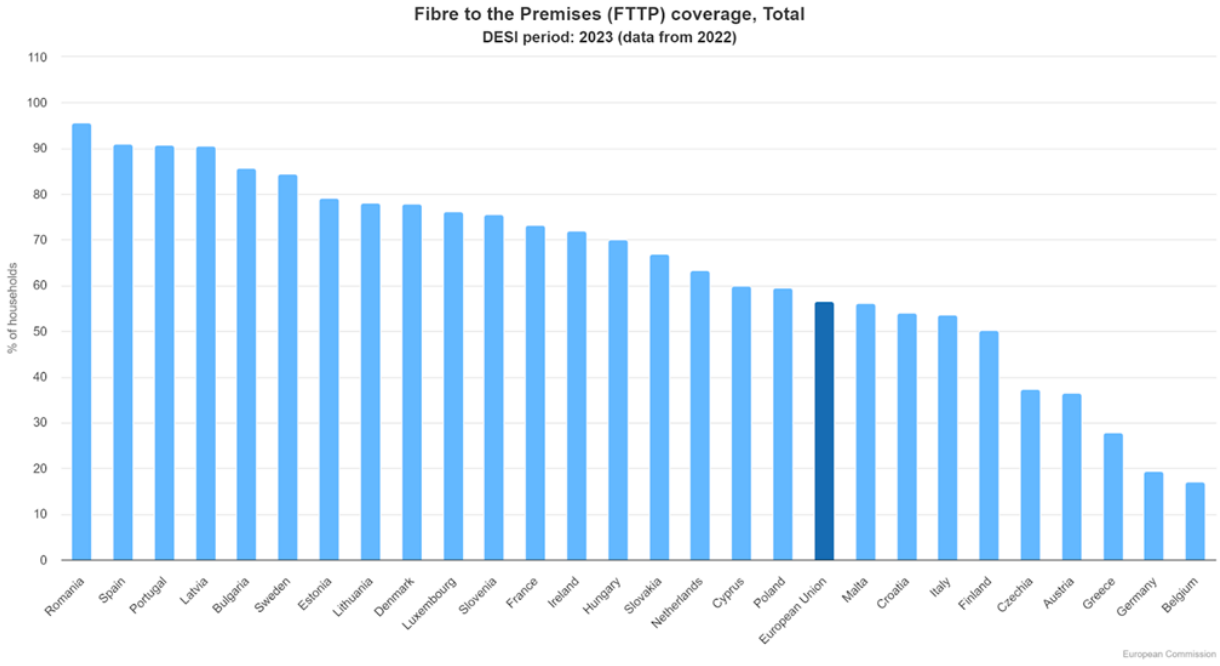


Figure 5.6.8 FTTP coverage, European Union, DESI 2023 Indicators
Generated by Digital Decade DESI visualization tool.

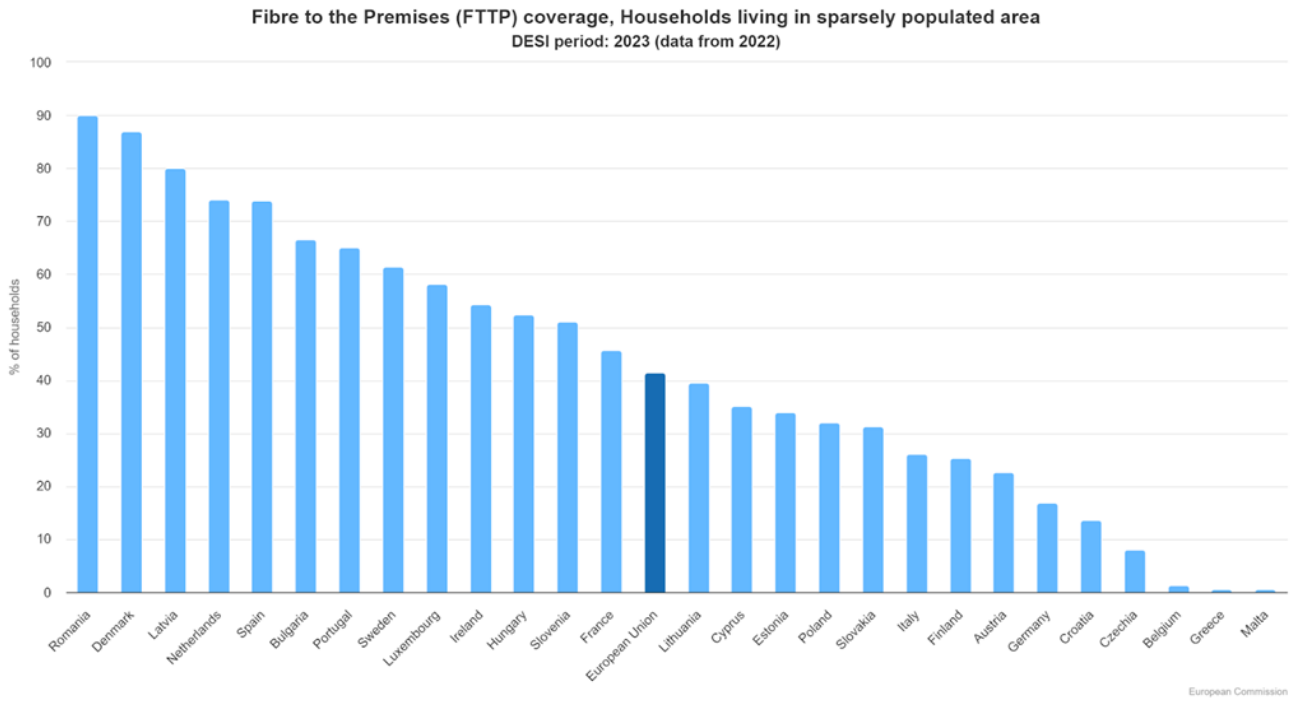


Figure 5.6.9 FTTP coverage, Rural Areas, European Union, DESI 2023 Indicators
Generated by Digital Decade DESI visualization tool.

Gjergji (2022), drawing on Ookla's Speedtest Intelligence data for the first quarter of 2022, has generated various maps representing internet speeds on Country, NUTS-2, NUTS-3 and city level (of 100.000 or more inhabitants). As seen in Figure 5.6.10, Western and Northern Europe performs much better in download speed.

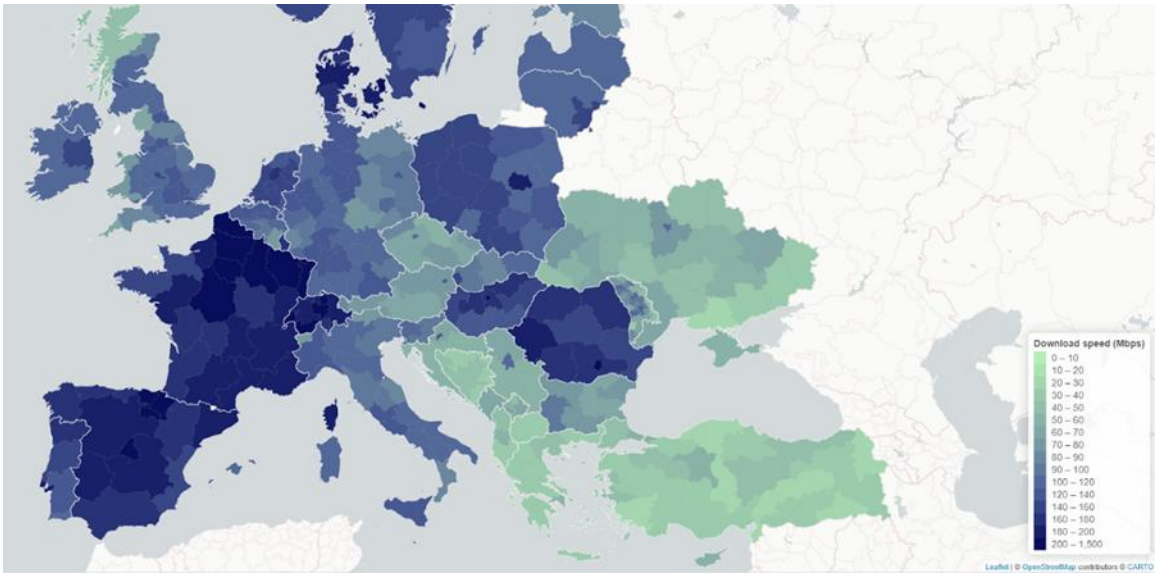


Figure 5.6.10 Map of Europe based on Download Speed (Mbps)
Generated by Gjergji (2022)

Below follows a closer look at the R-map use-case countries, for which there is available information. For all the countries, apart from the maps generated, which show average download speeds, the latest dataset for NUTS-3 of all European countries studied was downloaded to determine the fastest and slowest download speed region per country. Data on all NUTS-3 level regions is available but beyond the scope of this report.

Austria

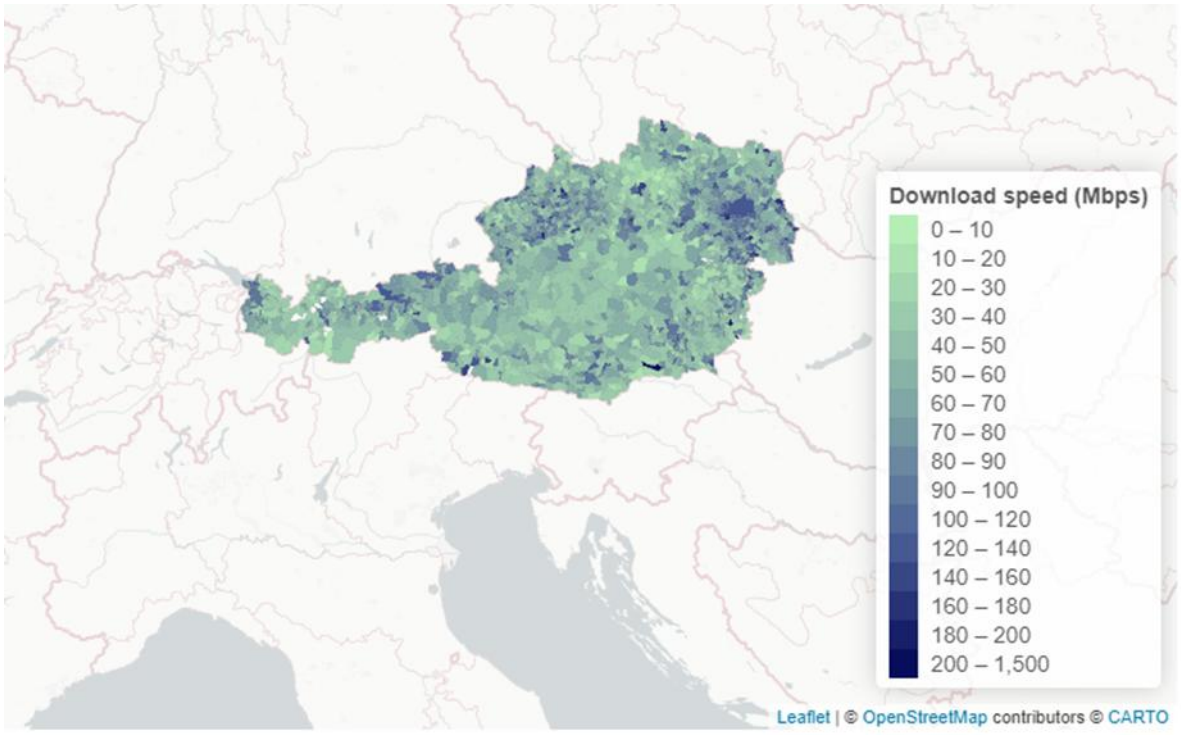


Figure 5.6.11 Map of Austria based on Download Speed (Mbps)
Generated by Gjergji (2022)

As can be seen from the map (Figure 5.6.11), there is great variation in internet download speed throughout the country. Below is information on the regions with the fastest and slowest download speeds.

Highest Average Download Speed:

Region: Wien (AT130)

Average Download Speed: 124.82 Mbps

Average Upload Speed: 29.1 Mbps

Average Latency: 11.25 ms

Lowest Average Download Speed:

Region: Lungau (AT321)

Average Download Speed: 41.18 Mbps

Average Upload Speed: 13.33 Mbps

Average Latency: 19.26 m

Germany

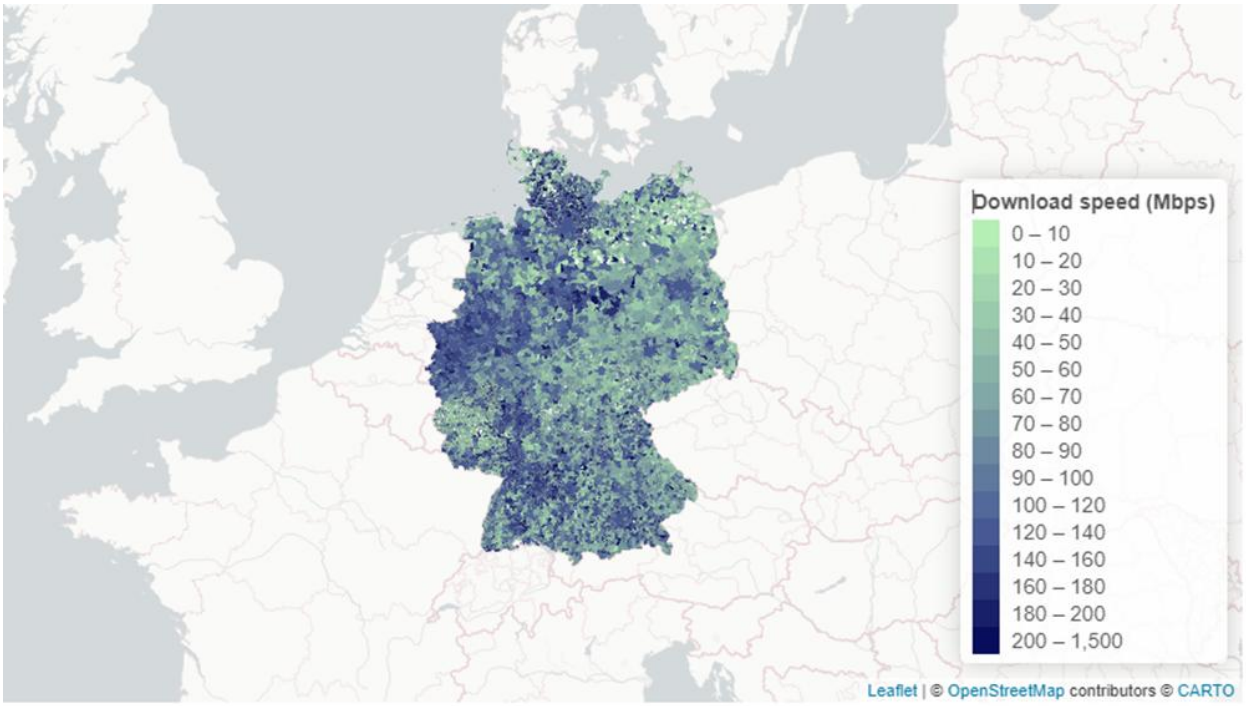


Figure 5.6.12 Map of Germany based on Download Speed (Mbps)
Generated by Gjergji (2022)

Germany also exhibits variation in internet download speed throughout but with various regions with high download speeds. Below is information on the regions with the fastest and slowest download speeds (See figure 5.6.12).

Highest Average Download Speed:

Region: Peine (DE91A)

Average Download Speed: 169.1 Mbps

Average Upload Speed: 87.83 Mbps

Average Latency: 16.41 ms

Lowest Average Download Speed:

Region: Vulkaneifel (DEB24)

Average Download Speed: 42.32 Mbps

Average Upload Speed: 14.72 Mbps

Average Latency: 28.59 ms

Greece

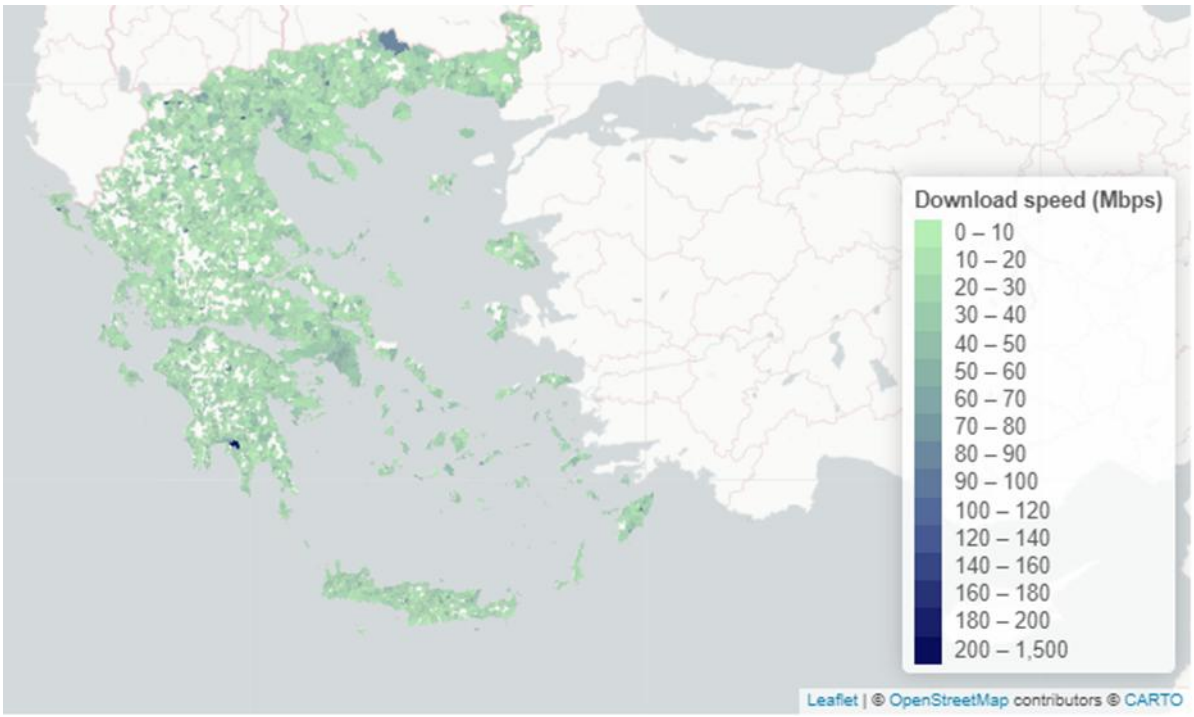


Figure 5.6.13 Map of Greece based on Download Speed (Mbps)
Generated by Gjergji (2022)

Greece appears to have the slowest download speeds across all use-case countries (See figure 5.6.13). Below is information on the regions with the fastest and slowest download speeds.

Highest Average Download Speed:

Region: Voreios Tomeas Athinon (EL301)

Average Download Speed: 58.23 Mbps

Average Upload Speed: 11.3 Mbps

Average Latency: 11.38 ms

Lowest Average Download Speed:

Region: Fokida (EL645)

Average Download Speed: 21.94 Mbps

Average Upload Speed: 4.51 Mbps

Average Latency: 31.31 ms

Italy

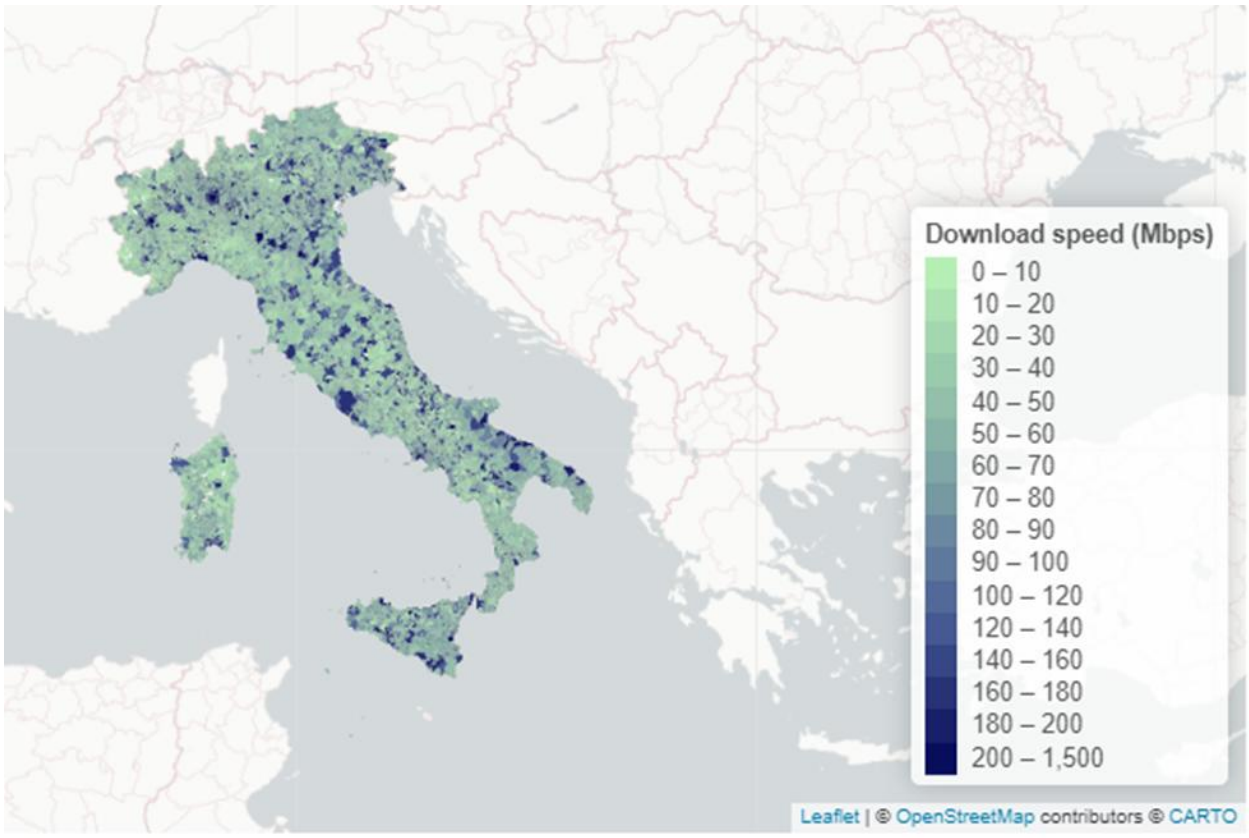


Figure 5.6.14 Map of Italy based on Download Speed (Mbps)
Generated by Gjergji (2022)

Italy, as with other countries seen so far also exhibits variation in internet download speed with certain regions enjoying very high speeds (See figure 5.6.14). Below is information on the regions with the fastest and slowest download speeds.

Highest Average Download Speed:

Region: Milano (ITC4C)

Average Download Speed: 187.33 Mbps

Average Upload Speed: 112.45 Mbps

Average Latency: 9.3 ms

Lowest Average Download Speed:

Region: Mantova (ITC4B)

Average Download Speed: 51.24 Mbps

Average Upload Speed: 17.57 Mbps

Average Latency: 24.82 ms

The Netherlands

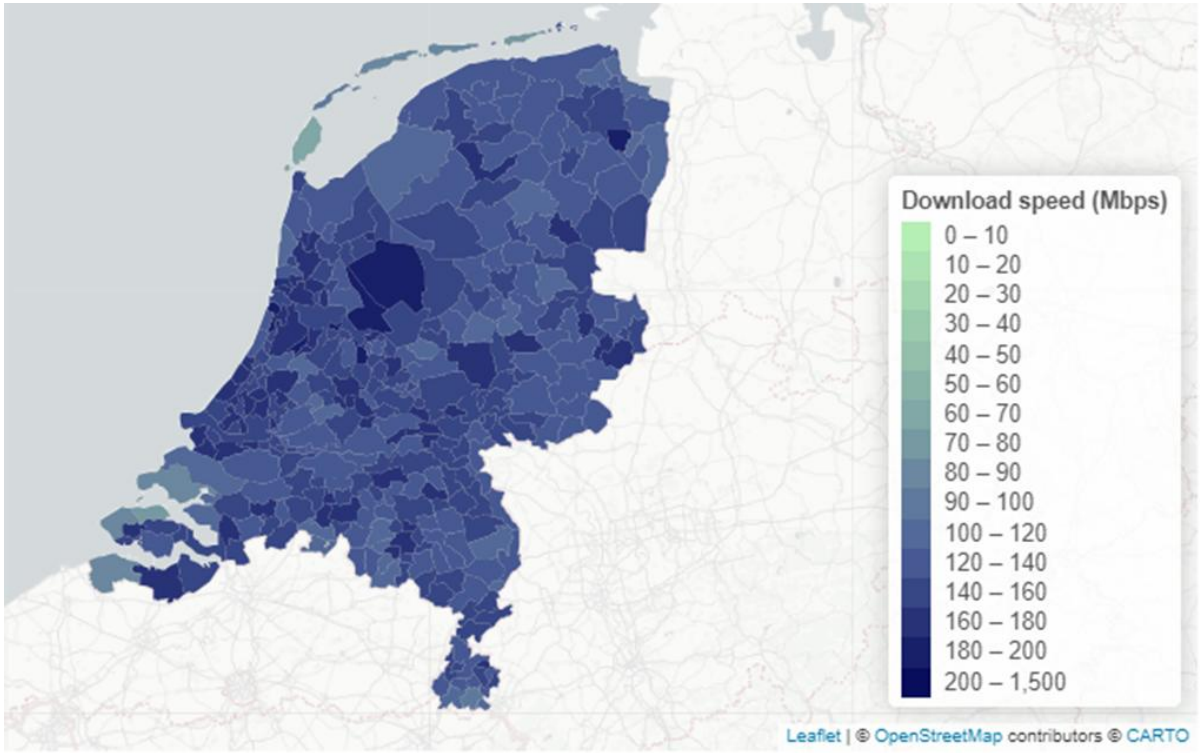


Figure 5.6.15 Map of the Netherlands based on Download Speed (Mbps)
Generated by Gjergji (2022)

The Netherlands seems to have consistently high broadband download speeds throughout the country with certain variations (See figure 5.6.15).

Highest Average Download Speed:

Region: Flevoland (NL230)

Average Download Speed: 176.71 Mbps

Average Upload Speed: 151.38 Mbps

Average Latency: 7.85 ms

Lowest Average Download Speed:

Region: Delfzijl en omgeving (NL112)

Average Download Speed: 115.3 Mbps

Average Upload Speed: 40.38 Mbps

Average Latency: 14.72 ms

Switzerland

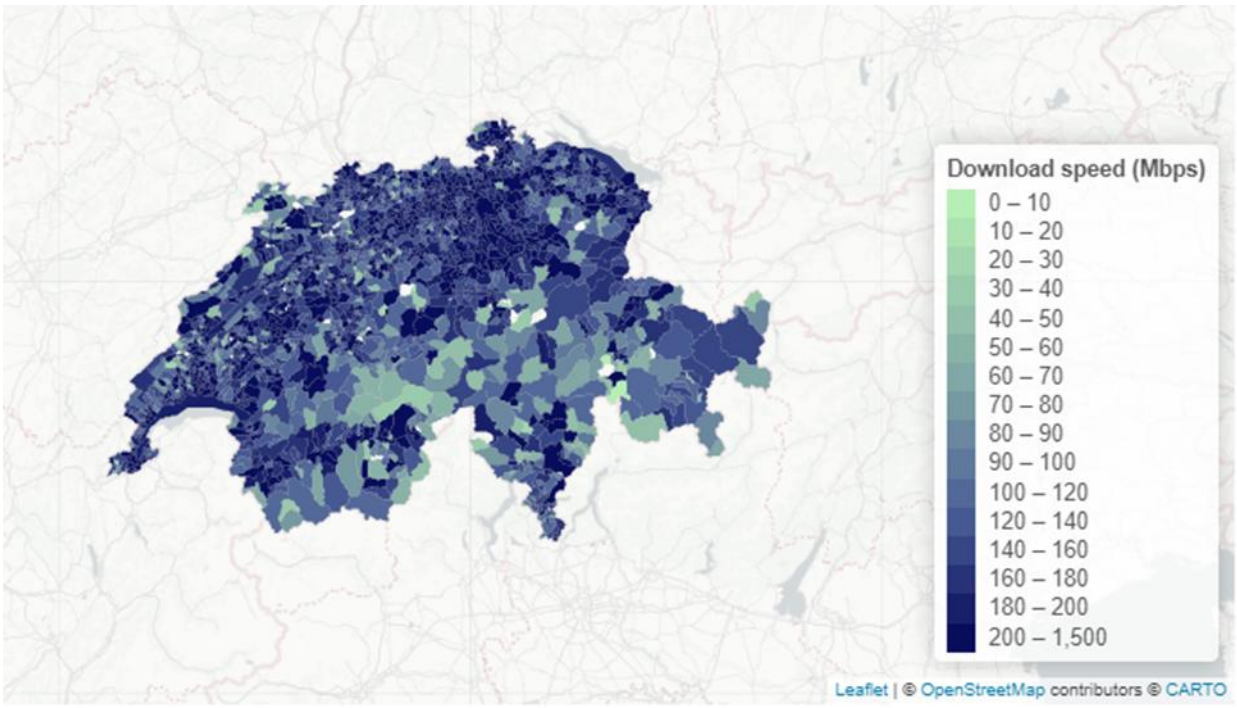


Figure 5.6.16 Map of Switzerland based on Download Speed (Mbps)
Generated by Gjergji (2022)

Switzerland, like the Netherlands, seems to have consistently high broadband download speeds throughout the country with certain regions enjoying low or lower download speeds (See figure 5.6.16).

Highest Average Download Speed:

Region: Basel-Stadt (CH031)

Average Download Speed: 240.42 Mbps

Average Upload Speed: 183.08 Mbps

Average Latency: 7.9 ms

Lowest Average Download Speed:

Region: Graubünden (CH056)

Average Download Speed: 143.03 Mbps

Average Upload Speed: 76.74 Mbp

Average Latency: 12.73 ms

UK

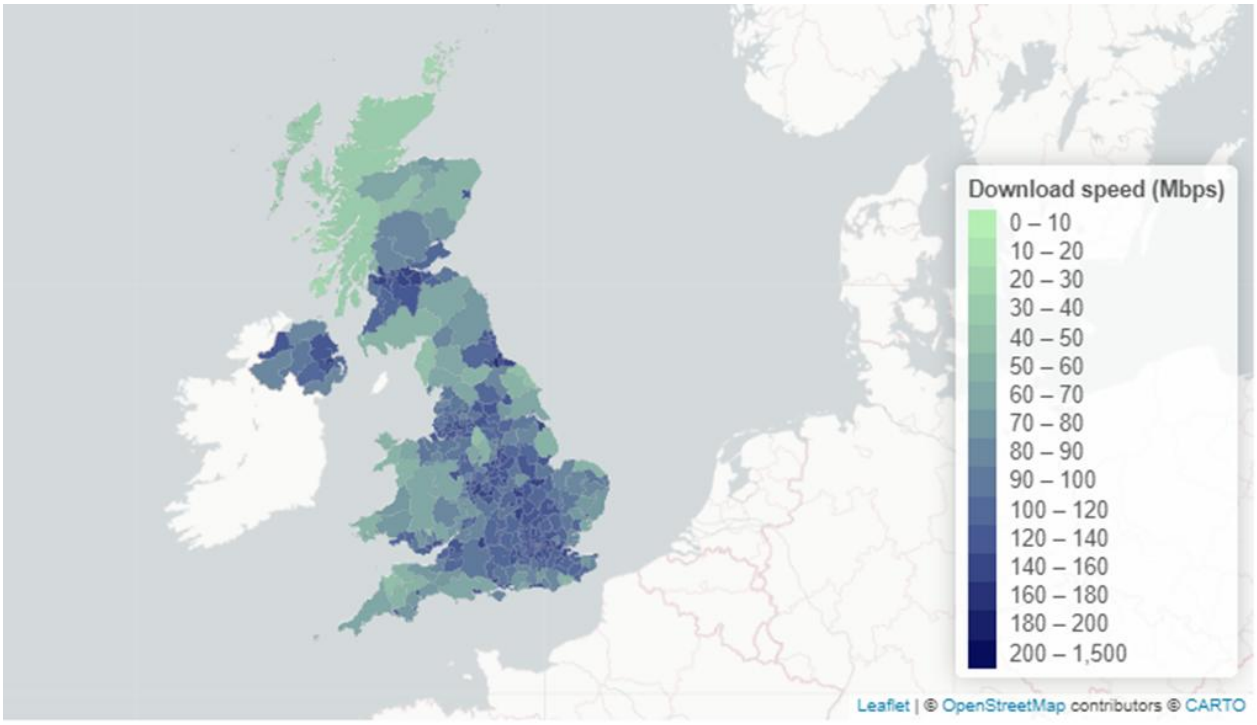


Figure 5.6.17 Map of the UK based on Download Speed (Mbps)
Generated by Gjergji (2022)

The UK exhibits relatively great variation in download speeds, with various regions, especially in the northern part of Scotland having slower speeds (See figure 5.6.17). Here is the detailed information for the NUTS-3 regions with the highest and lowest average download speeds in the UK:

Highest Average Download Speed:

Region: Southampton (UKJ32)

Average Download Speed: 167.0 Mbps

Average Upload Speed: 103.18 Mbps

Average Latency: 14.53 ms

Lowest Average Download Speed:

Region: Orkney Islands (UKM65)

Average Download Speed: 29.9 Mbps

Average Upload Speed: 8.23 Mbps

Average Latency: 49.01 ms

Türkiye

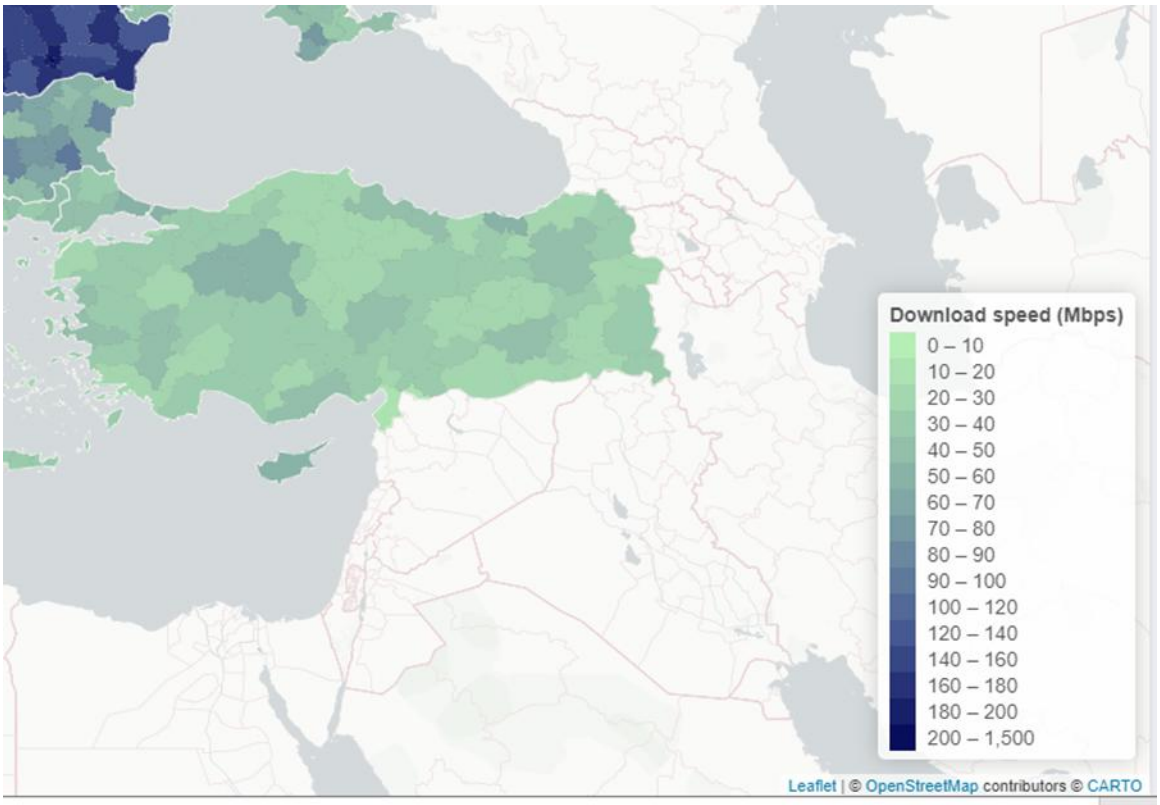


Figure 5.6.18 Map of Türkiye based on Download Speed (Mbps)
Generated by Gjergji (2022)

Although no specific data was found for Türkiye in the dataset, the map generated on the country level shows variation in download speeds, but overall much lower speeds compared to other countries in the group studied (See figure 5.6.18).

All the information on prices, broadband availability, infrastructure, speed and quality suggests that highly competitive economies in the group of countries studied (e.g. Netherlands, Switzerland) have greater infrastructure to support remote work and said infrastructure is to a great extent dispersed in the country and not concentrated only in e.g. urban regions. This is not, eg., the case in Greece, where broadband download speed is low in remote regions such as Chalkidiki (EL527), Thesprotia (EL542) and Evrytania (EL623) and is in fact the lowest in all the regions in the dataset that reflect the use-case countries (except for Türkiye, which is not covered).

5.7 Living Conditions: Quality of Life, Accessibility and Cost of Living

The increasing number of websites, groups and sources of information dedicated to cities and regions that are explicitly targeting remote workers and digital nomads is growing. This trend suggests that remote work and

hybrid work arrangements are becoming a permanent fixture in today's labour market. Nomad List,[38] for instance, drawing on millions of data points on thousands of cities around the world, such as cost-of-living, temperature, safety, internet speed and other such information ranks cities from most to least attractive for remote workers. Indicators for scoring cities vary from social aspects (e.g. friendly for women, levels of racism, happiness, LGBTQ+ friendliness, etc.), to income and infrastructure (internet speed, traffic,etc.) and climate/health (air quality, vulnerability to climate change, etc.). This ranking system is indicative but highlights the need to look at factors beyond digital infrastructure to understand the determinants that render specific locations more amenable to remote work from the employee's perspective.

5.7.1 Cost of Living

Cost of living information is mostly available on a country level and on the level of cities, rather than on regions within a country. Figure 5.7.1 represents a map of Europe utilizing a colour gradient, where green indicates lower cost of living locations and red signifies higher cost of living regions. All indices based on which cost of living is calculated for each country are relative to New York which is set as a baseline with a value of 100%.

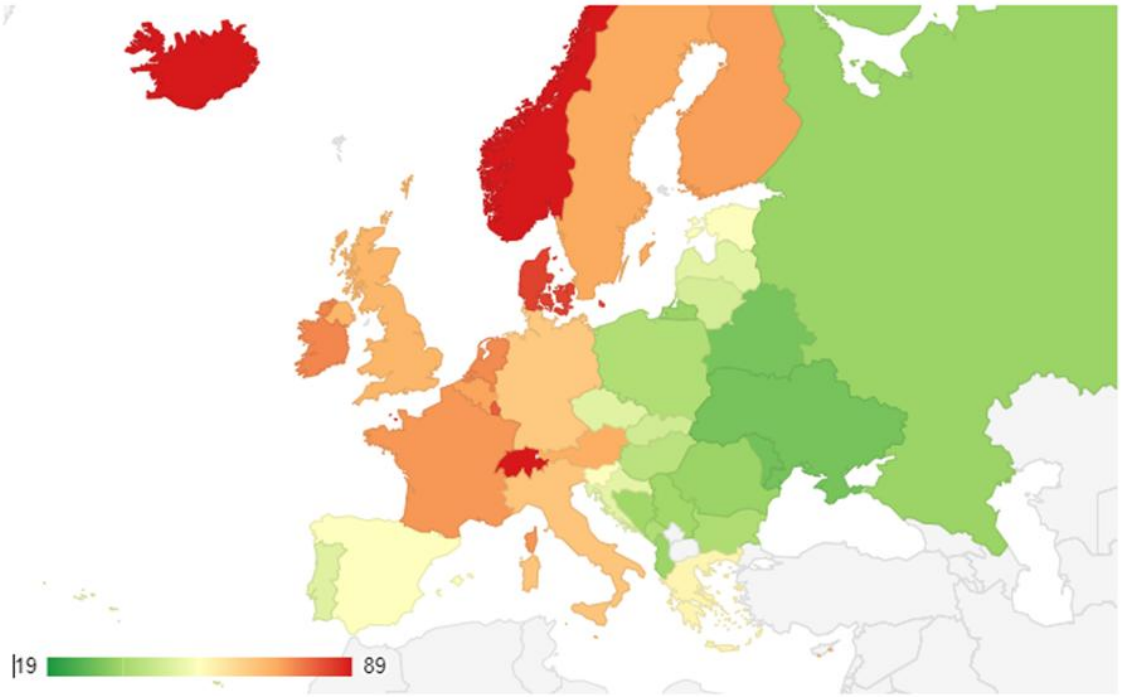


Figure 5.7.1 Europe: Cost of Living Index by Country 2022
Reproduced from Numbeo[39]

[38] https://nomadlist.com/ [Accessed 13 June 2024].

[39] https://www.numbeo.com/cost-of-living/rankings_by_country.jsp?title=2022&region=150 [Accessed 13 June 2024].

Figure 5.7.2 represents a graph for each of the use-case countries across six cost of living indices registered by Numbeo for the year 2022 as follows:[40] Cost of Living index, Rent index, Cost of Ling Plus Rent index, Groceries index, Restaurant Price index and Local Purchasing Power index. All indices are higher for Switzerland including purchasing power. Cost of living is very high in Switzerland, moderately high in the Netherlands, moderate in the UK and Austria and slightly lower in Italy. Compared to these countries, cost of living in Germany appears more moderate, while it's lower in Greece and the lowest in Türkiye. Despite the cost of living, Switzerland and the Netherlands register strong purchasing power, which is moderate in Austria and, comparatively very low in Greece and Türkiye. Interestingly, Germany exhibits very high purchasing power compared to all indices of cost (e.g. rent, groceries, etc.).

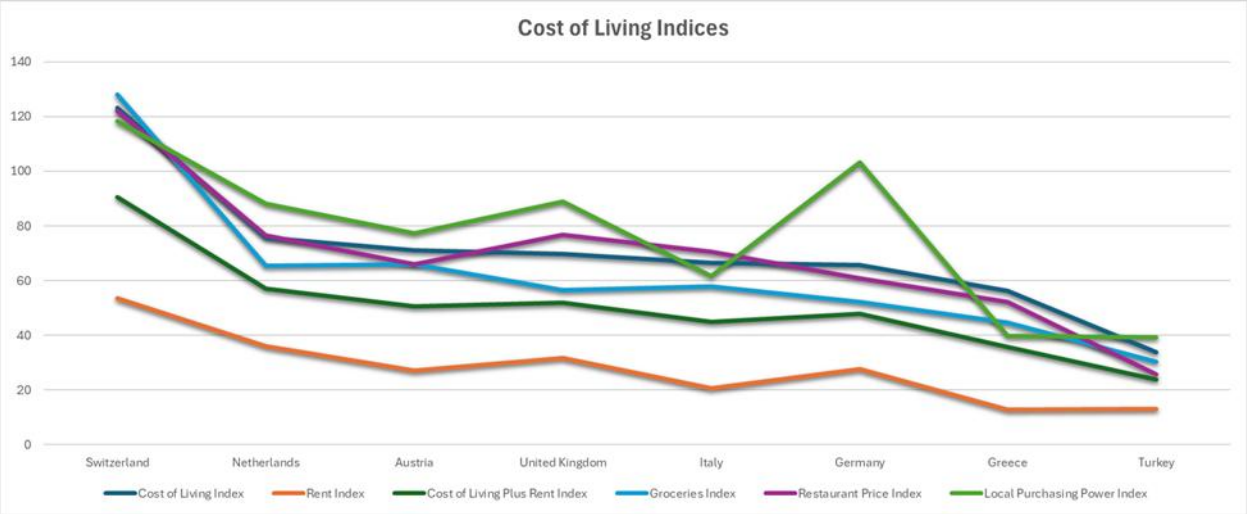


Figure 5.7.2 Cost of Living Indices in Switzerland, the Netherlands, Austria, UK, Italy, Germany, Greece and Türkiye Data taken from Numbeo.

Indicatively, three cities per use-case country have been selected for reasons of comparison and the cost of living (excluding rent) for a four-member family and for a single individual are compared across these cities (see Figure 5.7.3). The first three cities with the highest cost of living are all situated in Switzerland (Lausanne, Geneva and Zurich). Then follows a mix of Austrian, German and Dutch cities, followed by Italian cities (apart from Bari that appears further down the mix) and then Greek and Turkish cities.

[40] All data has been taken from Numbeo.

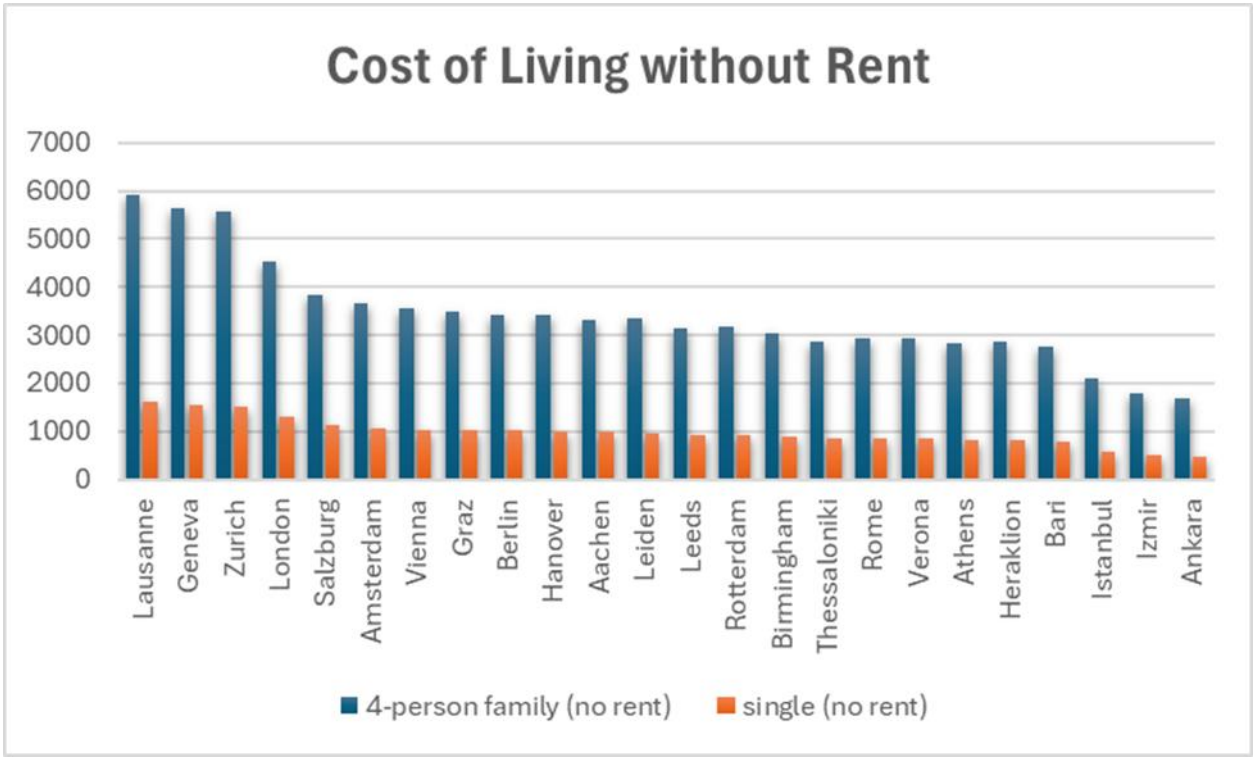


Figure 5.7.3 Cost of living without rent (family of four; single individual) per key cities in 8 Use-Case Countries in Euro. Generated by the author ; Data taken from Numbeo.

In Figure 5.7.4, Lausanne is set to 100% as a baseline, facilitating a clearer comparison and understanding of the cost of living in relation to other cities. It appears, therefore, that there are stark differences in the cost of living across various cities in Europe. A closer look reveals that Lausanne emerges as the most expensive city, with both family and single living costs indexed at 100%. In stark contrast, Thessaloniki, Greece, presents a significantly lower cost of living. For a 4-person family, the cost in Thessaloniki stands at approximately 50% of that in Lausanne. This indicates that families in Thessaloniki require roughly 50% less financial resources compared to those in Lausanne. These disparities underscore significant regional variations in cost of living, which are crucial for economic planning and policy formulation. These differences are particularly pertinent for cross-border remote workers, as cost of living might be a determining factor in their choice of city or country of residence. From the perspective of domestic economies, attracting remote workers or digital nomads can significantly stimulate economic growth. By attracting remote workers, local or national economies can experience increased spending on local goods and services, fostering a more vibrant and diverse economic but also social environment.

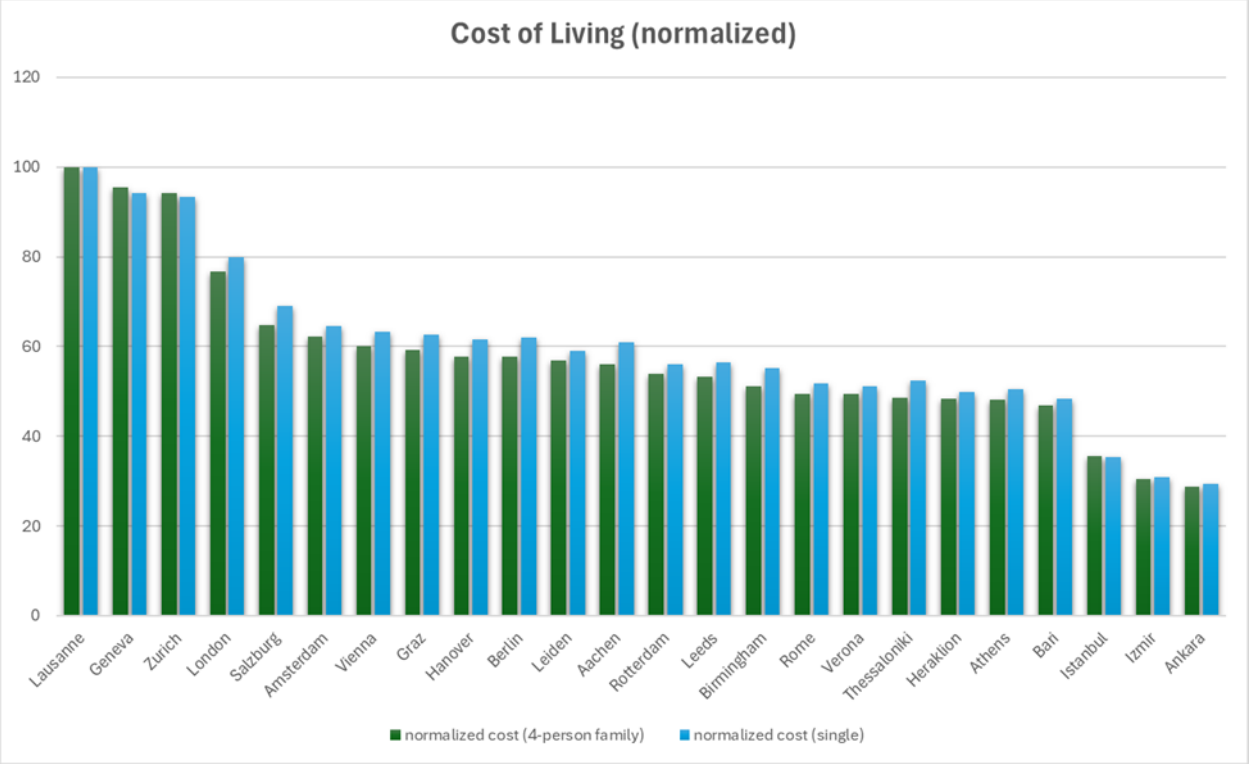


Figure 5.7.4 Cost of living (family of four; single individual) per key cities in 8 Use-Case Countries in Euro.Generated by the author. Data taken from Numbeo.[41]

Comparisons so far have been made in relation to countries and cities, as much of the available information focuses on those. However, variation in cost of living as well as life quality exist amongst cities, towns and suburbs and rural areas. According to Eurofound's *Bridging the rural–urban divide: Addressing inequalities and empowering communities* report (Mascherini et al., 2023), while residents of cities are overall wealthier, residents of rural areas are more able to make ends meet. The authors hypothesise that this might be attributed to the lower burden of housing costs borne by rural residents. Through regression analyses and running the marginal effects and confidence intervals for four different indicators of living costs (i.e. make ends meet, burden of housing costs, afford unexpected expenses, afford a holiday) and four indicators of assets and appliances ownership (colour TV, washing machine, car, computer) as proxies for the rural-urban gap in living standards, Eurofound (2023) finds that people living in towns and suburbs are 2% more likely to make ends meet compared to those living in cities. The percentage is slightly higher for those living in rural areas. Moving on, people living in town and suburbs and rural areas are marginally less likely to feel the burden of housing costs compared to city dwellers. When it comes to affording unexpected expenses, residents of towns and suburbs have a 3% higher chance than city dwellers. The likelihood is even higher for residents of rural areas (i.e. around 6%). However, residents of rural areas are 2% less likely than residents of cities to afford a holiday. In terms of assets and appliances, there is no difference between city dwellers, on the one

[41] Data is normalized with Lausanne as the baseline (100%). This means that the cost of living in Lausanne is set at 100%, and the costs in all other cities are expressed as a percentage of Lausanne's cost of living.

hand, and residents of towns and suburbs and rural areas in ownership of a colour TV, and only marginal difference for towns and suburbs residents in ownership of a washing machine. In terms of computer ownership, rural residents are around 1% less likely to own one than city dwellers. Finally, car ownership is higher in towns and suburbs (around 8%) and rural areas (around 12%), which could be driven by the higher need for transport and for potential lack of public transport infrastructure in rural areas (see Mascherini et al., 2023, p. 21).

Indeed, there is great variation between rural and urban places in rent and in the housing cost overburden rate, which shows the percentage of the population for which housing costs amount for more than 40% of their disposable income (see Figure 5.7.5).

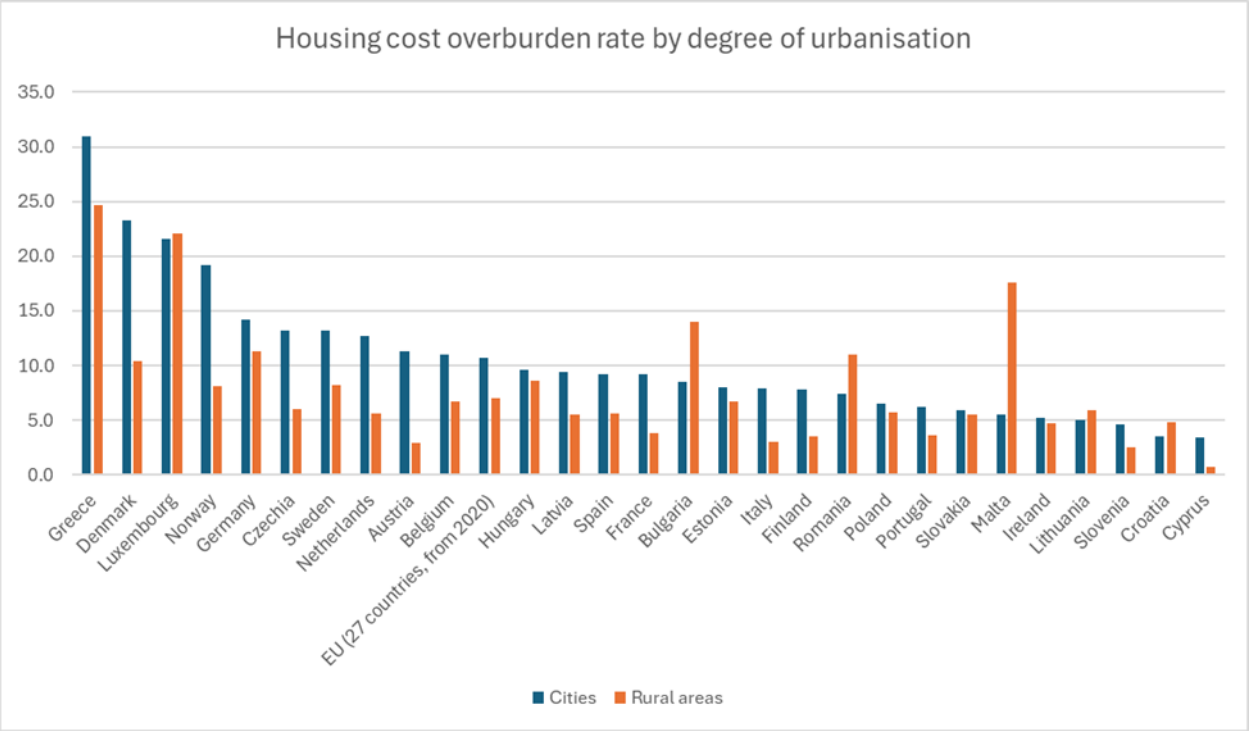


Figure 5.7.5 Housing cost overburden rate by degree of urbanisation- EU-SILC survey Data taken from Eurostat.[42]

Greece exhibits the highest housing cost overburden rates in cities and rural areas, followed by Germany and the Netherlands, of the R-map use-case countries and are all above the EU average. Italy is below the EU average. Throughout all countries studied by R-map, the housing cost overburden rates are higher in cities than in rural areas. Remote workers, therefore, might find it more financially viable to reside in rural areas, although this is undermined in many economies by the lack of infrastructure (e.g. broadband) in remote or rural areas, which is a great enabler for remote work. Though Eurostat does not provide the relevant data on

42 https://ec.europa.eu/eurostat/databrowser/view/ILC_LVHO07D__custom_1514503/bookmark/table?lang=en&bookmarkId=f229ccb2-aa12-4060-96e1-66eb8ff1adff [Accessed 13 June 2024].

the UK, an OECD report (2023a) places the UK amongst the countries with the highest level of housing cost overburden for low income households, with 53.3% of low income households experiencing this burden. The same report for Türkiye (2023b) does not provide relevant information, stating that very little information is known about the affordability of housing in Türkiye.

5.7.2 Life Quality, Infrastructure and Satisfaction

Considering the disparities in quality of life and satisfaction between rural and urban areas is crucial for illuminating the role and potential of remote work in addressing this divide. Although differences are noted within countries, rural areas more generally possess less developed internet infrastructure, as seen in section 5.4. However, on the whole, rural areas are relatively more immune to housing cost overburden and, as seen in 5.5.1, populations in rural areas can better make ends meet. This section addresses a few further aspects that create disparities between urban and rural regions. Figure 5.7.6,[43] provides an overview of general levels of satisfaction per income quintile and according to degree of urbanisation. As seen in the figure, the data indicates that overall life satisfaction shows minimal or no variation across the urban, town and suburbs, and rural axis for individuals belonging to the fifth income quintile. The population belonging to the fifth quintile also generally exhibits higher levels of overall life satisfaction. Overall, the lowest levels of life satisfaction are recorded in cities but for the population belonging to the first income quintile.

[43] The first quintile represents the lowest 20% of the population in terms of income and the fifth quintile represents the highest 20%.

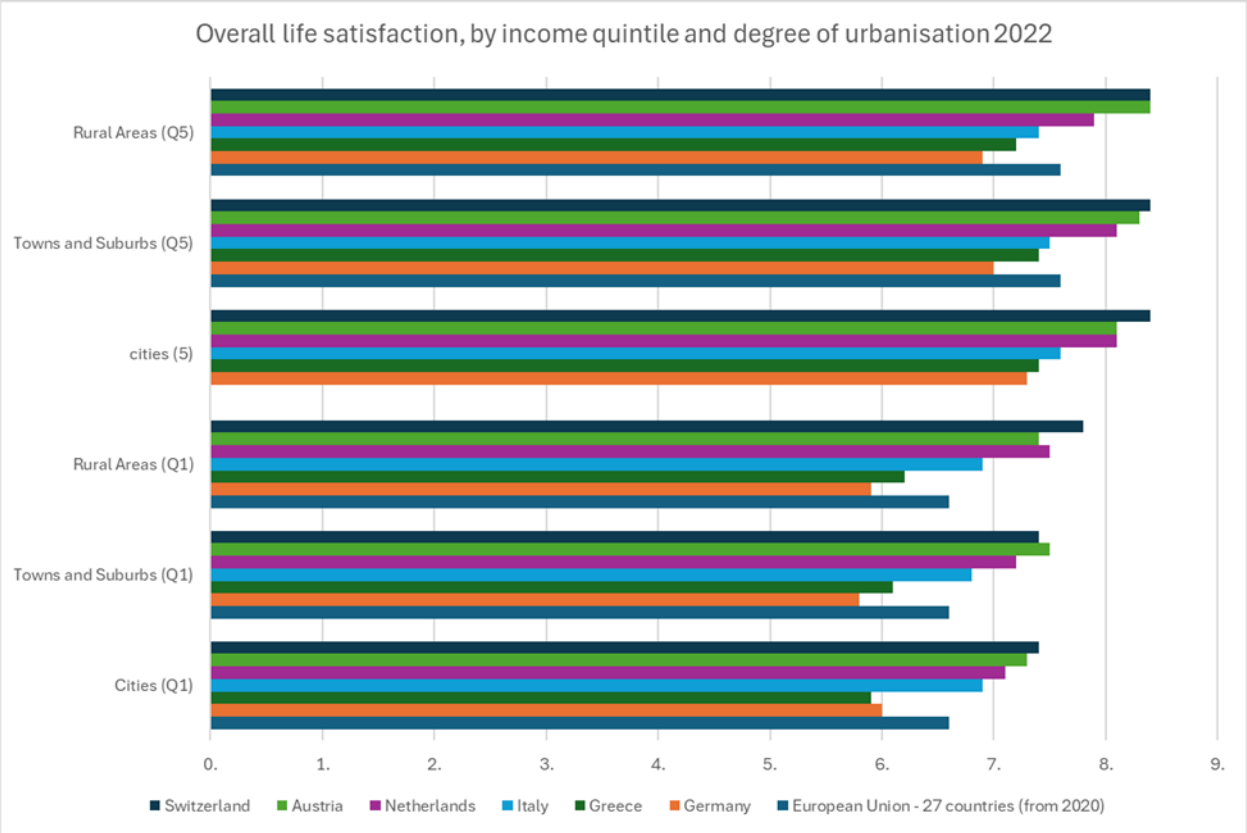


Figure 5.7.6 Overall Life Satisfaction, by Country, Income Quintile and Degree of Urbanisation 2022 Generated by the author. Data taken from Eurostat.[44]

On its own, this data would suggest that remote workers with high income would be equally content in any location, urban or rural. Accessibility is a crucial factor to take into account when considering the feasibility of residing in remote areas. Eurostat's *Urban-rural Europe - quality of life in rural areas* reveals that in most EU countries, the vast majority of the rural population was living within 15 minutes driving distance from a primary school (see Figure 5.7.7). The highest levels of accessibility of rural areas to primary schools are recorded for villages and the lowest levels for those living in uninhabited areas.

[44] https://ec.europa.eu/eurostat/databrowser/view/ilc_pw02__custom_11836941/default/table?lang=en [Accessed 15 June 2024].

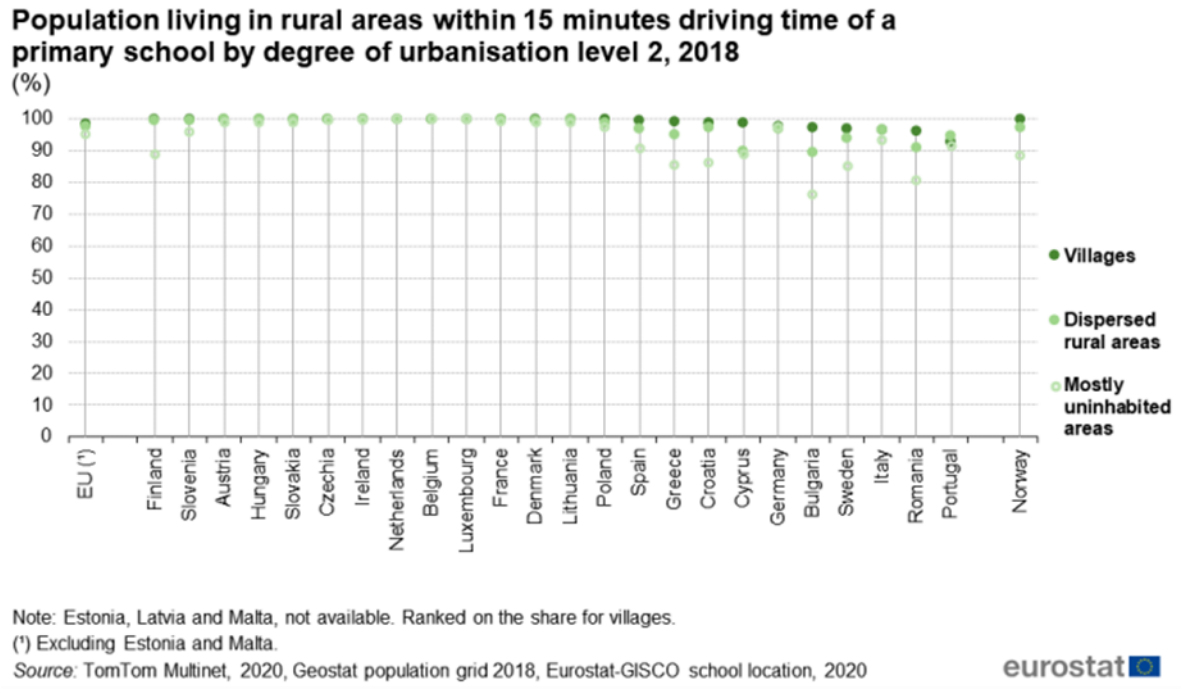


Figure 5.7.7 Population living in rural areas within 15 minutes driving time of a primary school by degree of urbanisation level 2, 2018 (%)

Source: TomTom Multinet, 2020, Geostat population grid 2018, Eurostat-GISCO school location, 2020. Taken from Eurostat (2022).

Access to healthcare is slightly more checkered compared to access to primary schools, with a lower share of the EU's rural population having access to healthcare services within 15 minutes driving time in 2018. There is no data by Eurostat provided for Estonia and Greece for access to healthcare. According to Eurostat (2022), 61.3% of village dwellers in the EU could drive to a main healthcare facility within 15 minutes and 49.3% of those living in mostly uninhabited areas could (see Figure 5.7.8).

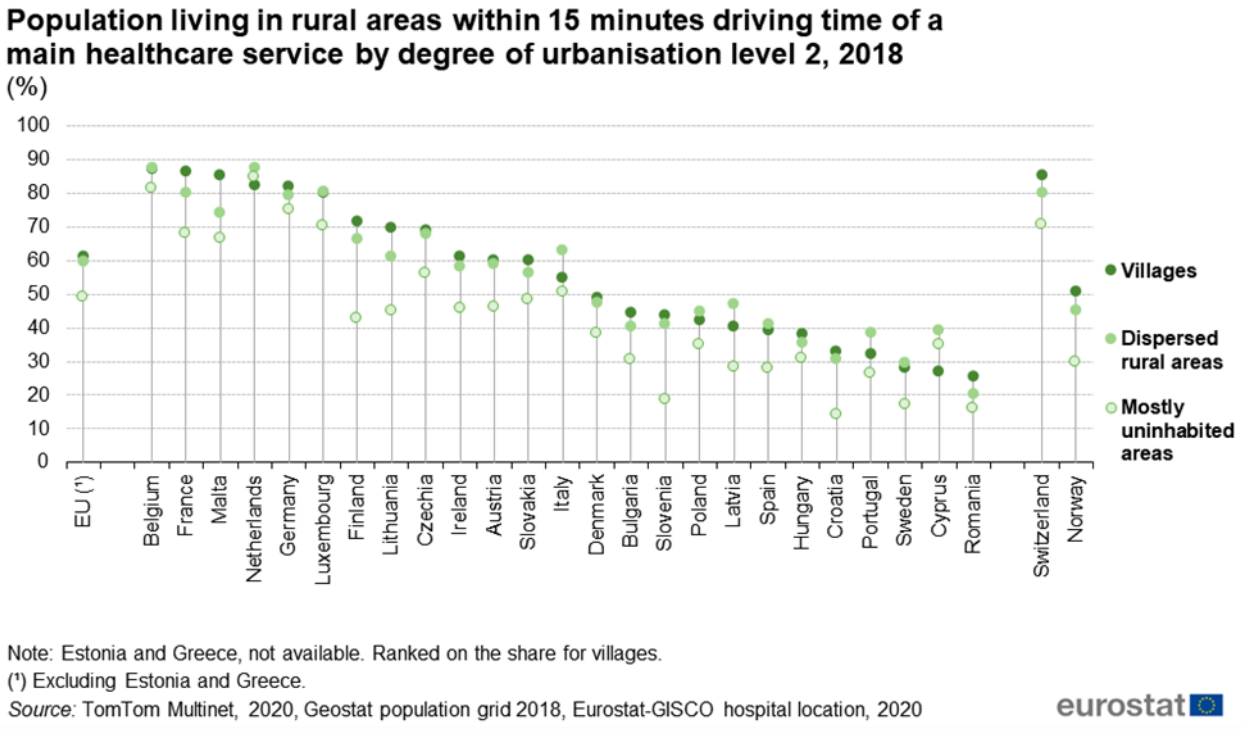


Figure 5.7.8 Population living in rural areas within 15 minutes driving time of a main healthcare service by degree of urbanisation level 2, 2018 (%)

Source: TomTom Multinet, 2020, Geostat population grid 2018, Eurostat-GISCO hospital location, 2020. Taken from Eurostat (2022).

Transport performance is another important indicator for the quality of life in rural areas. Transport performance is overall better in urban and densely populated areas. According to Figure 5.7.9, people in villages enjoyed greater levels of transport performance than those living in mostly uninhabited rural areas across most of the EU member states. The highest levels of transport performance by car in rural areas were recorded in Malta, Belgium and the Netherlands, while the lowest ones were encountered in South-east Europe mainly (Greece, Bulgaria and Romania).

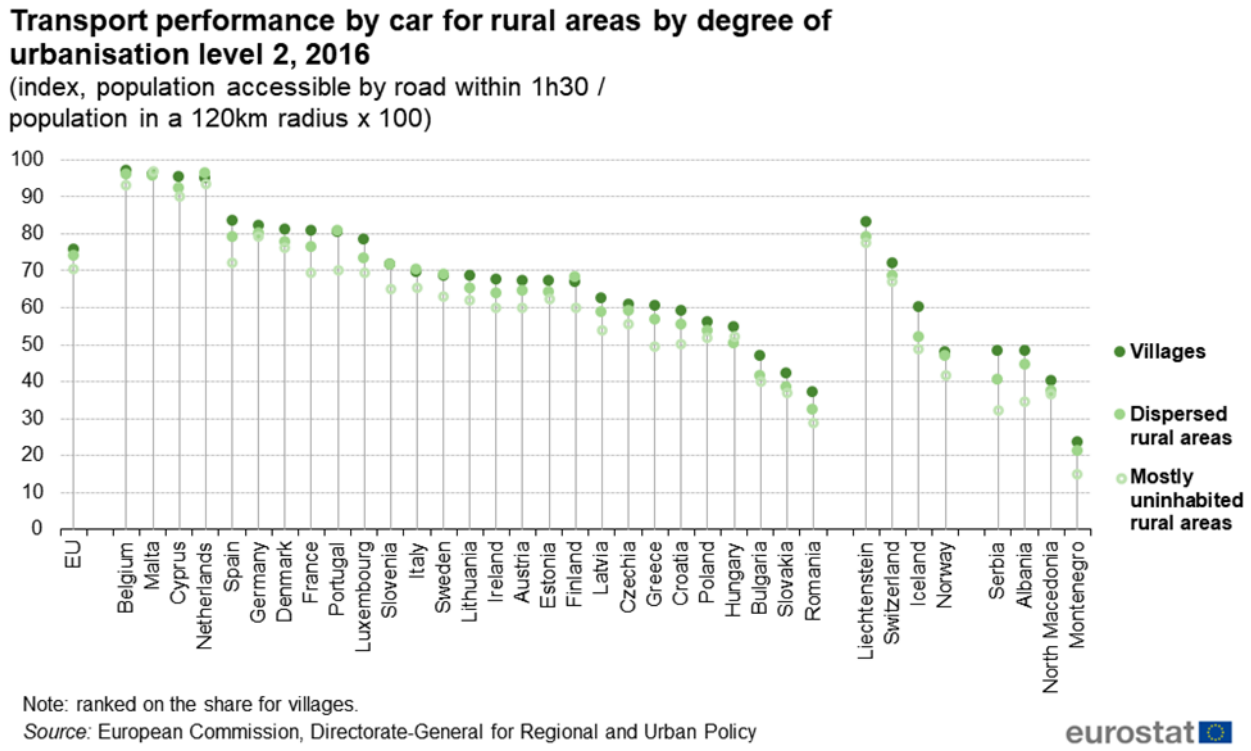


Figure 5.7.9 Transport performance by car for rural areas by degree of urbanisation level 2, 2016 (index, population accessible by road within 1h30 / population in a 120km radius x 100)
Source: European Commission, Directorate-General for Regional and Urban Policy. Taken from Eurostat (2022).

Finally, a snapshot of life quality based on ESPON's mapping of Good Life Enablers index on the NUTS-3 level provides very valuable information on the differences between countries and highlights the urban-rural distinctions within each country. ESPON draws on a number of indicators to evaluate the presence of Good Life Enablers in regions on a NUTS-3 level as follows: personal enablers (housing and basic facilities, healthcare, education), socio-economic enablers (transport, digital connectivity, work, consumption, public spaces, cultural assets), ecological enablers (green infrastructure, protected areas) (see ESPON, 2021).

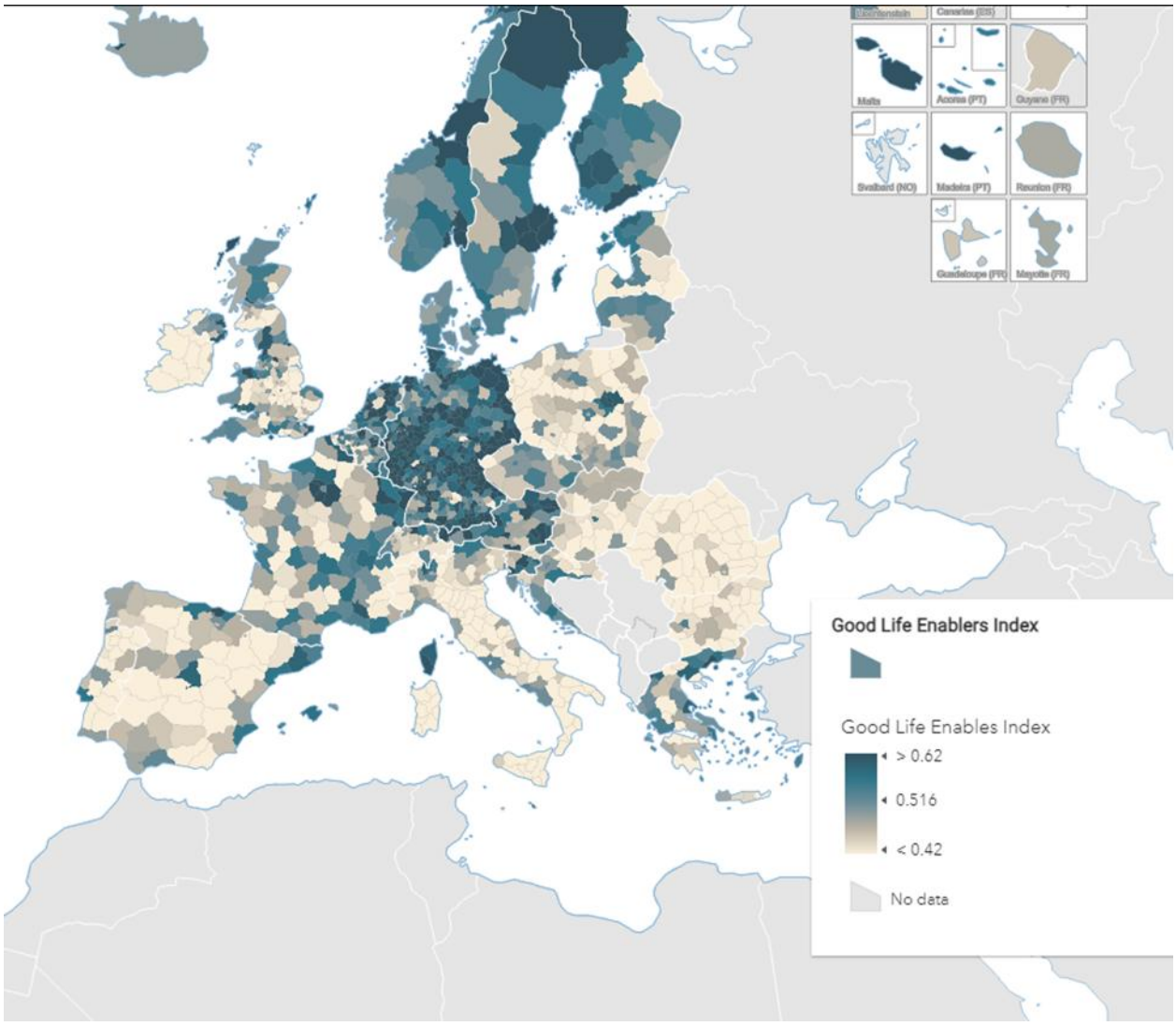


Figure 5.7.10 Good Life Enablers Index.
Origin of data: ESPON EGTC,[45] © ESPON[46]

Northern European countries are the ones that have most of their regions ranked highly on the Good Life Enablers Index (see Figure 5.7.10), such as Sweden, Finland, Denmark, Germany and Austria, among others. There are various regions which rank moderately high on the Good Life Enablers within countries, such as Northern and Central regions in Spain and the Northern regions of Italy, amongst others. Many regions in Greece and many Southern regions in Italy belong to the low index regions.

[45] See https://gis-portal.espon.eu/arcgis/apps/sites/#/espon-hub/maps/f9c01e8cb3d948159c11934e4013bcd4/explore [Accessed 15 June 2024]
[46] The interpretation of ESPON material does not necessarily reflect the opinion of the ESPON Monitoring Committee.

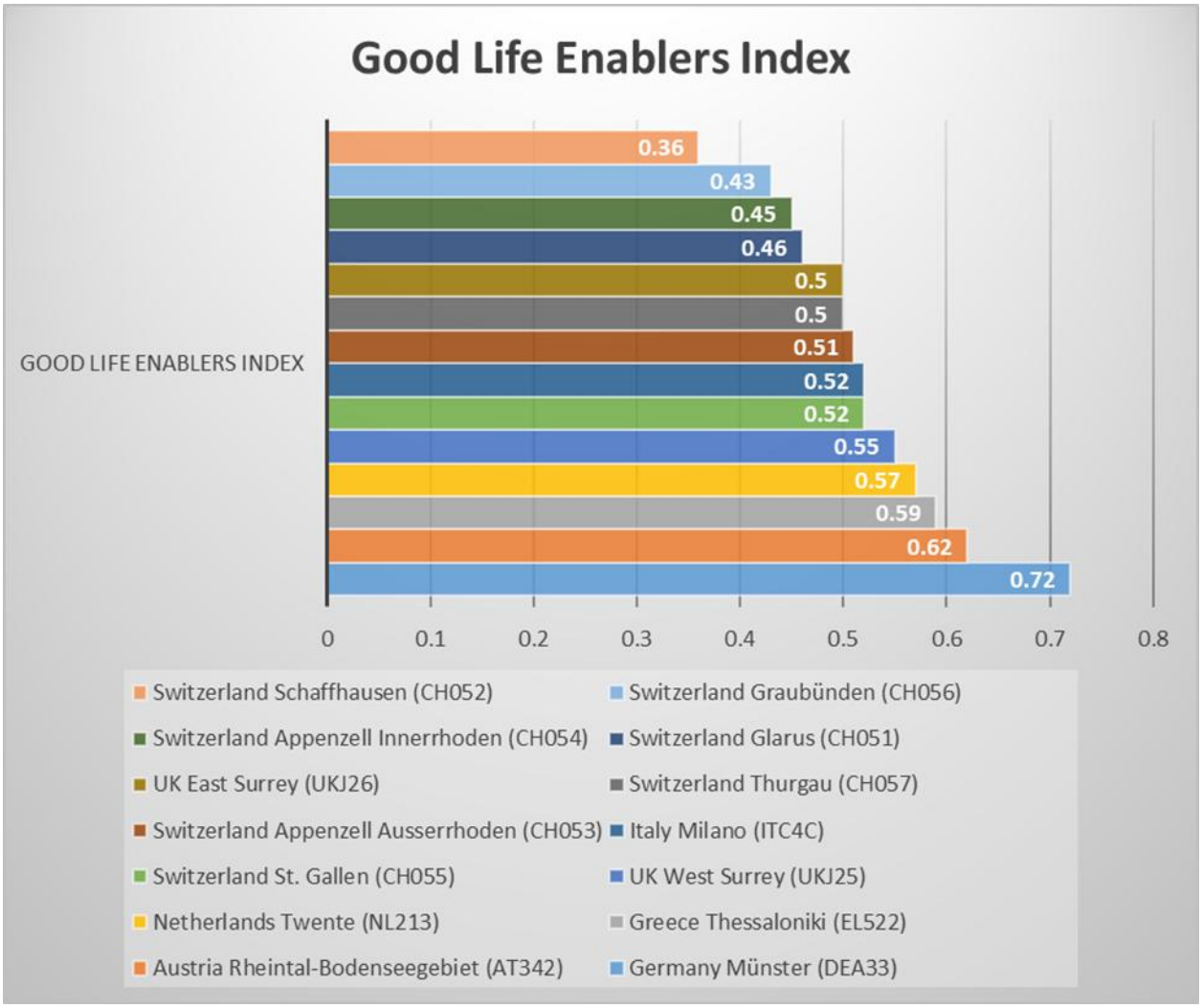


Figure 5.7.11 Good Life Enablers Index for selected NUTS-3 regions (2016)
Created by the author. Origin of data: ESPON EGTC,[47] © ESPON[48]

Figure 5.7.11 positions the various regions that will be the focal point of the R-Map project comparatively on the Good Life Enablers index. Münster, Germany performs very high on the index, followed by Austria's Rheintal-Bodenseegebiet and Thessaloniki, Greece. The lowest performing region is Switzerland's Schaffhausen. This data in combination with further data on human capital, digital infrastructure and industry activities can help illuminate these regions' potential for attracting talent. High-performing regions on the Good Life Enablers index can be more appealing to potential employees. No relevant information was found on Türkiye. Disparities between high-performing and low-performing regions can lead to policies and actions

[47] See https://gis-portal.espon.eu/arcgis/apps/sites/#/espon-hub/maps/f9c01e8cb3d948159c11934e4013bcd4/explore [Accessed 15 June 2024].

[48] The interpretation of ESPON material does not necessarily reflect the opinion of the ESPON Monitoring Committee.

that seek to improve low-performing regions, such as investments in infrastructure, digital connectivity and other amenities.

Outcome

According to a study on remote platform work by Braesemann et al. (2022), remote jobs are pulled to large cities, while rural areas fall behind and they are more readily accessible to workers from North America, Europe and South Asia. At the same time, highly skilled workers with skills considered in-demand attract more profitable jobs. While remote work has the potential to transform rural communities to more resilient and robust economies, both demand and supply, according to Braesemann et al. (2022) are clustered around a limited number of places, with more demand coming from urban areas of more developed countries and most remote jobs filled by individuals not from poor but rather from middle income countries (ibid., p. 11). Most remote projects are concentrated in places with high human capital levels, specialised knowledge, good internet infrastructure and a robust local economy (ibid.). This pattern of remote work concentration in urban centres of developed economies has significant implications for regional development. If we consider the regions examined in this section, Northern European countries perform better across almost all indicators (broadband infrastructure, concentration of human capital, digital literacy and specialised knowledge) and also offer more attractive living conditions based on the Good Life Enablers index. This means that they are currently better equipped to leverage any potential economic growth stemming from remote work.

Contrastingly, regions that do not perform so well along these indicators may struggle to both generate remote work opportunities (i.e. lack of companies that offer remote work) and to attract remote work talent, which would boost the local economy. This might exacerbate existing inequalities both across countries and between urban and rural areas within countries. If left unaddressed, the clustering of remote work in more developed urban centres will generate even greater regional disparities. To conclude, uncovering and understanding the regional dynamics of remote work is crucial for developing comprehensive strategies that can help various areas leverage the full potential of remote work to foster sustainable and inclusive growth.

6. Perspectives on remote work policies: challenges and opportunities

Conducting 15 interviews was the next step in this task. The pool of interviewees included policy makers from Türkiye, labour law expert from Austria, employees and representatives of the employees from Türkiye, Greece, France and Germany, and employers from Germany, the UK, Türkiye, Portugal and Greece. The aim was to capture the views of the tripartite government - employers – employees on remote working arrangements and to complement the desk research.

6.1 Perspectives of business representatives, policy makers and workers' unions

Models of remote working, main regulatory framework and employer-employee relationship

The interviewees mentioned the different models implemented for remote working, explained the legal framework for remote working and its gaps, and also referred to the general employer-employee relationship. All this can be summarised as follows.

According to the interviewees, remote working models are evolving worldwide with different countries adopting various approaches:

- **Hybrid Model:** The most popular approach according to the interviewees with employees splitting their work week between the office and home (e.g., UK, Greece).
- **Limited Remote Options:** In some cases (e.g., Türkiye), full-time remote working is less common, with companies requiring physical presence for specific tasks.
- **Fully Remote:** This model exists, with some companies being entirely remote from the start.
- **Company Discretion:** Some countries, such as Austria, offer flexibility, allowing companies to choose their model (hybrid, on-site, fully remote) based on the needs of the department.

Regarding the main regulatory framework is at various stages of development, with some countries lacking clear frameworks. More specifically:

- **No National Policy:** The UK is an example of a country without a national framework for remote working. Companies set their own policies, sometimes in employee contracts. This allows for company specific approaches but can lead to a lack of consistency for employees.
- **National Law with Discretion:** As one interviewee mentioned, Austria has a national 'home office law' which provides a foundation, but companies retain significant control over the design of their remote working models. This provides a balance between national guidelines and company autonomy.
- **Emerging Regulations:** Countries such as Türkiye are developing regulations to address remote work, but existing frameworks might be fragmented or lack clarity on specific aspects (e.g., employee rights, insurance during remote work). This highlights the need for clearer regulations to protect workers.

The employer-employee relationship in a remote working environment requires consideration of equipment, training, communication and setting clear expectations for performance and responsibilities.

- **Equipment and Training:** According to some respondents, some companies provide laptops or cloud-based tools (e.g., Greece), while others may require employees to use their own devices. Training may focus on general onboarding rather than specific remote working skills (e.g. Austria).
- **Focus on Flexibility and Work-Life Balance:** In some countries, such as the UK, employers highlight flexibility and work-life balance as key benefits of remote working.
- **Maintaining Company Culture:** As many interviewees pointed out, maintaining a strong corporate culture and effective communication is a challenge in a hybrid or remote working environment.
- **Control and Security:** Some employers maintain control over employee devices and software access for security reasons.
- **Management Strategies:** The importance of clear performance measurement for remote workers is highlighted. Some interviewees believe there shouldn't be a difference in management strategies between remote and in-office employees. Others emphasize the importance of establishing norms for remote working, such as camera usage, to maintain communication and company culture.

Interviewees	Models of remote working	Main regulatory framework	Employer-employee relationship
Interviewee 1 (Labour law expert)	All remote working models can be applied	A national law, a "home office law"	Most companies in Austria don't typically equip remote employees with work-specific tools due to cost concerns.
Interviewee 2 (Employee)	Partly decentralised	N/A	A secure drive to access remotely and a small laptop stand to use at home.
Interviewee 3 (Employee)	Telework a maximum of 10 days per month.	French legal system	The pandemic shift to remote work with laptops has become the new normal.
Interviewee 4 (Employer)	Fully remote	Company policy	The obligation for electricity, internet, safe place is back on the individuals.
Interviewee 5 (Employee representative)	Remotely as freelancers	No clear legislative framework	For people who work digitally, their contracts may be of questionable security.
Interviewee 6 (Employer)	Hybrid (at least 2 times a week in the office)	N/A	Employees who work remotely are given a laptop, but they cannot maintain the laptop, change the software, or change the rights.
Interviewee 7 (Employer)	Hybrid (some days the employee works on-site and some days the employee works from home)	N/A	The practice of "Bring Your Own Device" is prevalent in Greece due to the fact that only a select number of larger companies provide laptops to their staff.
Interviewee 8 (Employer)	Hybrid (two or three days a week in the office, two or three days a week work from home)	No overarching national policy or legal framework in the UK that dictates remote working arrangements	Effective communication is the cornerstone of success, both in the office and for remote teams. No financial incentives for remote working exist.

Interviewee 9 (Employee representative)	In Türkiye, it is still common for employees to work in the workplace.	'In Turkey, there is Article 14 of the Labour Law No. 4857. This article, which regulates teleworking, actually contains a very general provision'	No discrimination between workers doing the same job in the workplace and those working remotely.
Interviewee 10 (Employer)	Hybrid or full office work	N/A	Need for employee training and performance measurement
Interviewee 11 (Policy Maker)	N/A	Short legislation, but still trying to create a framework for teleworking in Türkiye	Employers are responsible for providing technology equipment for an employee to work remotely
Interviewee 12 (Policy Maker)	N/A	Article 14 in Turkish labour code is related to remote workers	Tripartite social dialogue is really important. Employees and employers need to communicate to address specific challenges faced by remote workers.
Interviewee 13 (Employer)	Hybrid	'The legal framework in Greece is a grey area'	The evaluation programmes are against remote workers performance. Investing in people by giving them access to knowledge and skills.
Interviewee 14 (Employee)	Hybrid	A very loose regulatory framework in France	Most companies in France want to be able to monitor and control their employees.
Interviewee 15 (Policy Maker)	No teleworking, only remote access from home to office computers	After the pandemic, there are some laws that regulate teleworking in the public sector.	N/A

Table 6.1.1 Themes from Interviews: Models of Remote Working, Regulatory Frameworks, Employer-Employee Relationships

6.2 Projected trends in remote working arrangements from policy and business perspectives

Trends, Opportunities, Challenges

The interviewees were asked to respond to what they thought would be the trends, opportunities and challenges of remote working in the future.

The key points that emerged from interviewees' responses about future trends in remote working are summarised below:

- The 'new normal' is likely to involve a hybrid approach, with a mix of remote and in-office work.
- The European Union is expected to play a greater role in regulating remote working, potentially creating a more standardised environment across EU member states.
- A global trend towards formalising remote working policies is expected to replace the informal, ad hoc approaches used during the pandemic.
- Remote working is expected to become even more geographically unrestricted, with talent pools potentially expanding beyond national borders.
- Countries are likely to offer programs catering to ‘digital nomads’ attracting remote workers with specific visa options.
- Employee preferences for flexibility are expected to remain a driving force, with companies needing to adapt to attract and retain talent.
- As remote working becomes more widespread, ensuring data security and employee privacy will be a top priority for employers.
- The rise of remote working could lead to concerns about job displacement due to automation,
- particularly for routine tasks.
- The younger generation is expected to demand more flexible working arrangements, further driving remote working opportunities.

According to the respondents, remote working opens up a world of opportunities for both companies and employees. To be more specific:

For Employers:

- **Cost Savings:** Companies can reduce the amount of office space they need, significantly reducing overheads. As one employee interviewee noted, employers can also save on travel and meal allowances.
- **Talent Acquisition:** Remote working allows companies to cast a wider net and attract top talent regardless of location, as one employer interviewee pointed out. This creates a more competitive advantage in the labour market.
- **Increased Productivity:** Some employees are better able to concentrate and manage their time more efficiently when working from home. This translates into increased productivity for the company.
- **Diversity and Inclusion:** As one employer interviewee pointed out, remote working creates opportunities for young mothers and people with disabilities, who may face challenges with traditional working arrangements. This promotes a more diverse and inclusive workforce.

For Employees:

- **Work-Life Balance:** Remote working allows employees to manage their family life more effectively. Reduced commuting time translates into more personal time and a better work-life balance.
- **Flexibility:** Employees can structure their workday around their needs, leading to improved mental organisation and focus.

- **Global Opportunities:** Remote working opens doors for geographically dispersed teams, fostering a more diverse and inclusive work environment.

Overall Impact:

- **Economic Growth:** Policymakers interviewed see remote working as a potential tool to tackle unemployment and create new employment opportunities across the economy.

While remote working offers flexibility and convenience, it also presents a complex set of challenges for employers, employees and policy makers, according to interviewees. These are posited below.

For Employers:

- **Loss of commercial office space:** Reduced need for office space can hurt the commercial property market.
- **Disparity among employees:** Creating a fair system for remote and in-office employees can be difficult.
- **Ensuring employee well-being:** Monitoring remote workers' well-being and mental health can be challenging.
- **Communication and visibility:** Maintaining clear communication and ensuring remote workers are visible for promotions can be difficult.
- **Technological infrastructure:** Providing adequate equipment and secure systems for remote work can be expensive, especially for small businesses.
- **Legal and regulatory issues:** Unclear regulations regarding remote work make it difficult for employers to manage aspects like work hours, monitoring, and data security.

For Employees:

- **Work-life balance:** Blurred boundaries between work and personal life can lead to overwork and burnout.
- **Isolation and mental health:** Lack of social interaction can lead to feelings of isolation and mental health problems.
- **Unionisation challenges:** Remote work can make it harder for employees to join or participate in unions.
- **Financial burden:** Remote workers may incur additional expenses for home office equipment, utilities, and internet.
- **Career progression:** Remote workers may feel less visible and have a disadvantage in promotions.

For Policymakers:

- **New legal framework:** The need for clear and comprehensive legislation on remote working.
- **Employee well-being:** Ensuring remote workers' mental and physical health needs to be addressed.
- **Data privacy and security:** Regulations are needed to protect sensitive data in remote working environments.
- **Taxation:** Taxation rules for remote workers, especially those working across borders, need clarification.

- **Infrastructure development:** Investments in internet and electricity infrastructure are crucial, especially in remote areas.

Interviewees	Trends	Opportunities	Challenges
Interviewee 1 (Labour law expert)	Remote working will become even more widespread and geographically unlimited in the future	N/A	Maintain a strong corporate culture when employees work both from home and in the office.
Interviewee 2 (Employee)	'There is a tendency either to try and force your employees back into offices or to go the other way, where you just save a lot of money on rent and then really give a lot of flexibility.'	N/A	Remote working arrangements really need to be enshrined in policy.
Interviewee 3 (Employee)	Remote working is here to stay, helping get the right skills on board	Improving productivity and efficiency	Loss of personal contact.
Interviewee 4 (Employer)	'I think more countries will offer various aspects of flexible working environments that will support the ability of people to work in a jurisdiction on a temporary basis without making the tax system more complex.'	N/A	Maintaining a corporate culture.
Interviewee 5 (Employee representative)	Teleworking is on the rise as digital products and demands increase.	N/A	Reduction in the possibility of collective bargaining with the employer.
Interviewee 6 (Employer)	A European labour market for all companies in the European Union, with appropriate working conditions and legislation	N/A	Problems communicating with the company and feeling invisible when promotion time comes.
Interviewee 7 (Employer)	The hybrid model is here to stay	Competitive advantage for employees to attract them	Lack of efficiency.

Interviewee 8 (Employer)	Future trend in remote working is not to return to a pre-pandemic 'normal' where everyone is in the office full time	More flexible around the use of office space	When employees work remotely full-time, it can be difficult for employers to verify that they're staying engaged with important work aspects ("touch points") and maintaining their well-being. This creates a challenge in ensuring a healthy and productive work environment for everyone.
Interviewee 9 (Employee representative)	Adoption of more flexible working models	Reduction of labour costs, especially for employers	Work stress, loss of work-life balance, problems related to inadequate technological infrastructure, ergonomic risks.
Interviewee 10 (Employer)	More flexible or remote jobs demanded by new generation	Teleworking is a kind of solution to the problem of unemployment, new job opportunities for young mothers or disabled people	Data privacy and security concerns, mental health and isolation.
Interviewee 11 (Policy Maker)	N/A	Good economic impact on employees and employers	Detailed and clear regulations, data security, psychological and psychosocial conflicts, fear of digital slavery, digital infrastructure for remoted areas.
Interviewee 12 (Policy Maker)	Automation and computer technology will take away some jobs	No accommodation constraints and no obligation to work every morning	Taxation, monitoring of working hours.
Interviewee 13 (Employer)	Remote working will get an extra boost from technological developments and 5G	Flexibility in working hours	Low internet speed in villages and rural areas.
Interviewee 14 (Employee)	'If you are a totally remote worker with no particular routine, you can visit all over Europe or for the whole of your career'	Increased worker productivity	Remote working exacerbates territorial inequalities.
Interviewee 15 (Policy Maker)	Public sector teleworking will be more integrated in the future	A reduction in business travel	Verification of the efficiency of the work of remote workers, socializing, infrastructure and internet in rural areas.

Table 6.2.1 Themes from Interviews: Trends, Opportunities and Challenges

7. The employee's perspectives: Policy Awareness and Priorities

The primary objective of this study was to explore the tripartite relationship among policymakers, employers and employees. As a result, one of the areas to focus on was the study of employees' viewpoints and knowledge on policy issues. This questionnaire aimed to examine whether the issues identified in the literature (see Section 4 for an extensive review) align with the priorities, challenges, and policymaking concerns of employees as key stakeholders. Important dimensions that were considered and studied in the questionnaire include issues of seniority, gender, age, location and sector to understand their impact on employees' perceptions of remote work arrangements.

7.1 Data Analysis: Descriptive Statistics

7.1.1 Demographic Information

A total of 123 (n=123) respondents (70 males, 50 females, 1 nonbinary and 2 prefer not to say) (Figure 7.2.1) participated in the study. The mean age of the participants was 41.34 years old (range = 20-68, min = 20, max = 68, st.dev. = 10.6) (Figure 7.2.2). The majority of the participants (60%) reported that they were not primary caregivers (n=74), while some of them (28.5%, n=35) reported being primary caregivers for children, parents (5.7%, n=7) or partner (5.7%, n=7).

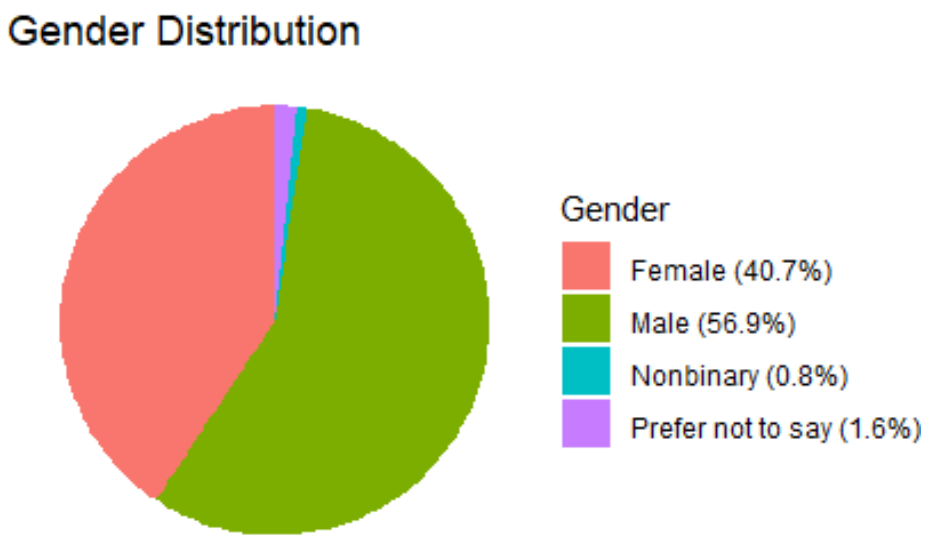


Figure 7.1.1 Distribution of participants by gender. The categories include Female, Male, Non-binary, and Prefer not to say

Regarding education, the majority of the participants held a Bachelor's (39%, n=48) or a Master's degree (35%, n=43). Few of them were PhD holders (9.8%, n=12), had secondary education (11%, n=13), primary education (1.7%, n=2) or Other (4%, n=5). Regarding the current employment status of the participants, the majority (64.2%, n=8) reported that they were employed full-time. Some participants identified as full-timers but also claimed to be freelancers and/or self-employed simultaneously (6.42%, n=8). A smaller number of employees claimed to work part-time (n= 3), as freelancers/contractors (15.4%, n=19), as self-employed (6.5%, n=8), or a combination of freelancer/contractor and self-employed status (4% n = 5). The participants have been working in total for a mean of 18 years (median=16 years) (min.=1, max=50, sd=11.5). Out of these years of employment experience, the employment in remote or hybrid settings mean is 6.4 years (median=4 years) (min=0, max=36, sd=5.35) (Figure 7.2.3).

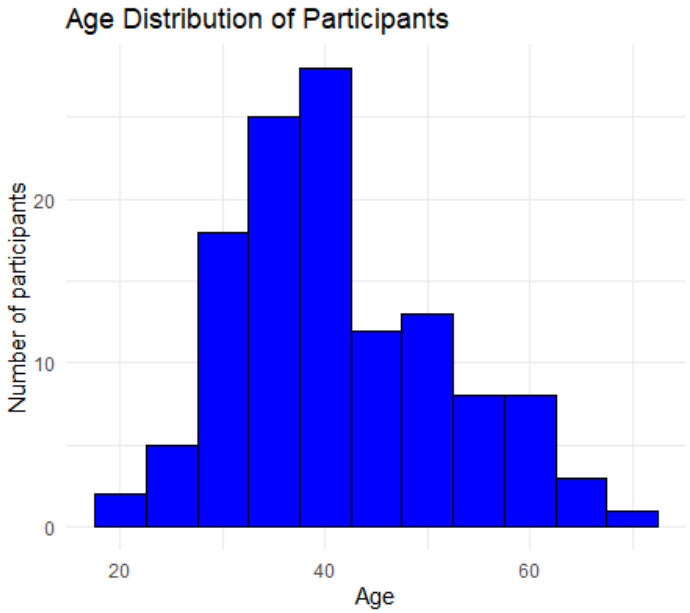


Figure 7.1.2 Distribution of participants by age

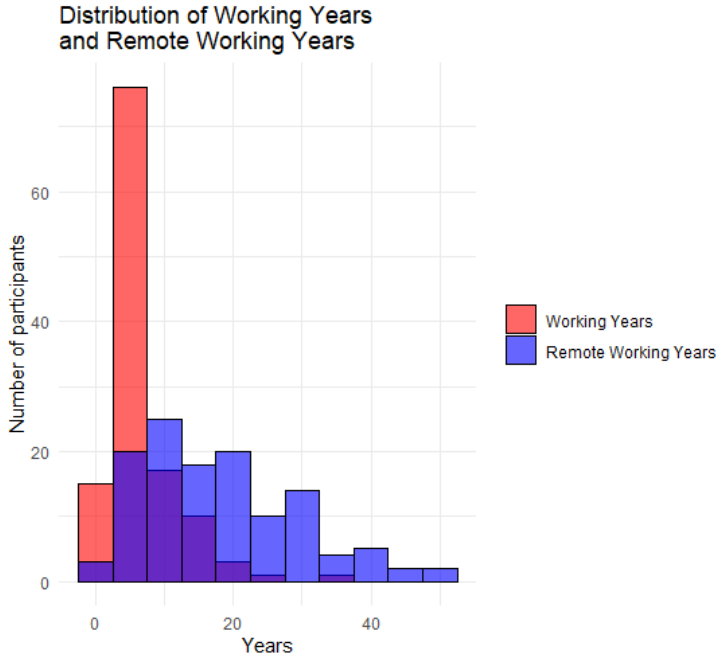


Figure 7.1.3 Distribution of working years and remote working years

Most respondents were employed as Senior Professional/Technical Experts, Middle Management, Senior Management, and Intermediate-level Professional/Technical Experts, comprising 77.5% of the sample. Other respondents were employed in Administrative and Operational Staff (5%), Entry level Professional (0.8%),

Executive Leadership (5.7%), Freelancers/Independent Contractors (6.6%), Interns/Trainees (0.8%), and Junior Professional/Technical Experts (2.5%) positions (Figure 7.2.4).

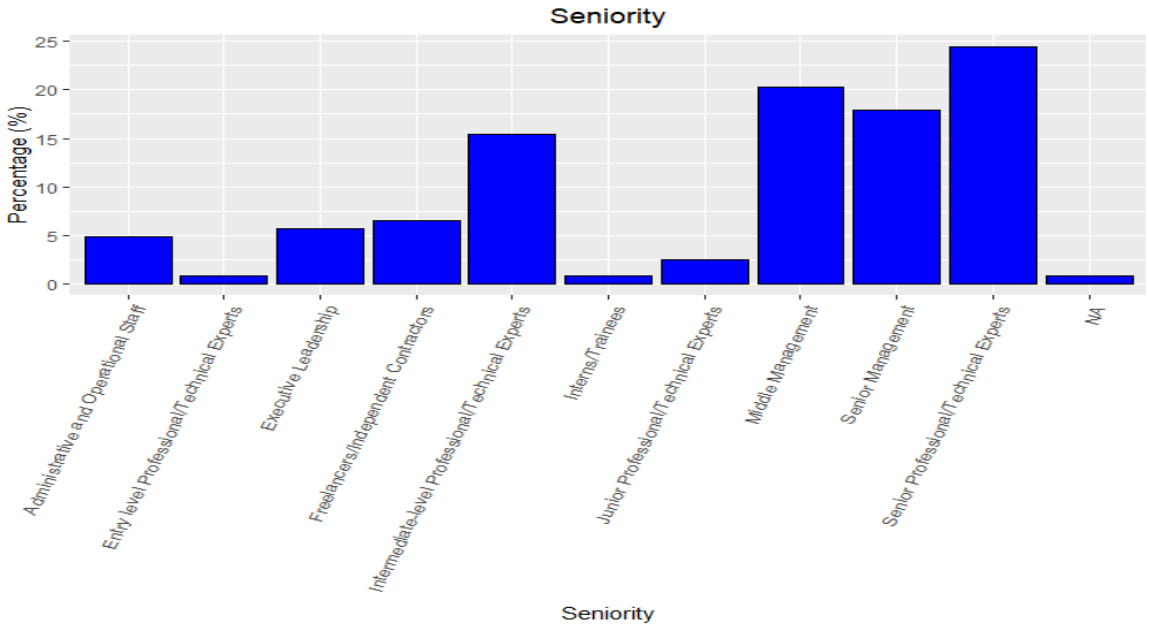


Figure 7.1.4 Participants' seniority levels

Most participants were employed in the sector of Professional and Business Services (79.7%, n=98), with Trade and Services (6.5%, n=8), Culture, Recreation (5.7%, n=7), Public and Social Services (4.9%, n=6), and Manufacturing Industry following (3.3%, n=4). None of the participants were in the primary sector.

Current work arrangements of the participants were predominantly 100% work-from-anywhere (38.2%, n=47) and 100% work-from-home (37.4%, n=46) models. Office-first hybrid (14.6%, n=18) and remote-first hybrid (9.8%, n=12) models followed. In terms of the preferred work arrangement, 56.9% preferred the 100% work-from-anywhere, 19.5% preferred 100% work-from-home, 18.7% preferred remote-first hybrid, and 4.9% preferred office-first hybrid (Fig. 7.2.5).

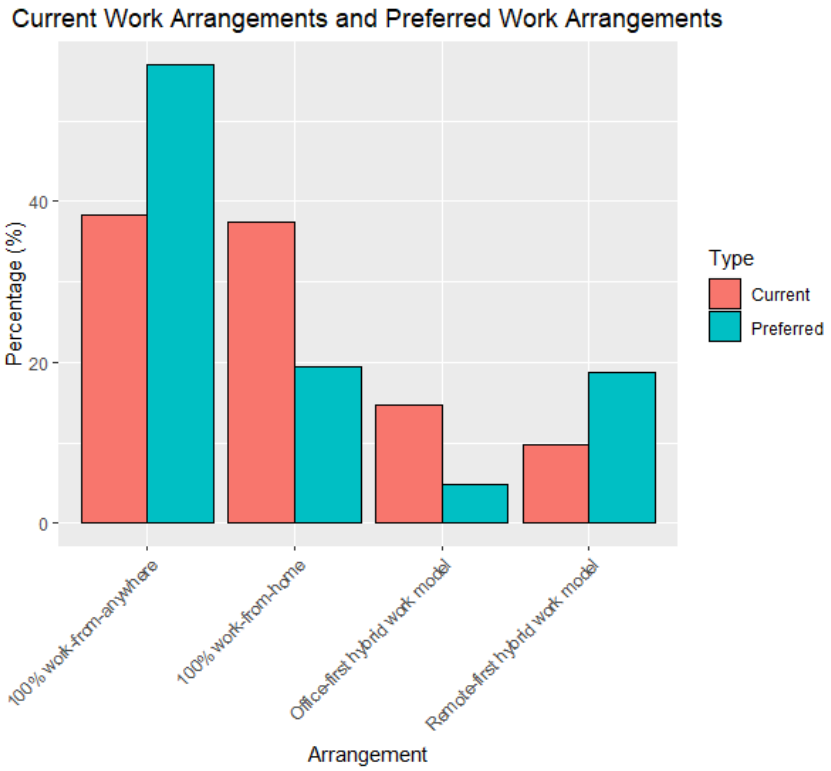


Figure 7.1.5 Participants' current and preferred work arrangements

Most participants lived in urban areas (43%) with suburban (38.2%), rural (15.4%), and other (3.3%) areas following. Most participants preferred a suburban area (39.8%), with urban (27.6%), rural (26%), and other (6.5%) areas following (Figure 7.2.6). A variety of countries were reported as the companies' bases (e.g. USA, India, Kenya, Germany, Greece UK), with most of the respondents (13.8%) working for Finnish-based companies. Similarly, the location of the participants was equally diverse, with participants being globally distributed (e.g. Mexico, Philippines, Switzerland, Sri Lanka, Bangladesh), while there were some notable numbers for participants living in Greece (n=7) and the US (n=32).

Figure 7.1.6 Participants' current and preferred remote location

7.1.2 Survey Questions

The next part of the survey examines the participants understanding and evaluation of governmental or organizational remote and/or hybrid work policies, as well as their awareness on legal and other rights as a remote worker or worker engaged in a hybrid work arrangement. Participants were provided with multiple choice questions.

The majority of the participants (53.65%) claimed to be fully or mostly aware of the remote worker legal rights and obligations, while 23.57% reported ignorance (not at all aware/slightly aware), and 22.76% claimed to be somewhat aware (Figure 7.2.7). A very high percentage of participants (73.16%) agreed on the effectiveness of the digital infrastructures in their region, with a small minority (5.6%) expressing a negative opinion. A high percentage of participants (30%) claimed ignorance regarding the effectiveness of remote work legislation in their region, while a total of roughly 58% claim that it is somewhat/mostly or highly effective (Figure 7.2.8).

Most participants (70.72%) reported the belief that remote work in their sector will increase in the next five years, while 11.37% had the opposite idea, and 17.88% of the participants had a neutral opinion (Figure 7.2.9). When it comes to gender-specific challenges (e.g., increased domestic responsibilities, risk of harassment, mis-gendering and discrimination, etc.), 33.32% agreed that gender-specific challenges are effectively addressed, 32.5% had the opposite opinion, and 34.14% claimed ignorance (Figure 7.2.10).

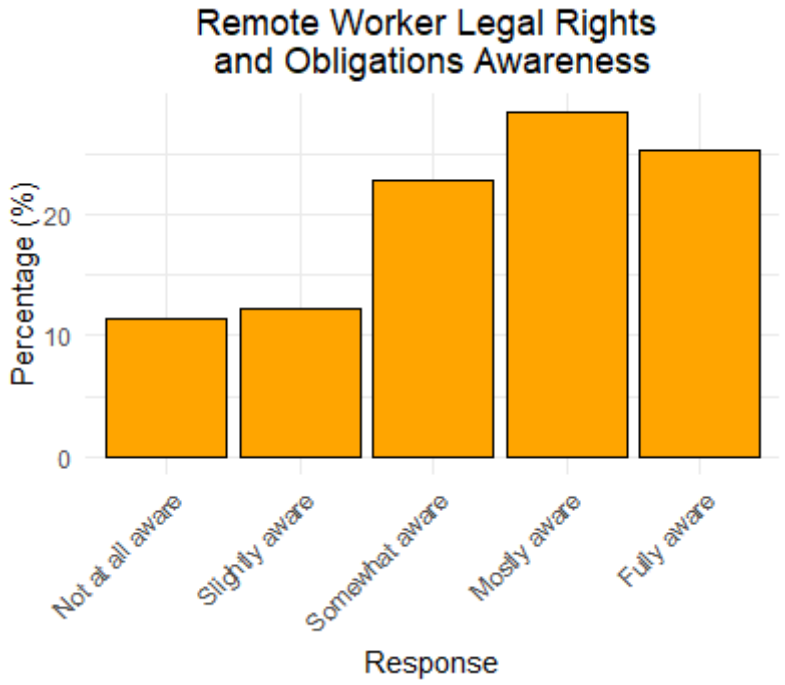


Figure 7.1.7 Participants' awareness of remote worker legal rights and obligations

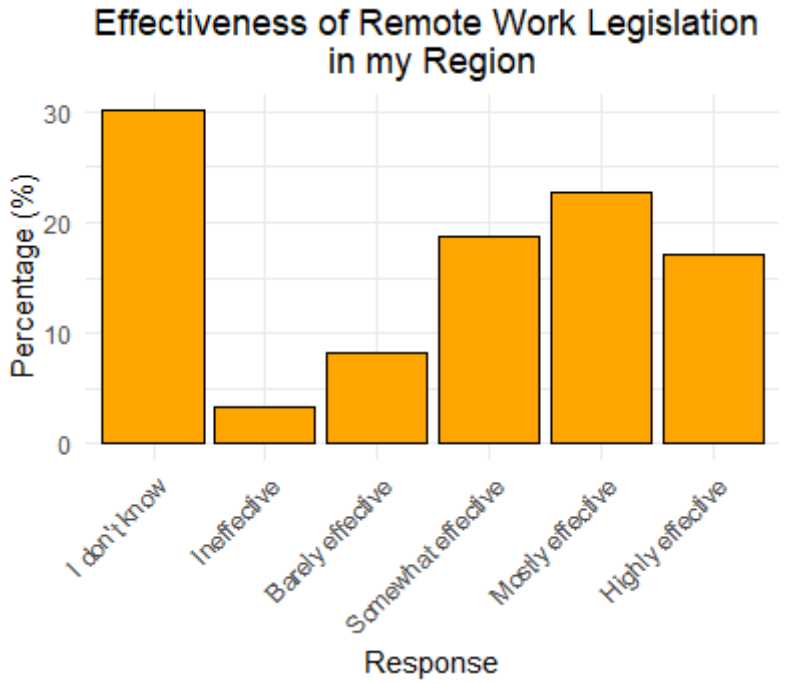


Figure 7.1.8 Participants' perception of the effectiveness of remote work legislation in their region

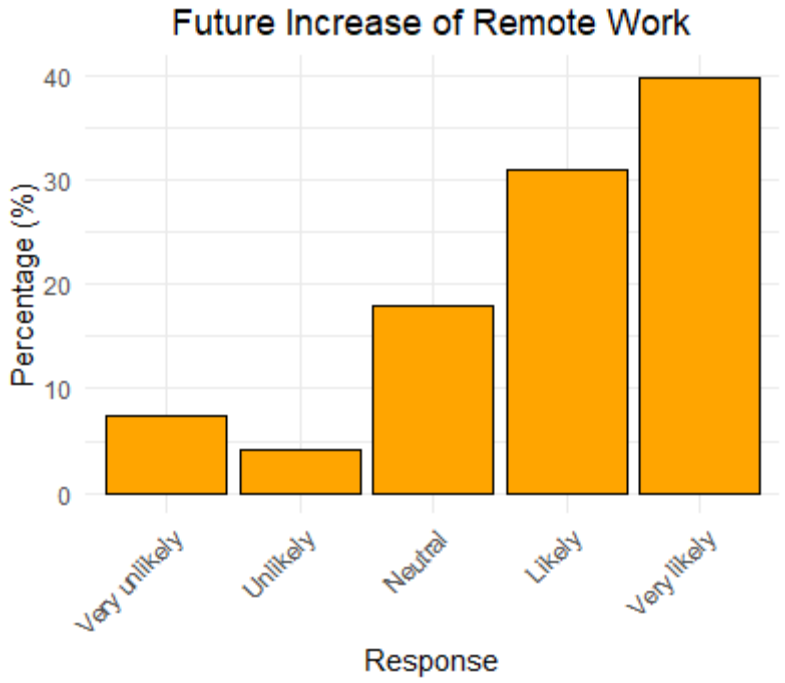


Figure 7.1.9 Participants' perception of the future of remote work

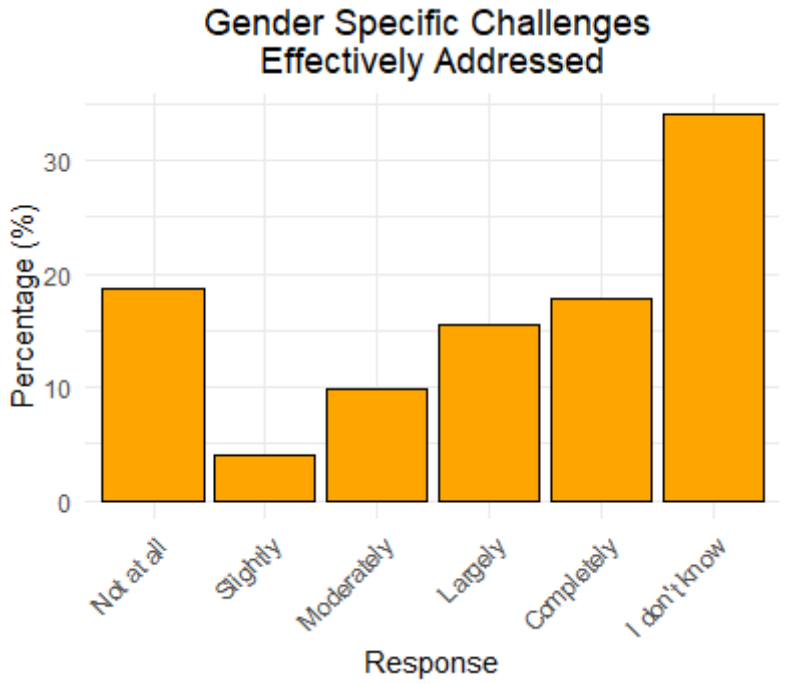


Figure 7.1.10 Participants' perception on how effectively gender specific challenges are addressed

When participants were asked to report the areas that were covered by their organization's remote work policy, the use of digital media, rights and liabilities awareness, remote employee support, and team-building were among the least selected answers, while in ascending order, health and safety, communication guidelines, professional training resources, data and security, relevant expenses, work schedule, and remote technology were the most common answers (Figure 7.2.11).

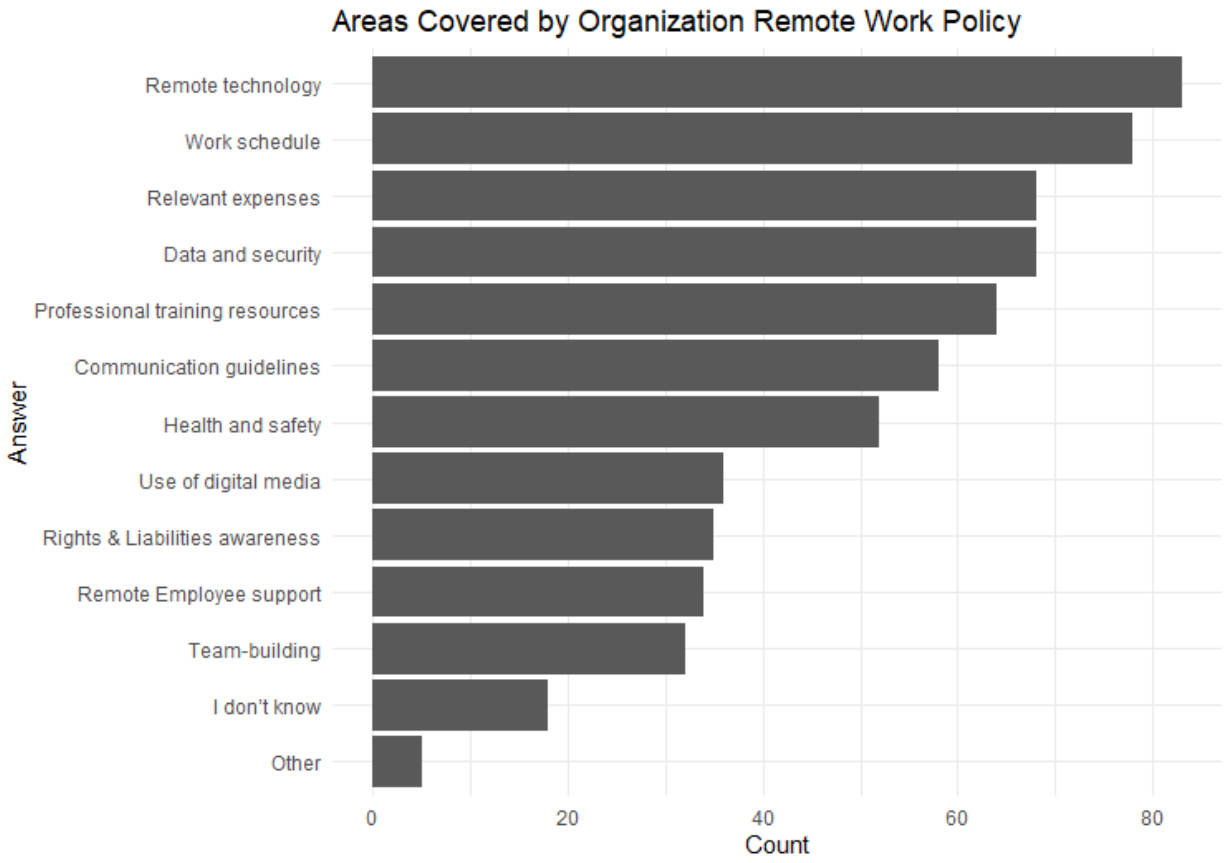


Figure 7.1.11 Areas covered by the participants' organization remote work policy

In the question regarding the most critical areas for a remote work policy, the first five categories remain the same as in the previous question, with professional training resources, data and security, relevant expenses, work schedule, and remote technology still being the top five among the participants. Use of digital media, rights and liabilities awareness, remote employee support, and team-building were selected more compared to the previous question, indicating that participants feel that they need more structured context (Figure 7.2.12).

Remote workers feel that their key challenges include a sense of isolation, work-life balance, different time zones, motivation, and productivity. On the other hand, virtual communication barriers, professional advancement, mental health concerns, cybersecurity, technological challenges, physical health concerns, and distractions were not among the key challenges selected by remote workers (Figure 7.2.13).

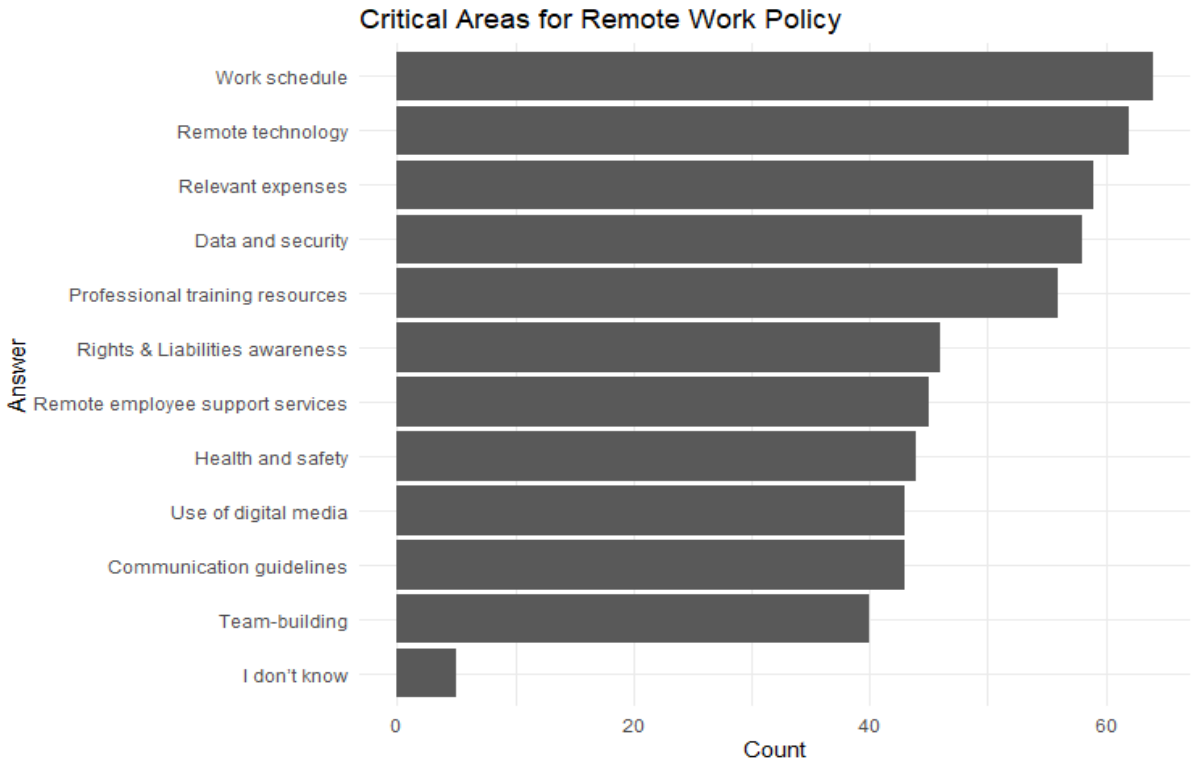


Figure 7.1.12 Participants' perception on critical areas for organizations' remote work policy

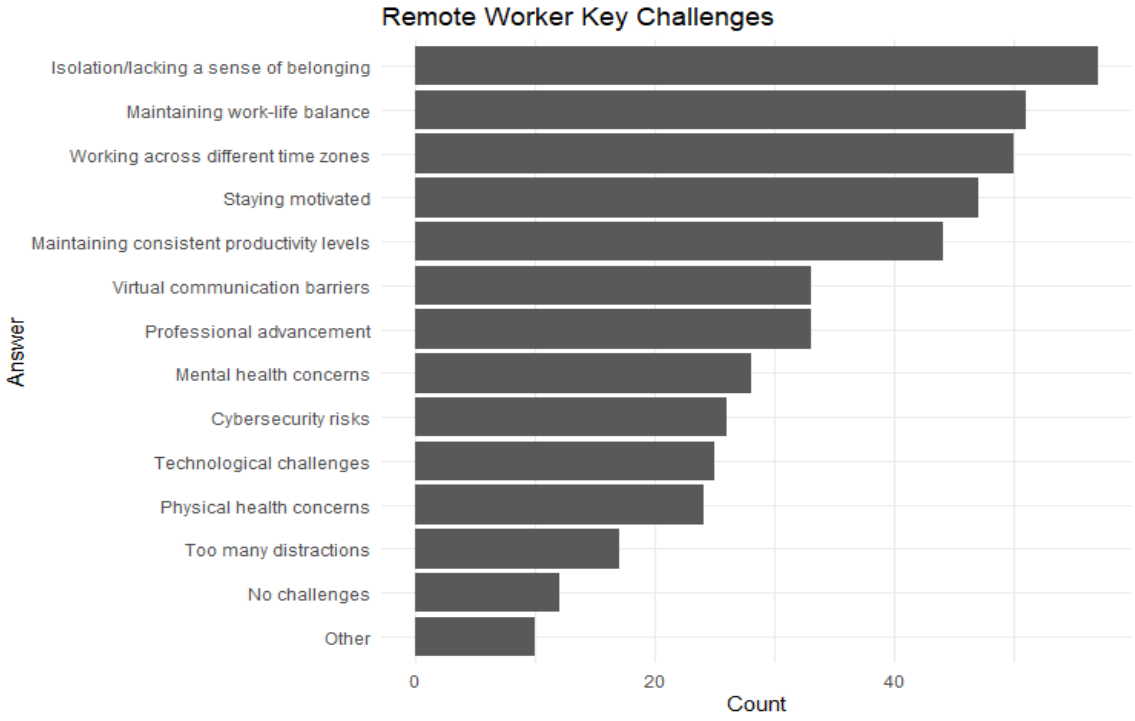


Figure 7.1.13 Participants' perception on critical areas for remote workers key challenges

For the benefits of remote working, participants mainly valued freedom to choose where they live, reduction/elimination of commuting, and flexibility to design their work schedule. Increased productivity, more time with friends/family, feelings of autonomy, improved financial situation, improved focus, increased motivation, and feelings of safety, in descending order, were less selected by participants.

Participants were also asked to evaluate their organizations when it comes to remote policy issues. For the statement: "In my opinion, my organization has carefully implemented remote and/or hybrid work arrangements," 32.5% strongly disagreed and 32.5% agreed with this statement. 23.6% had a neutral response, 8.1% disagreed and 3.3% strongly disagreed with the statement (Figure 7.2.14). For the statement: "My organization has clearly communicated their remote work and/or hybrid work policy to all employees," 31.7% strongly disagreed, 34.1% agreed, 22% neither agreed nor disagreed, while the percentage of those who either disagreed or strongly agreed was roughly 6% (Figure 7.2.15).

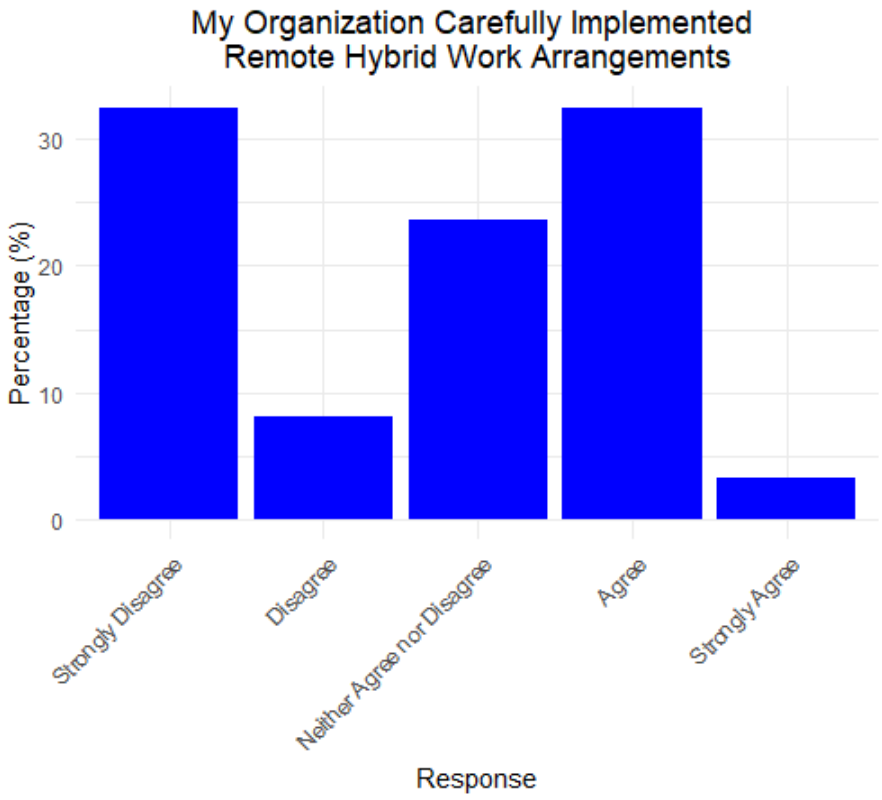


Figure 7.1.14 Participants' perception of the implementation of their organizations remote work arrangements

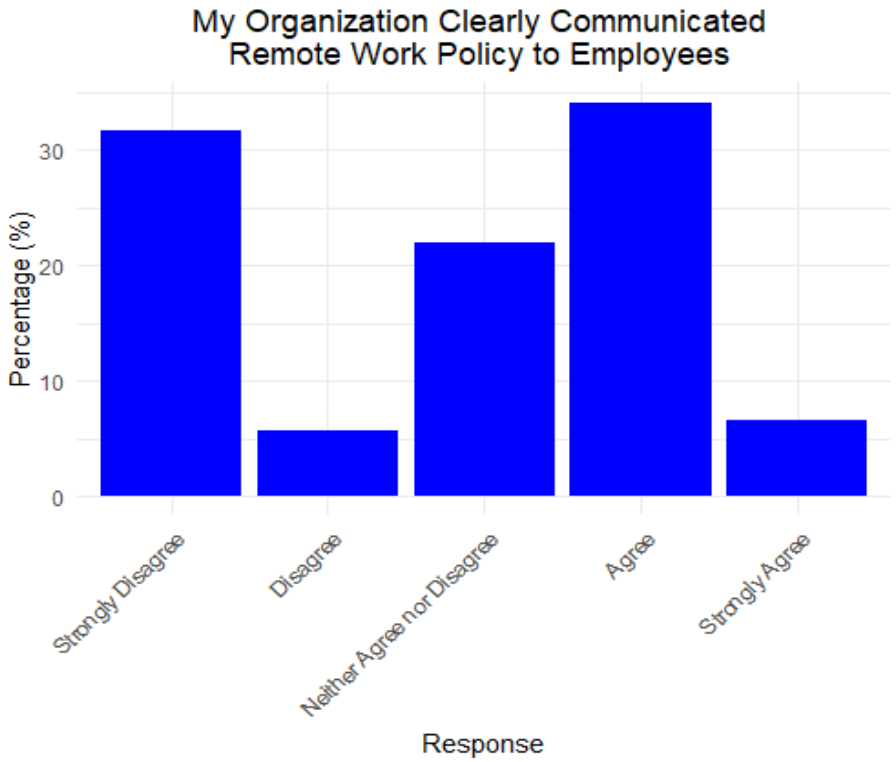


Figure 7.1.15 Participants' perception of the communication of their organizations remote work policies to employees

For the statement "My organization has effectively communicated all relevant government regulations on remote (or hybrid) work to all employees," the majority of participants (30.9%) neither agreed nor disagreed. 23.6% strongly disagreed, while the remaining responses were more or less equally distributed around 15% (Figure 7.2.16). Regarding the statement "My organization regularly communicates any relevant changes and updates on government regulations on remote and/or hybrid work to all employees," the majority of participants were neutral (33.3%), while 40% disagreed or strongly disagreed, and 26.8% agreed or strongly agreed (Figure 7.2.17). For the statement "My organization actively seeks feedback from employees on how to improve remote work policy and arrangements," the majority of respondents neither agreed nor disagreed (38.2%), 37.4% either disagreed or strongly disagreed, and 24.4% either agreed or strongly agreed (Figure 7.2.18).

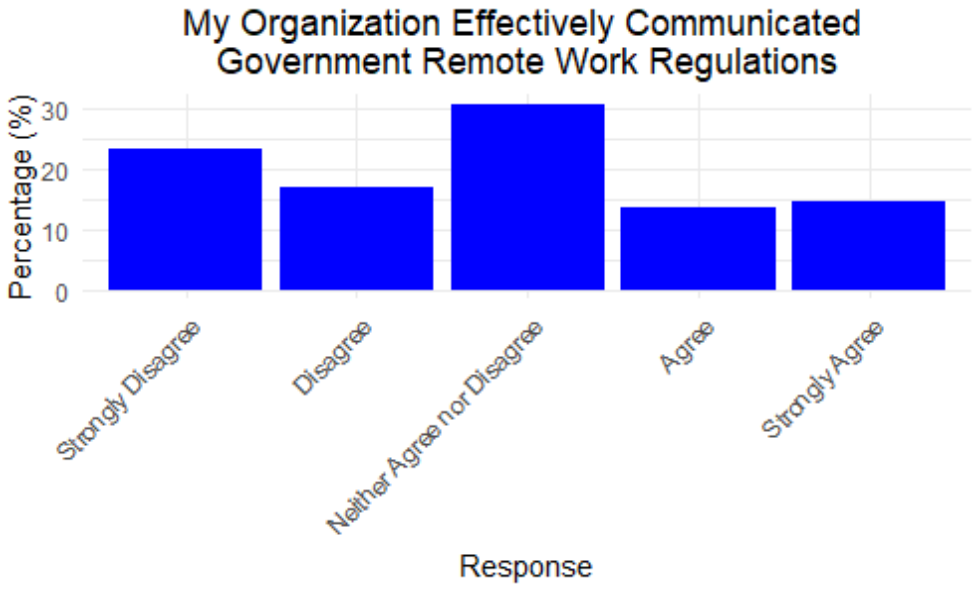


Figure 7.1.16 Participants' perception of the communication of government's remote work regulations to employees

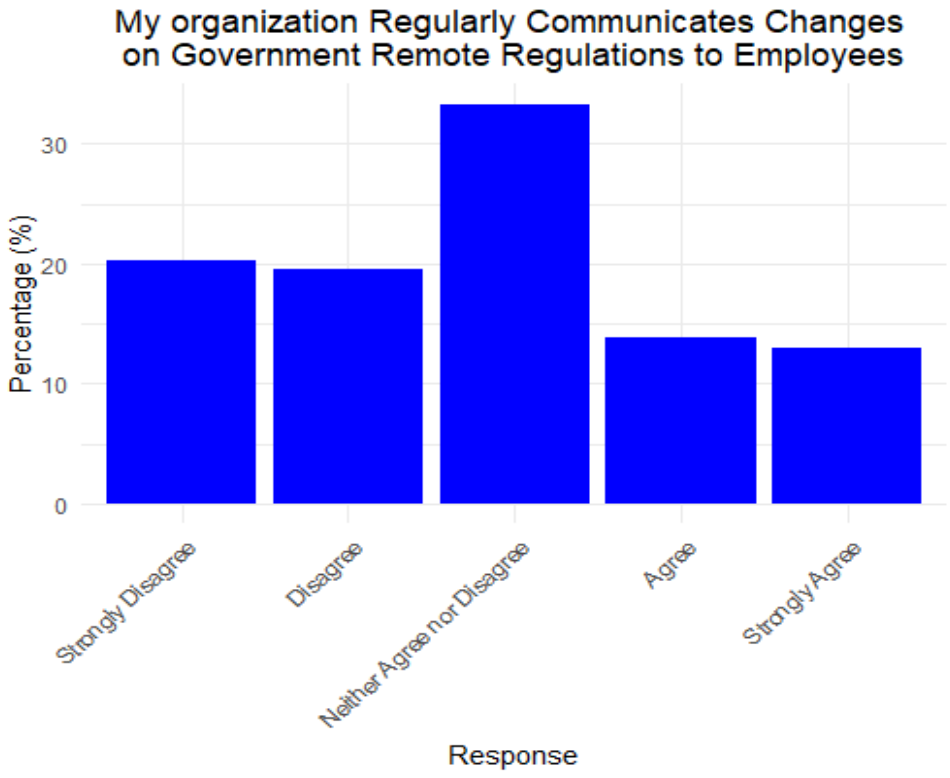


Figure 7.1.17 Participants' perception of how regularly government remote work regulations are communicated to employees

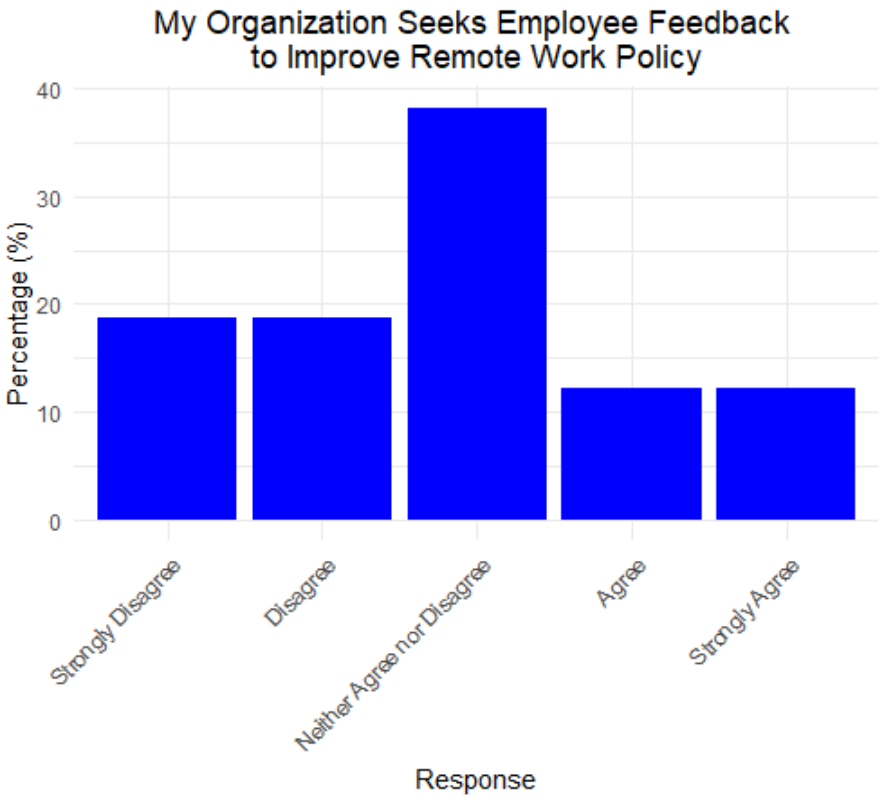


Figure 7.1.18 Participants' perception of their organizations attitude towards employee feedback on remote work policies by employees

7.1.3 Correlations

Several interactions were tested among the questionnaire variables to identify any significant relationships. The data were filtered to exclude "Nonbinary" and "Prefer not to say" categories due to their very small sample sizes, which could undermine the validity of the analysis. Thus, the focus was on "Male" and "Female" participants. Starting with the question of how participants believe that gender-specific challenges are addressed by their organisations, a Fisher's Exact Test was conducted, due to the expected low frequencies in the contingency table. No significant relationship was found, revealing that gender is not a statistically significant predictor of the participants' perception (p=0.6444). (Figure 7.2.19).

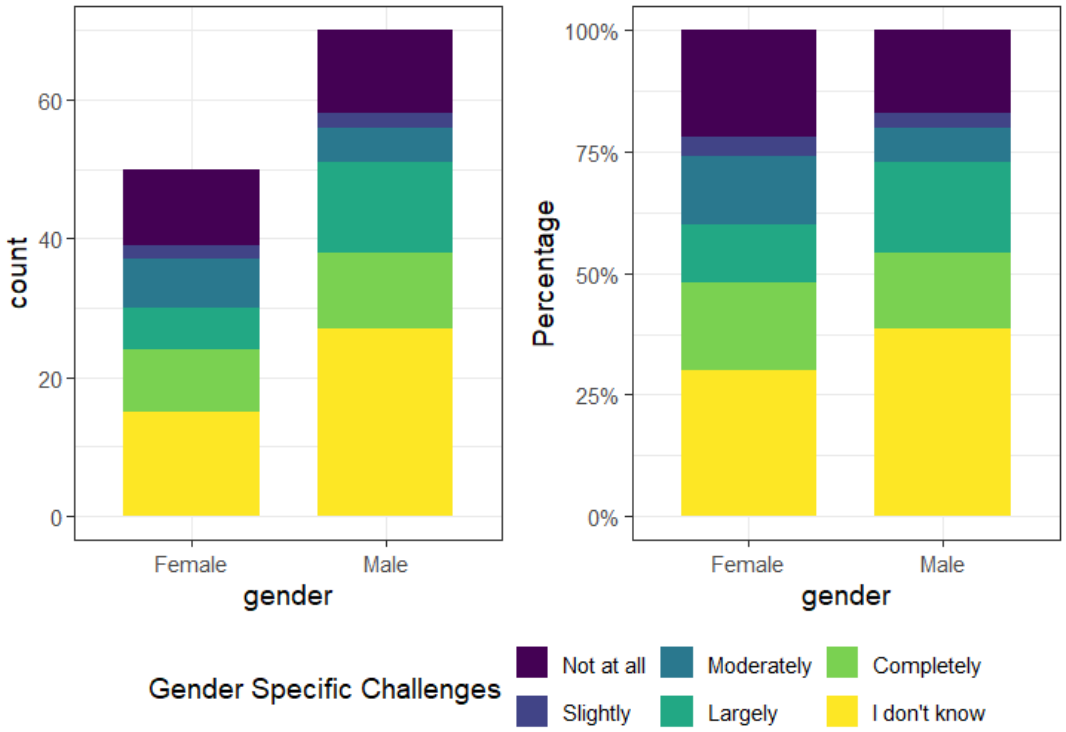


Figure 7.1.19 Participants perception on how gender specific challenges are being addressed, grouped by gender

The association between gender and seniority level was examined using Fisher's Exact Test as a Chi-square test was again inappropriate due to the small frequencies observed in the contingency table. It was found that there is a statistically significant association (p= 0.01899) revealing significance in the distribution of seniority levels across genders. Following the significant overall association between gender and seniority levels, a post-hoc pairwise Fisher's Exact test was conducted to identify which specific gender and seniority level pairs contributed to this association. The statistically significant pairs were:

- Administrative and Operational Staff vs. Freelancers/Independent Contractors (p=0.009657)
- Administrative and Operational Staff vs. Intermediate-level Professional/Technical Experts (p=0.02387)
- Administrative and Operational Staff vs. Middle Management (p=0.005057)
- Administrative and Operational Staff vs. Senior Management (p=0.02371)
- Administrative and Operational Staff vs. Senior Professional/Technical Experts (p=0.00257)
- Junior Professional/Technical Experts vs. Senior Professional/Technical Experts (p=0.04032)

Overall, it can be noticed that there is a gender disparity with females being overrepresented in lower positions. For example, in Administrative and Operational Staff (females = 12%, males = 0%), middle management (females = 16%, males = 23.2%) (Figure 7.2.20).

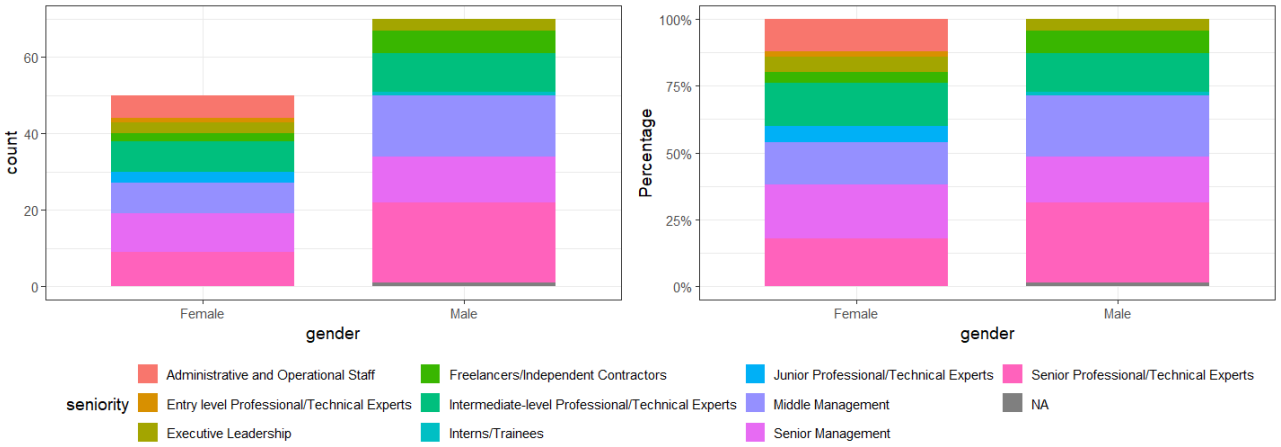


Figure 7.1.20 Distribution of seniority levels across genders

A Fisher's Exact Test was conducted to examine the relationship between seniority and the perception of the presence of a dedicated remote work policy but no significant association was found ($p>0.05$). Similarly, no significant association ($p>0.05$) was found for the industrial sector of the worker and the way they evaluated the existence of a dedicated remote work policy (Figure 7.2.21).

For the association between remote location and preferred remote location, a Fisher's Exact Test was conducted, indicating a statistically significant association with a p-value of 0.0005. According to the findings of the pairwise Fisher's Exact Tests, significant associations were found for the pairs:

- Other vs. Rural area ($p < 0.05$)
- Other vs. Suburban ($p < 0.05$)
- Other vs. Urban ($p < 0.05$)
- Rural vs. Other ($p < 0.05$)
- Rural vs. Suburban ($p < 0.001$)
- Rural vs. Urban ($p < 0.001$)
- Suburban vs. Other ($p < 0.05$)
- Suburban vs. Rural ($p < 0.001$)
- Suburban vs. Urban ($p = 0.001$)
- Urban vs. Other ($p < 0.05$)
- Urban vs. Rural ($p < 0.001$)
- Urban vs. Suburban ($p < 0.001$)

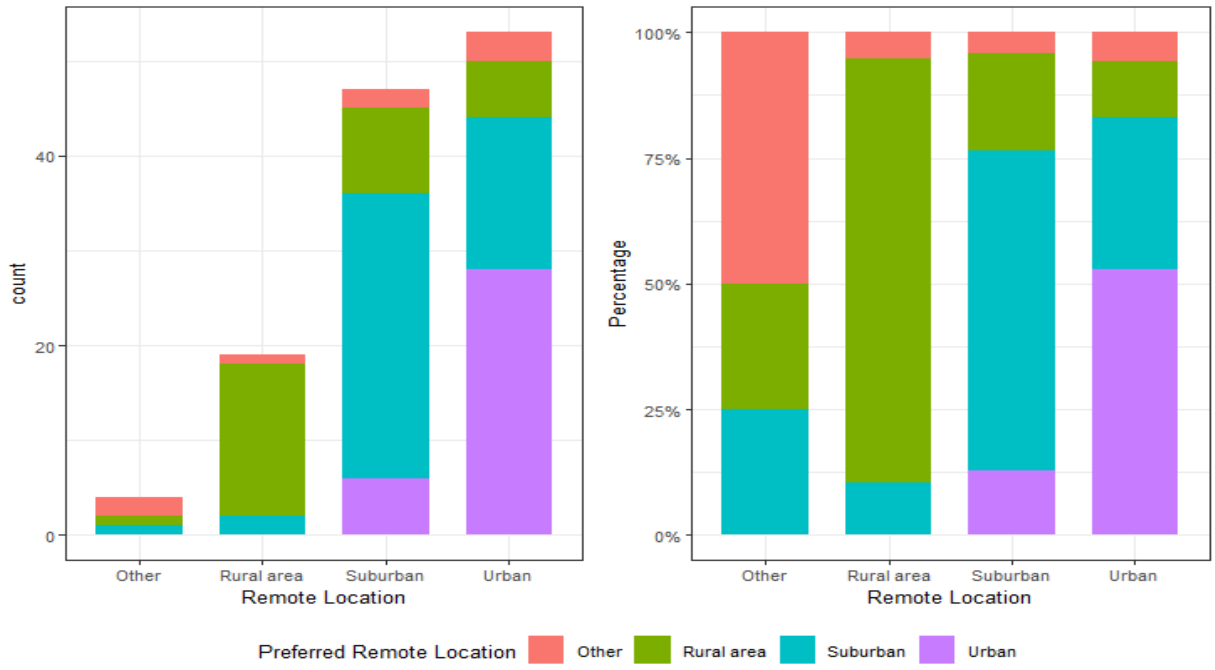


Figure 7.1.21 Association between remote location and preferred remote location

Preferred Remote Location by Remote Location (Row Percentages)

Dependent: preferred_remote_location		Other	Rural area	Suburban	Urban	Total
Total N		8	32	49	34	123
remote_location	Other	2 (50.0)	1 (25.0)	1 (25.0)	0 (0.0)	4 (100)
	Rural area	1 (5.3)	16 (84.2)	2 (10.5)	0 (0.0)	19 (100)
	Suburban	2 (4.3)	9 (19.1)	30 (63.8)	6 (12.8)	47 (100)
	Urban	3 (5.7)	6 (11.3)	16 (30.2)	28 (52.8)	53 (100)

Figure 7.1.22 Participants preference of remote location grouped by current location

A Kruskal-Wallis test was conducted to study the relationship between age and preferred work arrangements as the Shapiro-Wilk test showed that age was not normally distributed. The interaction was found to be significant ($p<0.05$). Subsequent pairwise comparisons using the Wilcoxon rank sum test with Bonferroni adjustments indicated significant findings overall ($p=0.044$) but none of the pairwise comparisons was found

to be significant, indicating that age distributions across the various preferred work arrangements are different, without though creating a specific pattern (Figure 7.2.22).

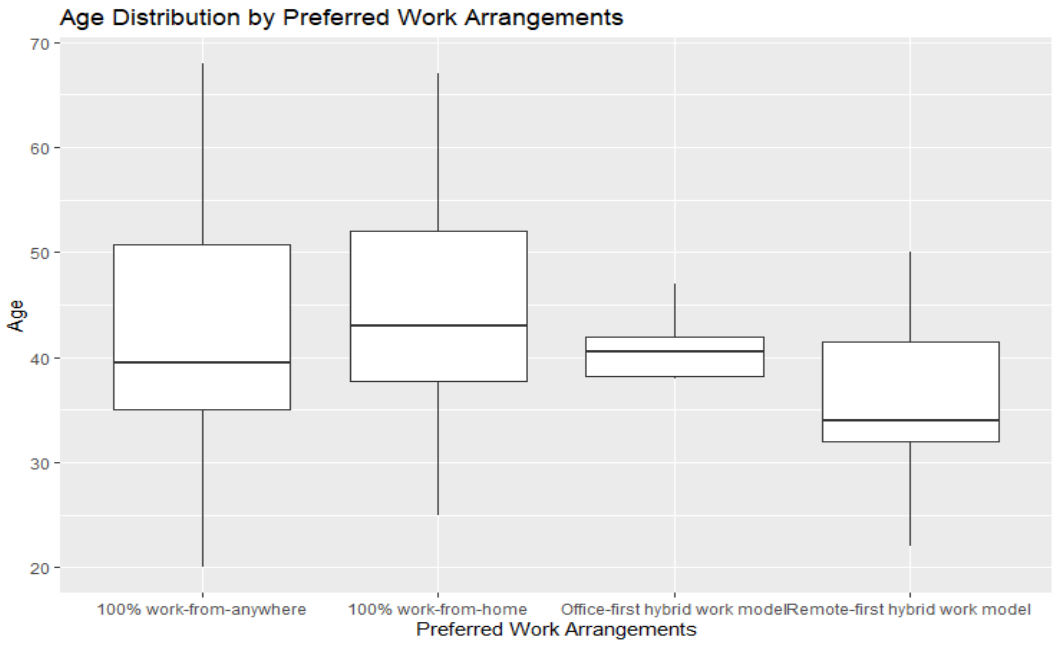


Figure 7.1.23 Age distribution across different preferred work arrangements categories

The same procedure was repeated for the age and preferred remote location. The Kruskal-Wallis test was found to be significant (p=0.044) but no pairwise comparison indicated a statistically significant difference (Figure 7.2.23). Similarly, the association between age and remote location was examined (Figure 7.2.24). The Kruskal-Wallis test was found to be significant (p<0.001). The pairwise comparisons using the Wilcoxon rank sum test with Bonferroni adjustments revealed that only the suburban-urban pairs had a significant difference in age distribution (Figures 7.2.25 and 7.2.26).

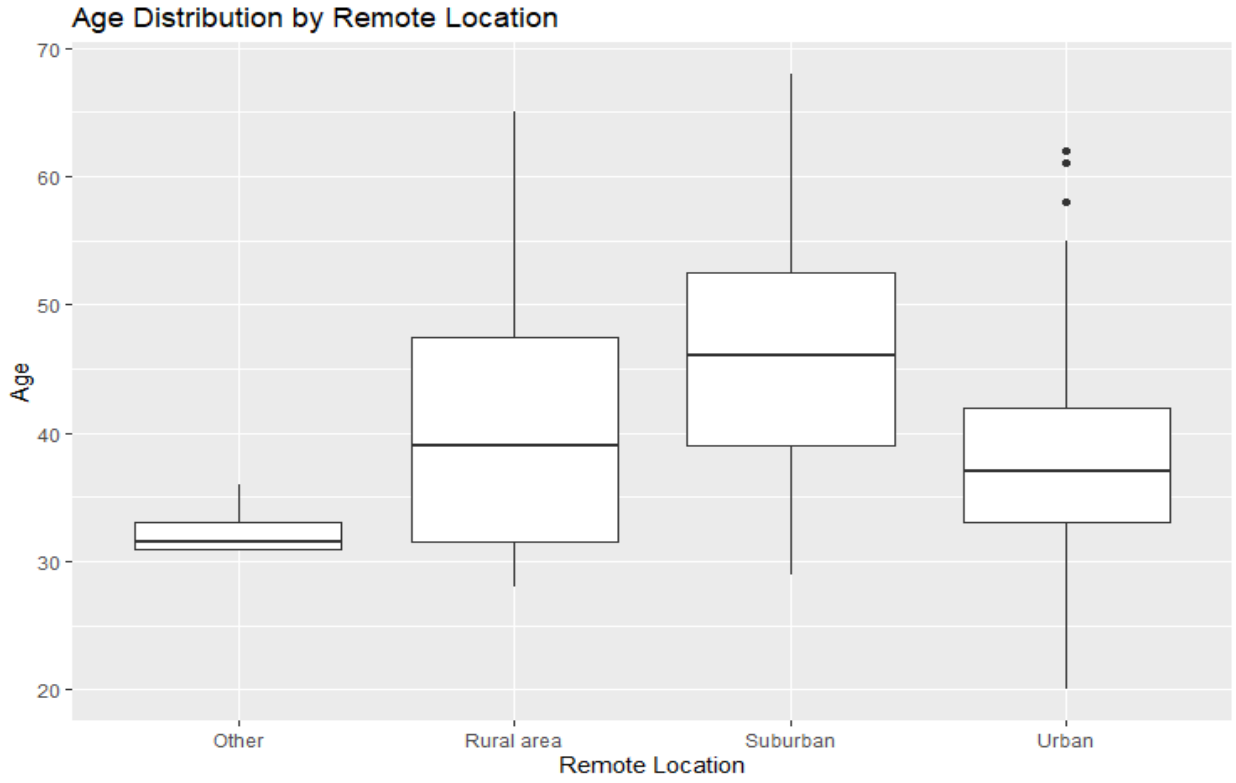


Figure 7.1.24 Age distribution across remote location

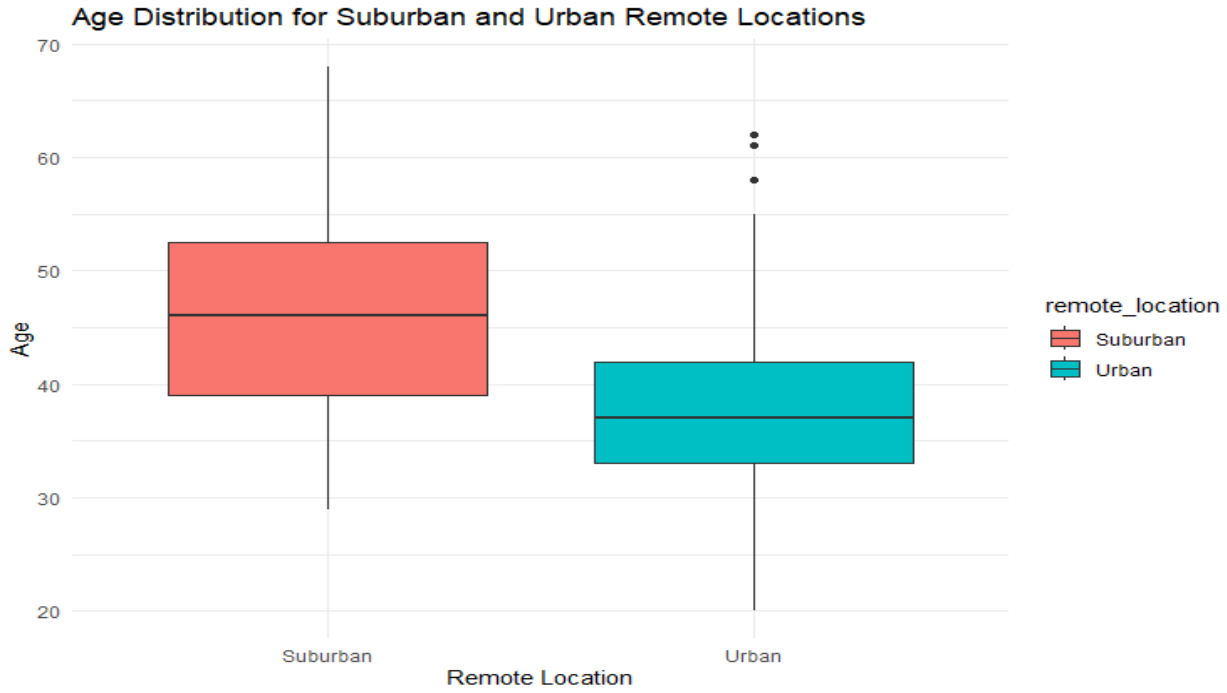


Figure 7.1.25 Age distribution across urban and suburban remote locations

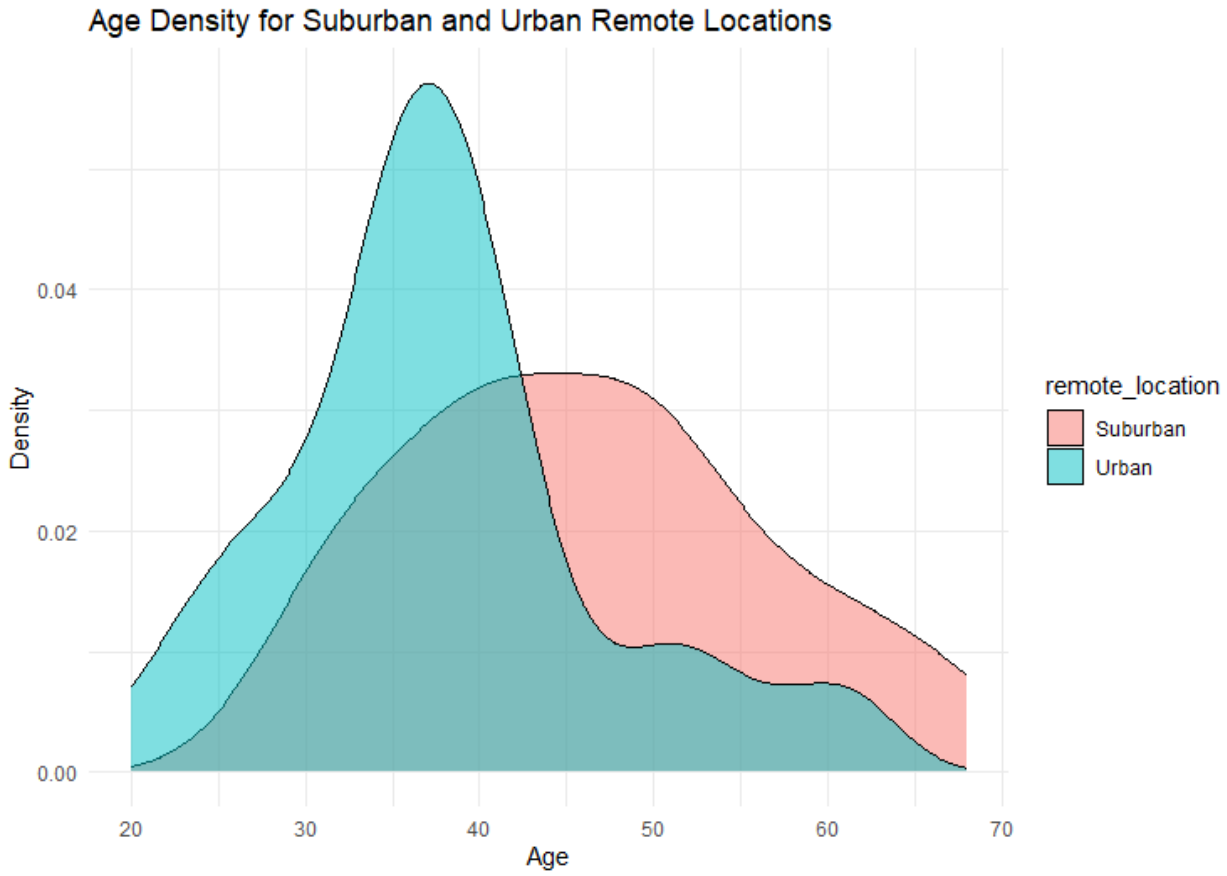


Figure 7.1.26 Age distribution across preferred remote location

Outcome

The findings of the questionnaire provide useful information regarding the demographics and perceptions of remote workers concerning remote work arrangements. The sample included 132 participants with a balanced representation of genders and a mean age of 41.34 years. Participants from various educational backgrounds, seniority levels and work arrangements answered the questions. It was found that the majority of the participants prefer complete remote work flexibility. Despite most of them living in urban and suburban, there seems to be an increasing interest in suburban living. The sample population mainly claimed to be aware of their rights and obligations and expressed their satisfaction regarding digital infrastructures. However, there is also a relatively high percentage of employees claiming to be unaware of remote work legislation.

The employees mainly reflected on challenges including isolation, work-life balance, and different time zones, while mental health and infrastructure did not seem to be issues that significantly affect them. There was a blurred picture regarding the way policies are implemented and communicated, indicating that organisations probably need to ensure the successful communication of policies that affect employees while being more inviting to receive feedback by their employees.

An interesting area that can potentially be studied deeper is the interaction between gender and seniority levels, as findings seem to indicate a gender disparity in positions of higher seniority. Additionally, different ages seem to have different preferences when it comes to living locations, though more stratified studies are necessary to examine the interaction of these factors.

8. Conclusions and Initial Implications

This report has carefully brought together insights from academic research and data and observations from various reports from EU, other bodies (e.g. Cedefop, Eurofound, etc.) and professional services bodies (e.g. Deloitte, McKinsey) in order to provide a more holistic understanding of the practices, enablers and barriers in remote and hybrid work arrangements and potential insights into the urban/rural divide with a view to examining whether remote and hybrid work could play a role in addressing the divide.

Technology and technological advancements not only play a crucial role in remote and hybrid work, but serve as a catalyst for making these arrangements available at all. A variety of dimensions and implications have emerged around the use of technology in the work environment, however, of which the most important are legal, social and mental-health related, which should be addressed by policy and legal frameworks, in order to realise the EU's plan for digital transformation without compromising the EU's 'digital sovereignty' and with respect to employees' mental health and work-life balance (e.g. technostress, telepressure, etc.) and rights (e.g. digital surveillance). In many cases there are conflicts or the potential for conflict between e.g. policies and employers' needs. For instance, in some countries the policy on privacy prohibits the use of camera for monitoring performance (e.g. Greece), but from the interviews with employers and employees (see Section 6.1) it emerges that e.g. cameras are seen as a way of establishing communication or that employers need to feel they can monitor and control performance, which could potentially be problematic if not properly regulated. In the case of Türkiye, while steps are taken to introduce remote working policy and secure the workers' rights, as it emerged from an interview with an employee, there is a prevailing concern among the workforce that technological advancements predominantly benefit employers and not necessarily employees.

Infrastructure is highlighted as an important factor both in the literature but also by the interviewees overall on the national level, but also in relation to the urban/rural divide. In Türkiye, for instance, the lack of digital infrastructure in rural areas is highlighted by interviewees, both policy makers and employers, as an issue. When it comes to France, for instance, an interviewee identified that while remote work was branded as part of local development policy and a way to upgrade declining rural areas and small towns, it seems that this policy was not pursued further. Digital infrastructure was discussed in Section 5.3, where it became evident that there were significant disparities amongst countries, with Northern countries substantially outperforming certain countries in Southern Europe and within counties, with rural areas lagging behind comparatively to urban centres. Apart from digital infrastructure, digital literacy and the digital intensity of SMEs was addressed in Sections 5.2.3 and 5.2.4, with discrepancies noted again amongst countries and between rural and urban areas. From the above a number of implications emerge, especially for the EU, given that part of the EU's rural development plan aims at "achieving a balanced territorial development of rural economies"[49] and creating and maintaining employment opportunities:

- Investment in digital infrastructure but also physical infrastructure (schooling, healthcare, cultural opportunities) might render remote or other rural areas more attractive to both employers and employees in remote work, in combination with the lower cost-of-living noted in Section 5.4.1.

[49] See https://agriculture.ec.europa.eu/common-agricultural-policy/rural-development_en [Accessed 26 June 2024].

- While policies in many European countries are to a great extent similar, if not harmonised, with some variations in terms of the authority that employer, state, works councils and other entities exercise in defining specific aspects of remote work, concerns with mental and physical health, safety, security, privacy and surveillance emerge both in the literature and through the interviews conducted for R-Map, calling attention to the fact that policies need to be robust, on the one hand, and their implementation should be monitored, on the other.
- Various programmes that aim to boost literacy and digital skills can be instrumental in boosting rural economies and allowing rural populations to actively participate in the remote labour market.

Labour market characteristics (see Section 5.2.3) were identified as an important factor in access to and in the growth of remote work opportunities. Therefore, projections on the growth of specific sectors across the different EU and associated countries might help align remote work policies and infrastructure investments with national and EU-level economic and rural development plans.

From the literature (Section 4) as well as the input of policy makers, employers and employees (Sections 6 and 7), it emerges that crucial aspects surrounding remote work and its implementation cannot only be addressed by policy and the state but require corresponding commitment from organizations, companies and employers. Issues such as remote work uptake, equity, creativity, employee retention and mental health are related by the literature with aspects of management and leadership. This suggests that HR policies and management configurations play a crucial role in the alignment of company practices with state policies on remote work and that bilateral consultations and agreements can help the modern labour market adjust to new remote or hybrid modes of working in an equitable manner to the benefit of local economies. For instance, input from the interviews conducted within the framework of R-Map showed that some companies struggle to adopt remote work practices for fear of relinquishing control or need for more structured ways to measure employee performance. It further suggests that the contracts of some employees who work digitally might not be so secure. Furthermore, input from the survey addressed to employees suggested that a high percentage of remote workers are not aware of the effectiveness of remote work legislation in their region as well as the extent to which gender-specific challenges are addressed by the remote work policy implemented in their organization. All this suggests a number of implications when it comes to future trends:

- Telework is an important part of the current EU digitalisation policies, but regional conditions reveal gaps in the harmonisation of policies, disparities in infrastructure and technological advancements among EU member states, between urban and rural areas, as well as between EU and its non-EU partners. These issues need to be addressed at both the EU and the national levels, especially in view of the EU goal to create a single digital market and maintain its ‘digital sovereignty’.
- EU conditionality creates a favourable environment for the expansion of an EU digital market and thus remote work. Nonetheless, the challenge of harmonising policies and standards remains.
- A common opinion shared by all stakeholders is that remote work is here to stay and that it will continue to increase. Legal frameworks should be consistent and clear when it comes to the status of remote or digital workers in different sectors of the economy.
- Policy should be inclusive (e.g. gender) and address issues of consistency and transparency in terms of employees’ rights when it comes to remote work, including issues related to occupational health and safety, provision of equipment, occupational costs covered and access to employee representation.

- Since the format and organisation of work is typically decided between the employer and the employee at the level of the company in the employment contract, a more inclusive, multi-stakeholder ongoing dialogue should take place. The position and influence of social partners (employers' unions, trade unions, works councils etc) in this dialogue should be strengthened in order to secure employees' rights and interests representation.
- Training for employers and employees on implementing remote or hybrid work arrangements could help modernise the labour market more quickly and effectively.
- The advent of remote work can impact companies' culture and thus its corporate brand, managerial styles and internal policies. A more concerted effort to study the impact of hybrid and remote work arrangements might bring about important insights.

Overall, before considering the role of remote work in shaping local economies or the global labour market, the different configurations of remote work should be better understood and fully addressed by policy. As was seen in this report, different countries employ different definitions of remote work or telework and different approaches and in some cases remote work can be understood as a job role while in others as a working arrangement. A concise and consistent legal definition and framework could help policymakers, employers and employees better navigate the modern labour market and enabling them to capitalize the benefits and advantages presented by this new work paradigm.

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10. Appendices

10.1 Appendix A: Tripartite Interviews, Themes and Line of Questioning

Three thematic areas were covered in the interviews, based on the capacity of each participant—i.e. whether they were policy-makers, employees, employers or union members. The questions and themes can be found below.

Related to Employment

1. When establishing remote work policies, employers need to be mindful of a variety of legal and regulatory considerations. Can you outline the key areas of legal and regulatory concern, and describe the main policies your company has implemented to address them?
2. Within your industry or sector, there are likely different models of remote work arrangements. Can you describe the various models that exist, and for each model, explain the significant opportunities and challenges that come along with it?
3. Are there any major gaps in remote work regulations that currently pose challenges for companies, such as those related to digital nomads visa?
4. Are there specific industries or sectors that require distinct remote work regulations because of their unique/specific characteristics? What factors should be considered when developing remote work policies, such as eligibility criteria, communication protocols, and performance metrics?
5. What strategies can be employed to ensure that remote work policies are clearly communicated to employees, fostering both understanding and compliance?
6. What measures can employers take to guarantee that remote employees are equipped with the necessary tools, software, and technical support to optimize employees' performance?
7. What support mechanisms can be provided to employers to facilitate the transition to remote work, such as training programs or financial incentives?
8. Policymakers have a role to play in assisting small and medium-sized enterprises (SMEs) in effectively adopting remote work practices. Can you describe some ways policymakers can facilitate this process for SMEs?
9. Looking ahead to the next five years, what major trends do you foresee shaping remote work? What types of challenges and opportunities will these trends create for employers?

Related to Policies

1. Are there any policy framework(s) on remote work ensuring worker rights and protections?
2. What are the most significant challenges policymakers face when crafting policies that address the unique needs of different remote work models, such as digital nomad visas, taxation, and pensions?

3. How could widespread adoption of remote work affect labour market dynamics, such as geographic mobility and job distribution in urban and rural areas? Additionally, are there any current regulations in your country that address these potential impacts? If so, please elaborate.
4. Are there specific industries or sectors that require distinct remote work regulations because of their unique/specific characteristics?
5. Is there currently a dialogue happening among policymakers, employers, and employee representatives (trade unions) regarding the creation of comprehensive remote work policies?
6. How can policymakers create remote work policies that are accessible to everyone, including those living in rural or underserved areas with limited internet access or technology resources?
7. Policymakers need to find a balance between enforcing rules and ensuring compliance with remote work regulations, while also upholding employee rights and freedoms. Can you describe some strategies to achieve this balance?
8. How can policymakers address potential disparities in opportunities and wages between remote and non-remote workers?
9. Data security and employee privacy are critical considerations in remote work environments. What measures should be put in place to ensure both are protected?
10. In your opinion, what measures can be taken to improve broadband access and digital infrastructure in areas where remote work is less feasible?
11. In your opinion, what are the major trends that will be prominent in remote work governance in the next 5 years? What kind of challenges and opportunities do you think will arise?

Related to Employees' Representation

1. Can you describe the most significant challenges that employees currently face when working remotely?
2. What rights and protections should trade unions or employee associations prioritize for remote workers? Additionally, what strategies can they utilise to effectively advocate for these prioritised rights and protections?
3. Trade unions and employee associations play a crucial role in shaping the work environment. How can they collaborate with policymakers and employers to develop regulatory frameworks that support remote work practices while simultaneously safeguarding worker rights and interests, including the right to collective bargaining?
4. The modern economy is characterised by the gig economy, the rise of remote work, and increasing digitalisation. How can trade unions and employee associations adapt and remain relevant in this evolving landscape?
5. Currently, are there any policy frameworks in place that ensure worker rights and protections in remote work environments? These protections should encompass individual rights, privacy, and freedoms. If frameworks exist, are they adequate in your opinion?
6. Are there any regulations currently in place that safeguard employees from potential disparities in opportunities and wages between remote and non-remote workers, such as those related to promotions? If so, do you believe these regulations are sufficient?

7. Is there a system in place to ensure that remote workers can access ongoing education and skill development opportunities? This is critical to help them stay competitive in the evolving job market.
8. How can remote work policies be crafted to be flexible and adaptable? This would allow them to better accommodate the diverse needs and preferences of a remote workforce.
9. Looking ahead to the next five years, what major trends do you foresee shaping remote work? What types of challenges and opportunities will these trends create for employees?

10.2 Appendix B: R-Map: Researching the current status of remote working arrangements in Europe and beyond

Survey Questions

Part A • DEMOGRAPHIC INFORMATION

1. **What is your current age?**

(open answer)

2. **How would you describe your gender?**
   - Male
   - Female
   - Non-binary
   - [Other (Please specify): _____
   - Prefer not to say
3. **Are you the primary caregiver for someone?**
   - No
   - Yes, for parent or guardian
   - Yes, for child/children
   - Yes, for spouse or partner
   - Other (please specify):_____
4. **What is your highest level of education?**
   - No formal education
   - Primary education (e.g. elementary school)
   - Secondary education (e.g. high school)
   - Bachelor's Degree (BA, BSc, etc.)
   - Master's Degree (MA, MSc, etc.)
   - Doctorate degree or equivalent
   - Other (please specify)
5. **What is your current employment status?**

- Employed full-time
- Employed part-time
- Self-employed
- Freelancer/contractor
- Unemployed
- Student
- Prefer not to say

6. **Please select the option that best describes your current seniority level within your organization. Choose the option that best aligns with your primary role or responsibilities.**
   - Executive Leadership (e.g., CEO, CTO, CFO, VP-level)
   - Senior Management (e.g., Senior Managers, Department Heads, Directors)
   - Middle Management (e.g., Managers, Team Leaders)
   - Senior-level Professional (more than 5 years of experience)
   - Intermediate-level Professional (between 3 and 5 years of experience)
   - Entry-level Professional (up to 3 years of experience)
   - Freelancer/Independent Contractor
   - Intern/Trainee
   - Other (Please Specify): _____
7. **Please select the option that best describes your current industrial sector.**
   - Agriculture
   - Manufacturing
   - International Trade and Development
   - Professional and business services
   - Public and social services
   - Culture and recreation
   - Human Resources
   - Sales and Marketing
   - Hospital & Health Care
   - Financial services
   - Education

- Software development
- Technology, Information, & Internet
- Other (please specify): _____

8. **In total, how long have you been working?**
   - Please respond in an approximate number of years
9. **In total, how long have you been working remotely?**
   - Please respond in an approximate number of years
10. **What is your current type of remote work arrangement*? *Please select the option that is most applicable to your situation.***
    - 100% work-from-home
    - 100% work-from-anywhere
    - Office-first hybrid work model (I am expected to work on-site but can choose a few days a week to work remotely)
    - Remote-first hybrid work model (I mostly work remotely with occasional visits to coworking spaces or the office)
    - Other (please specify)
11. **What is your preferred type of remote work arrangement? Please select the option that is most applicable to your situation.**
    - 100% work-from-home
    - 100% work-from-anywhere
    - 100% onsite work
    - Office-first hybrid work model (I am expected to work on-site but can choose a few days a week to work remotely)
    - Remote-first hybrid work model (I mostly work remotely with occasional visits to coworking spaces or the office)
    - Other (please specify)
12. **Which option best describes your current remote work location?**
    - Urban (i.e. large cities or towns with a high populated density)
    - Suburban (i.e. outskirts of a city or large town with a medium populated density)
    - Rural area (i.e. an area located outside cities or towns with a low populated density)

- Other (please specify)

13. Which option best describes your preferred remote work location?

- Urban (i.e. a densely populated area; for instance, large cities or towns with significant employment, infrastructure, and high-rise residential buildings)
- Suburban (i.e. an area with a medium to low population density, typically found on the outskirts of a city or large town)
- Rural area (i.e. an area located outside cities or towns with low population density and large agricultural or natural settings around it with few services available)
- Other (please specify)

14. In which country is your company based?

(open answer)

15. In which country are you currently based?

(open answer)

Part B • SURVEY QUESTIONS

16. Are you aware of your legal rights and obligations as a remote worker?

- Fully Aware
- Mostly Aware
- Somewhat Aware
- Slightly Aware
- Not at all Aware

17. In the region where you live and work, how effective do you think remote and hybrid work legislation is?

- Highly effective
- mostly effective
- Somewhat effective
- Barely effective

- Ineffective
- I'm not aware of any remote working legislation in my region.

18. In the region where you live and work, how effective do you think digital infrastructures for remote work are (i.e. policies and technological advancements in cybersecurity, broadband and mobile data, tech solutions, high-performing computing, etc.)?

- Highly effective
- Mostly effective
- Somewhat effective
- Barely effective
- Ineffective
- I don't know

19. As far as I am aware, my organization's remote work policy covers the following (choose as many as needed):

- Professional training resources
- Remote tools and technology
- Expenses related to remote working (e.g. purchase and maintenance of equipment and tools, etc.)
- Work schedule (e.g. flexible hours, recording of work hours, etc.)
- Health and safety arrangements
- Remote Employee support services (loneliness, wellbeing, leisure time, etc.)
- Rights & Liabilities awareness
- Use of digital media (privacy and data protection, right to disconnect, etc.)
- Data and security guidelines
- Communication guidelines
- Team-building and Employee Resource Groups
- I don't know
- Any other (please specify): ____

20. Please select the areas you believe are most critical for a remote work policy to address:

- Professional training resources

- Remote tools and technology
- Expenses related to remote working (e.g. purchase and maintenance of equipment and tools, etc.)
- Work schedule (e.g. flexible hours, recording of work hours, etc.)
- Health and safety arrangements
- Remote Employee support services (loneliness, wellbeing, leisure time, etc.)
- Rights & Liabilities awareness
- Use of digital media (privacy and data protection, right to disconnect, etc.)
- Data and security guidelines
- Communication guidelines
- Team-building and Employee Resource Groups
- I don't know
- Any other (please specify): ____

21. **I am familiar with remote work (or hybrid work) policies or practices employed by my organization.**
    - Not at all familiar
    - Slightly familiar
    - Moderately familiar
    - Very familiar
    - Extremely familiar
22. **In my opinion, my organization has carefully implemented remote and/or hybrid work arrangements.**
    - Strongly Agree
    - Agree
    - Neither Agree nor Disagree
    - Disagree
    - Strongly Disagree
23. **My organization has clearly communicated their remote and/or hybrid work policy to all employees.**

- Strongly Agree
- Agree
- Neither Agree nor Disagree
- Disagree
- Strongly Disagree

24. My organization has effectively communicated all relevant government regulations on remote and/or hybrid work to all employees.

- Strongly Agree
- Agree
- Neither Agree nor Disagree
- Disagree
- Strongly Disagree

25. My organization regularly communicates any relevant changes and updates on government regulations on remote and/or hybrid work) to all employees.

- Strongly Agree
- Agree
- Neither Agree nor Disagree
- Disagree
- Strongly Disagree

26. My organization actively seeks feedback from employees on how to improve remote work policy and arrangements.

- Strongly Agree
- Agree
- Neither Agree nor Disagree
- Disagree
- Strongly Disagree

27. In your opinion, what are the <u>key challenges</u> as a remote worker? (select as many as apply)

- Staying motivated
- Isolation / Lacking a sense of belonging

- Working across different time zones
- Virtual communication barriers
- Maintaining work-life balance
- Too many distractions
- Technological challenges
- Professional advancement (e.g. promotions, etc.)
- Physical / mental health concerns
- Cybersecurity risks
- Other (please specify): ___

In your opinion, what are the <u>key benefits</u> as a remote worker? (select all that apply)

- Freedom to choose where I live / work
- Flexibility to design own work schedule
- Reduce/eliminate commuting
- Increased productivity
- Increased motivation
- Improved financial situation
- Feelings of autonomy
- Improved focus
- More time with friends / family
- Feelings of safety
- Other (please specify): _____

28. In your opinion, how likely is it that remote work will increase in the next five years?

- Very unlikely
- Unlikely
- Neutral
- Likely
- Very likely

29. What improvements do you think would enhance your remote or hybrid work experience?

- - -

Thank you for your participation!

Your responses are vital to understanding the evolving landscape of remote work and will contribute significantly to our research.

R-Map

MAPPING THE EFFECTS OF REMOTE WORKING ARRANGEMENTS IN URBAN AND RURAL AREAS

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