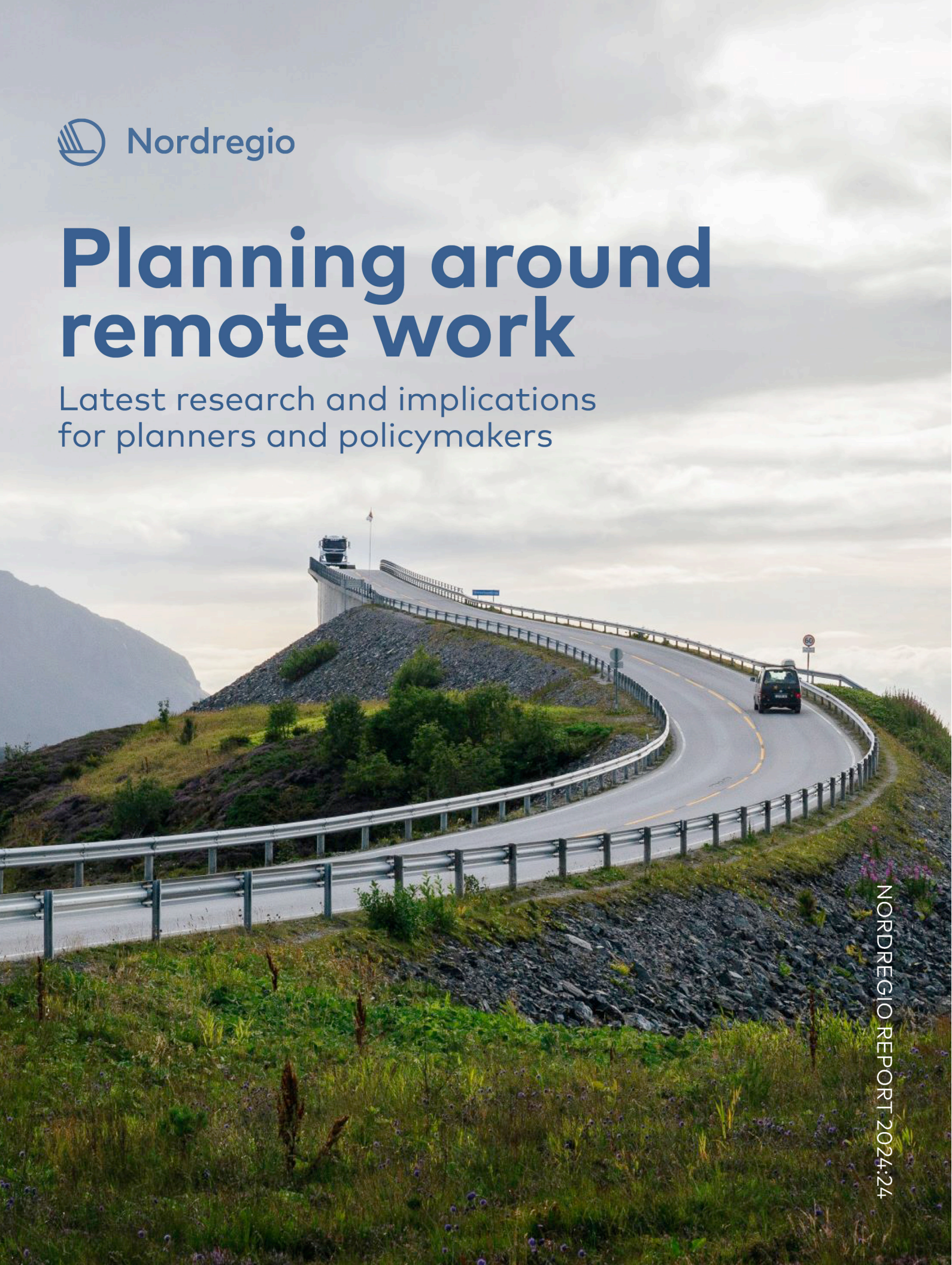
Nordregio

Planning around remote work

Latest research and implications for planners and policymakers



NORDREGIO REPORT 2024:24

Contents

Photo: Felix Gerlach / imagebank.sweden.se

Executive summary

Exacerbated by the COVID-19 pandemic, remote work has changed how people live and work. Since 2021, Nordregio – a research institute for urban and regional development and planning in the Nordic Region – has studied the tools and policies used in Nordic countries to support remote work. The aim of this report is to put into dialogue the research results within Nordregio's *Remote work and multilocality post-pandemic* project and the latest international literature exploring the spatial implications of remote work. In doing so, we gain a fuller understanding of how remote work can be integrated into urban and regional development, planning, and policymaking within the Nordic Region.

Previous Nordic-based reports within the project found that remote work practices lead to new residential preferences and mobility patterns based on hybrid work as the new normal for a share of the population. Remote work practices were also found to enable work force exchange among settlement areas. Some smaller towns and rural areas regard remote work opportunities as one of several ways to increase attractiveness. Despite these results, the work also found that there is a lack of available data and methods for studying the nuances of remote work, and there are some gaps in developing knowledge exchange and partnerships across levels of governance which Nordic policymakers can take advantage of to better understand the situation.

Within the international academic literature reviewed in this report, we identified six thematic areas in which remote work practices are making a spatial influence for urban, rural, and regional development. These include: (1) challenges and opportunities for transportation, (2) urban-rural linkages, (3) digital nomadism, co-working spaces, and third places, (4) attractive and affordable housing fit for work-live arrangements, (5) impacts on urban cores, and (6) polycentric cities and the 15-minute city ideal. In many instances, we see that the experiences in the Nordic Region align with the global discourse (on, for example, housing, transportation,

and urban-rural linkages). Reports based in the Nordic countries both support and provide nuances to the themes given unique aspects of the geography, economy, and culture. At other times, there are gaps or differences in the Nordic perspectives and the global discourse. The report provides a discussion of planning and policy implications, categorised under three areas: transportation, the built environment, and sustainability. The report highlights several recommendations, such as to safeguard public transport, support investments in measures to boost small-town and rural attractiveness, encourage development according to work-live (mixed-use) designs and 15-minute city principles, promote a diverse and affordable housing supply, enable access to digital infrastructure, plan for residents who also do not have the possibility to work remotely, and reconsider research frameworks and data collection based on the unique spatial patterns of remote work.

As of 2024, the study of remote work habits and policy remains a moving target. More research is needed to understand potential long-term impacts. Both the international literature and the Nordic studies identified a gap in data availability and a need to develop theories and methods suitable for the unique practices of remote work. Further research may also consider how remote work plays a role in regional development policy (with a special focus on shrinking populations), the positive and negative impacts of remote work in Nordic cities and medium-sized towns, and mobility solutions for hybrid workers in the Nordic context, from both regional and local perspectives. Planners and policymakers stand at a unique moment, with opportunities to assess the effects of increased remote work and make decisions to facilitate remote work. However, they need consider how to guide these new practices through strategic planning and development to ensure that they align with larger sustainability goals.

Photo: Felix Gerlach / imagebank.sweden.se

Sammanfattning

Det ökade distansarbetet efter covid-19-pandemin har förändrat hur människor lever och arbetar. Sedan 2021 har Nordregio, som nordiskt forskningsinstitut för urban- och regional utveckling samt planering, studerat de verktyg och policyer som används i de nordiska länderna för att stödja distansarbete. Syftet med denna rapport är att sätta forskningsresultaten inom Nordregios projekt *Remote work and multilocality post-pandemic* i relation till den senaste internationella forskningen kring de rumsliga konsekvenserna av distansarbete och genom detta få en bättre förståelse för hur distansarbete kan integreras i urban och regional utveckling, planering och beslutsfattande i Norden.

Tidigare rapporter inom Nordregios projekt har visat att distansarbete leder till nya boendepreferenser och mobilitetsmönster baserade på att hybridarbete ses som det nya normala för en del av befolkningen. Distansarbete visade sig också möjliggöra utbyte av arbetskraft mellan olika typer av bosättningsområden. Vissa mindre städer och landsbygdsområden ser möjligheter till distansarbete som ett av flera sätt att öka attraktionskraften. Trots dessa resultat finns det en brist på tillgängliga data och metoder för att studera distansarbetet mer ingående. Det finns också möjligheter till kunskapsutbyte och partnerskap över förvaltningsnivåer som nordiska beslutsfattare kan dra nytta av för att bättre förstå situationen som inte används idag.

Inom den internationella akademiska litteraturen som granskas i denna rapport har vi identifierat sex tematiska områden där distansarbete har inflytande på stads-, landsbygds- och regional utveckling. Dessa inkluderar: (1) utmaningar och möjligheter inom transport, (2) kopplingar mellan stad och landsbygd, (3) digital nomadism, co-working och tredje platsen, (4) attraktiva och överkomliga bostäder som passar att både bo och arbeta i, (5) effekter på stadskärnor och (6) polycentriska städer och 15-minuters staden. I många fall ser vi att erfarenheterna i Norden ligger i linje med den globala diskursen (om till exempel bostäder,

transporter och kopplingar mellan stad och landsbygd). Rapporter baserade i de nordiska länderna både stödjer och nyanserar de olika temana givet unika aspekter av geografi, ekonomi och kultur. Det finns också luckor eller skillnader mellan de nordiska perspektiven och den globala diskursen. Rapporten diskuterar konsekvenser för planering och politik inom områdena transport, byggd miljö och hållbarhet. Relaterat till detta lyfts flera policyrekommendationer fram såsom att upprätthålla kollektivtrafiken, stödja investeringar i åtgärder för att öka småstäders och landsbygdens attraktionskraft, uppmuntra utveckling av områden där det är möjligt att både bo och arbeta enligt 15-minuters-stadens principer, främja ett mångsidigt och överkomligt utbud av bostäder, möjliggöra tillgång till digital infrastruktur, planera för invånare som inte har möjlighet att arbeta på distans, samt ompröva forskningens ramar och datainsamling baserat på distansarbetets unika rumsliga mönster.

I nuläget är distansarbetet och relaterad policy fortfarande ett rörligt mål att studera. Mer forskning behövs för att förstå potentiella långsiktiga effekter. Både den internationella litteraturen och de nordiska studierna identifierade brister i tillgången till data och ett behov av att utveckla teorier och metoder som lämpar sig för distansarbetets unika praxis. Ytterligare forskning kan studera distansarbetes roll i regional utvecklingspolitik (med särskilt fokus på områden med krympande befolkning), de positiva och negativa effekterna av distansarbete på nordiska större och medelstora städer, samt regionala och lokala mobilitetslösningar för hybridarbetare i den nordiska kontexten. Planerare och beslutsfattare står inför ett unikt läge med möjligheter att bedöma effekterna av ökat distansarbete och fatta beslut för att underlätta distansarbete. De behöver dock överväga hur de ska vägleda utvecklingen genom strategisk planering för att säkerställa att den är i linje med hållbarhetsmålen.

Photo: Silje Bergum Kinsten / norden.org

Introduction

Since the pandemic, remote work has become more integrated into work-life culture in the Nordic Region. Surveys showed that a high percentage of employees in Europe (78%) who had experienced remote work during the pandemic were interested in continuing at least occasionally after restrictions were lifted (Eurofound, 2020). In 2022, Randall et al. reported on the status of remote work within the Nordic Region, highlighting the effects of new working patterns on urban and regional development. Since then, employers and employees alike have adjusted their ways of working, with hybrid work being more common than always working from home. While these changes influence things like quality of life in the work environment, tax systems, and the labour market, these alternative working practices have also changed the way people move, where people live and work, and what they expect from their city or region.

This is the sixth and final report in the research project *Remote work and multilocality post-pandemic*[1]. The report aims to synthesise findings from the previous reports and provide an outlook on how remote work might influence Nordic regions, rural areas, and cities in the years to come. It does so by placing the outcomes of the project work in dialogue with the latest international academic research, as well as reports from the Nordic countries, to understand the spatial implications of remote work. What does the state of remote work in the Nordic Region mean for spatial planning and policymaking? Can remote work act as a regional development tool or a transport policy? How are cities and urban areas affected by remote work practices compared to smaller towns and rural

1. https://nordregio.org/research/remote-work-and-multilocality-post-covid-19/

areas?[2] The Nordic Region has a vision to become a green, competitive, and socially sustainable region by 2030[3] – can remote work help to achieve this goal?

As of 2024, the phenomenon of remote work is at a unique phase. While the effects of remote work practices are already being felt spatially, planners and policymakers may yet have the possibility to steer remote work in a way that benefits both urban and rural areas in the Nordic Region. This report provides discussion for how actors might think strategically about remote work in order to guide the region towards social, economic, and environmental sustainability.

The state of remote work in the Nordic Region

Despite the undeniable changes that remote work has inspired in recent years, it is important to keep in mind that, prior to the pandemic, a relatively high percentage of the populations in Nordic countries worked remotely. In Denmark, Finland, Iceland, and Sweden, over 27% of the population reported sometimes or usually working from home already in 2018, compared to the EU average of 13.6% in the same year (Figure 1). Over the pandemic years, the proportion of employees who sometimes or usually work from home grew in all Nordic countries as well as across the EU. According to data from the European Labour Force Survey, around 58% of employed persons in the Nordic countries report *never* working from home in 2023, compared to about 73% in 2017. Norway saw the most dramatic changes between 2017 and 2023 (10.4% *sometimes* or *usually* worked remotely in 2017 compared to 41.8% in 2023).

2. This report, and others linked to the project, have used the term *city* to refer to municipalities with large populations (relatively speaking in the Nordic context), and the term *town* to refer to municipalities with smaller population sizes. However, it is not always the case that the academic literature follows suit. Ideas around "city centres" or the "15-minute city" may also apply to smaller scales.
3. Established in 2019, the Nordic Vision sets the goal for the Nordic Region to become green, competitive, and socially sustainable by 2030; read more at https://www.norden.org/sv/declaration/var-vision-2030

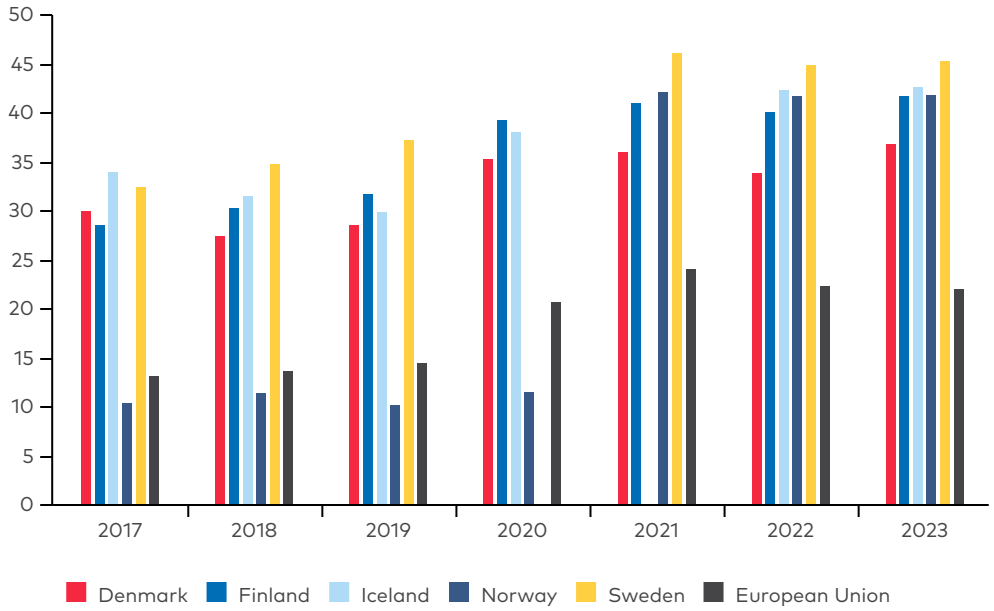


Figure 1. Percent of employed persons sometimes or usually working from home: EU compared to Nordic countries, 2017-2023.

Source: European Labour Force Survey (Eurostat, 2024-a)
**No data available for Iceland in 2021 or Sweden in 2020*

In 2021, Eurofound predicted that at least 20% of European employees would continue teleworking practices after the pandemic, a forecast that has thus far been proven true. As of 2023, 13.3% of employed persons in the EU *sometimes* work from home, and another 8.9% report *usually* working from home (Eurostat, 2024). While numbers of people working remotely have remained steady since the pandemic, there is some variation in the proportion of people *sometimes* compared to *usually* working from home (Figure 2). Denmark, Finland, Norway, and Sweden all saw an increase in people *usually* working remotely between 2019 and 2021. However, while the proportion of people reporting *usually* working remotely decreased in all four of these countries by 2023, the proportion of people reporting *sometimes* working remotely increased after 2021. The results highlight the normalisation of hybrid work over full-time working from home.

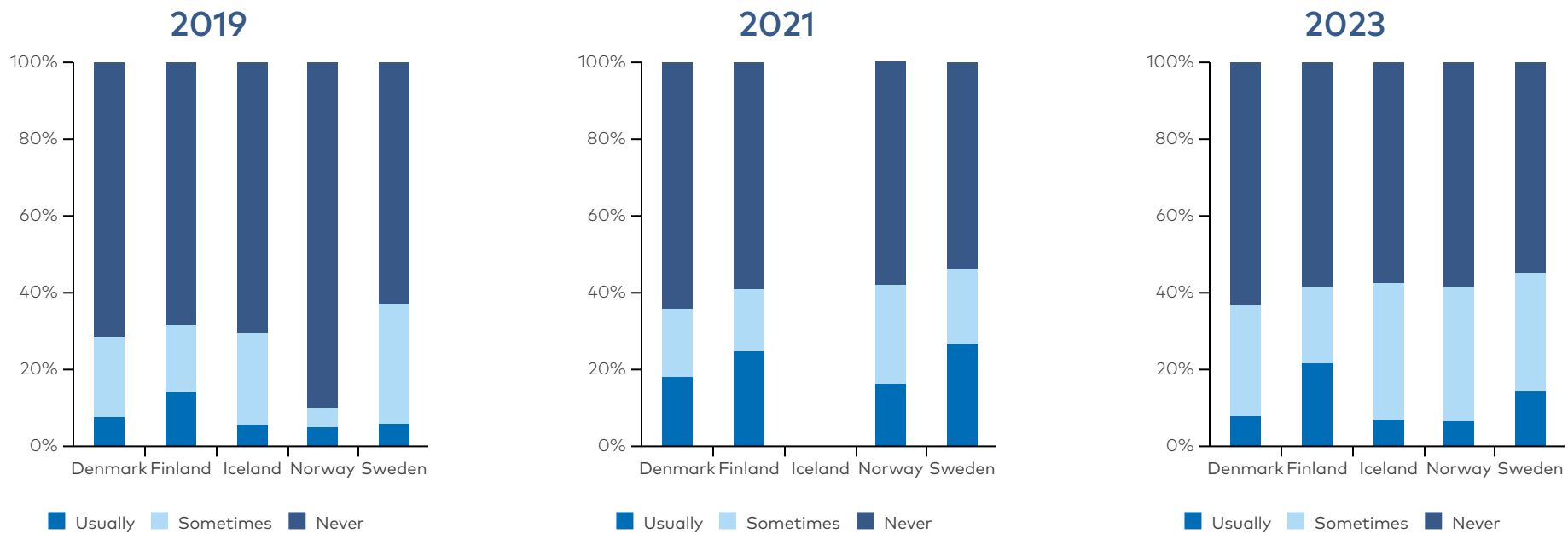


Figure 2. Percent of employed persons usually, sometimes, and never working from home in the Nordic countries, 2019, 2021, and 2023.
*Source: European Labour Force Survey (Eurostat, 2024-a). * No data available for Iceland in 2021*

While the data in Figures 1 and 2 show national-level figures, other reports provide distinctions of remote work proportions based on municipal typology. Across Europe, capital areas tend to have higher rates of people working remotely compared to other regions, and cities have higher rates than towns or suburbs: "the pandemic shifted the balance of telework in favour of cities compared to other areas; it increased the share of urbanites teleworking, and the frequency of this practice" (Sostero et al., 2024, 14).

Remote work as an "urban" trend is thought to be due to employment structures in metropolitan areas – in other words, areas with a higher proportion of white-collar jobs are more likely to accommodate remote work. However, as Granath Hansson & Guðmundsdóttir (2024) point out, remote work can be a two-way street, enabling remote workers to hold employment in urban areas while living outside of urban areas, or to hold employment outside of urban areas while living in urban areas. The manifestation of this (and whether it will contribute to higher proportions of remote workers in small towns or rural areas) is not yet clear. Eurofound has reported a growing gap between the rate of teleworking in cities compared to towns and suburbs and rural areas (Sostero et al., 2024). The situation raises questions as to whether remote work will act as a powerful factor in attracting or retaining people. There remains some uncertainty around how municipalities can use remote work practices as a planning tool and which areas may have greater opportunities to see benefits (Bogason et al., 2024-a). The situation also provokes some question as to how strongly employment steers people to settle in one location versus another – or to split time across multiple localities. Importantly, while remote work opportunities may enable some segment of the population to decouple their municipality of residence from their municipality of employment, whether people actually do so – and how many – depends on a number of complex and individual factors.

Finally, it is important to remember that remote work is not an opportunity provided equally to all people in the Nordic Region; it remains dependent on the kind of job and the agreements made between employers and their employees. A recent Eurofound report warns that "hybrid working is often a privilege that high earners in more senior positions have access to, while employees lower in the hierarchy are excluded. Hybrid working thus has the potential to become a new source of inequality in the workplace" (Eurofound, 2024, 26). Simultaneously, local and national surveys show conflicting perceptions of whether working from home is an advantage or disadvantage for employees who are granted the option (e.g., see Haunstrup Christensen et al., 2024).

Overall, it is evident that remote work has changed how people live and work. Therefore, research is needed to understand how such changes may influence urban and regional development. Furthermore, planners and policymakers have the opportunity to guide remote work to ensure it aligns with sustainable development goals for the city or region in which they work.

Outline of the report

This report is organised into three parts. First, we provide a synthesis of key findings from the previous reports developed within the *Remote work and multilocality post-pandemic* project[4] (2021-2024). Then we review the latest research on remote work with respect to spatial planning, organised into six thematic areas based on international academic literature and cross-analysis with Nordic-based documents and reports. The six thematic areas include: (1) challenges and opportunities for transportation, (2) urban-rural linkages, (3) digital nomadism, co-working spaces, and third places, (4) attractive and affordable housing fit for work-live arrangements, (5) impacts on urban cores, and (6) polycentric cities and the 15-minute city ideal. The third section opens a discussion around implications for policymaking and planning in the Nordic Region based on the combined analysis. We conclude with several suggestions for further research relevant for Nordic spatial planning and policymaking.

Box 1 reviews several key terms within the ever-expanding lexicon of remote work. Additional terms, such as *urban attractiveness* or *third spaces*, are highlighted in relation to the sections below that explore these ideas in more detail (see Boxes 2 and 7).

4. https://nordregio.org/research/remote-work-and-multilocality-post-covid-19/

BOX 1. KEY TERMS AND DEFINITIONS

REMOTE WORK, WORKING FROM HOME, AND VARIATIONS THEREOF

In the Nordic countries, a variety of words are used to describe the phenomenon of working wholly or partly from a place other than the main workplace. Words used can be translated into *remote work*, *working from home*, and *work without specified location* (Randall et al., 2022-a). In this report, we use the term *remote work* based on the meaning presented by Statistics Finland:

Remote work refers to gainful employment that, in line with an agreement with the employer, is carried out outside the actual workplace (e.g., at home or at a summer cottage, or on a train), often with the use of information technology equipment. Remote work is work of the kind that could also be carried out at the workplace [...]. A characteristic feature of remote work is that work arrangements are not tied to a specific time or place [...] (Statistics Finland, n.d.).

Related terminology around remote work in the Nordic languages include *distancearbejde* or *hjemmearbejde* in Danish; *distansarbete*, *hemartbete*, and *flexibelt arbete* in Swedish; *fjernarbeid*, *hjemmearbeid*, and *stedsuavhengig arbeid* in Norwegian; *fjarvinna* and störf án staðsetningar in Icelandic; and *etätyö*, *monipaikkaisuus*, and *paikkariippumaton työ* in Finnish (see Randall et al., 2022-a).

HYBRID WORK

Hybrid work refers to the situation when an employee works part-time at his or her permanent workplace and part-time remotely. As expressed by Gurstein (2023, 345): "Hybrid work is a flexible work model that supports a blend of in-office, remote, and on-the-go workers. It offers employees the autonomy to choose to work wherever and however they are most productive." As hybrid solutions are the most common, compared to full-time remote positions, and hybrid arrangements have different implications for spatial patterns than full-time remote work, it is important to distinguish between these two different phenomena. Several labour surveys in the Nordic countries during the pandemic (2020-2021) highlighted that both employees and employers desired to continue remote work opportunities at least 2-3 days per week after restrictions were lifted (Randall et al., 2022-a). In the Nordic countries, collective agreements help to regulate such hybrid work.

TELEWORK AND TELECOMMUTING

The Framework Agreement on Telework defines telework as:

A form of organising and/or performing work, using information technology, in the context of an employment contract/relationship, where work, which could also be performed at the employer's premises, is carried out away from those premises on a regular basis (European Trade Union Confederation, 2002).

This definition continues to be the point of reference for remote work agreements in the Nordic countries. Referring to Huws et al. (1990) and Mokhtarian (1991), Gurstein (2023) explains how telework was originally conceptualised as decoupling work from its dependence on transportation. *Telecommuting* highlights this by linguistically indicating the practice as a form of mobility. However, Gurstein clarifies that "telework is not just working from home, as satellite office or neighbourhood telework centres close to employees' homes can substitute for the commute to a centralised office" (Gurstein, 2023, 345). Based on this nuance, telework itself may still involve some kind of commute, albeit to somewhere other than the primary office space. While telework or telecommuting were the more popular terms at the advent of ICT-dependent work practices, these terms have been replaced by "remote work," "work from home," and "hybrid work," with minor conceptual variations. However, telework is still often used in academic literature depending on the study and the concepts used by statistical offices.

REMOTE WORK *PRACTICES*

In academic literature, remote work, work from home (WFH), and telework are all used with various frequencies. The discourse also includes references to remote work or telecommuting "practices" (Budnitz et al., 2021; Currie et al., 2021), flexible working "patterns" (Budnitz et al., 2020), and work-from-home "arrangements" (Thulin et al., 2023; Elldér, 2020), indicating the repeated exercise of these working methods, the complexity and variations involved when discussing such methods, and their emergence as a way of life (of solving the life puzzle, or *livspusslet*). These arrangements are highly individual, and are potentially irregular, depending on the week, day, or even hour since, depending on the flexible arrangement, employees may split their work tasks across time and space within a single day. These fragmented practices make remote work a particularly complex field to study.

MULTI-LOCALITY

Simply put, multi-locality is about having some definitive link to more than one place. However, the concept is far more complicated, both theoretically and practically (see Lapintie, 2022; Weichart, 2015). Weichart (2015) explores several theories for understanding residential multi-locality as "a social practice … [in which] at least one household member moves from one place to another at (predominantly) regular intervals" (387). However, the phenomenon, as Weichart and others argue, is highly complex and involves the study of space, time, and identity. It also suggests that there are clear boundaries of what constitutes "home" compared to other spaces, which is not always clear cut. While the idea of multi-locality is not new, Lapintie (2022) points out that our "state-epistemology" still does not account for it. He brings to light the distinction between living and residing, pointing out how statistical databases fail to account for the multi-local individual who may be both urban and rural but can only be permanently registered in a single municipality. For the purposes of this report, we consider remote work as one kind of multi-locality in that it affords some individuals with the ability to rearrange their living and working activities across multiple locations.

INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) AND DIGITAL INFRASTRUCTURE

Though not always the case, ICTs are often the backbone of remote work opportunities (Sostero et al., 2024). The term encompasses "all technical means used to handle information and aid communication," including "both computer and network hardware, as well as their software" (Eurostat, 2023). While much of the Nordic Region enjoys a high level of quality internet connectivity (for example, more than 92% of Danish municipalities offer connections to "superfast" broadband), there remain some discrepancies between urban and rural municipalities (Penje, 2022). That being said, Sostero et al. (2024) suggest that "rural internet speeds in the EU are now likely enough to support telework" and therefore, "high internet speeds are no longer significant predictors of higher levels of regional rates of telework" (2). In this report, we use both ICT and digital infrastructure to discuss the services and systems required for performing most remote work tasks.

Photo: Eythor Arnason/norden.org

Methods

The aim of this work was to put the Nordic-based research from the *Remote work and multilocality post-pandemic* project[5] into dialogue with the wider discourse on remote work, specifically through the lens of spatial planning. To do so, we conducted a literature review of international research and compared this work with research results from the six previous Nordregio publications. The results provide a review of major themes concerning remote work and spatial planning internationally and the prevalence and potential relevance of such topics within the Nordic countries. We also curated from the international and Nordic research the relevant results indicating changes for policymaking and spatial planning. The nuances from the international literature review also provide some potential pathways for future research on the topic of remote work in the Nordic context.

To explore the latest remote work discourse in relation to spatial planning, a systematic literature review was conducted between March and May of 2024. The researcher made various keyword searches on the Scopus peer-reviewed literature database using a combination of remote work-related terms (e.g., *remote work*, *hybrid work*, *multilocality*, *work from home*) and urban planning-related terms (e.g., *spatial*, *planning*, *geography*, *urban*, *rural*, *city*). To account for shifts in the discourse during and after the COVID-19 pandemic, the literature search was limited to articles published from 2018 to 2024. Search results were filtered by relevant subject areas (e.g., social sciences). A total of 63 articles were initially curated on the spatial planning implications of remote work. To complement these articles, a further 8 articles were included through an additional Google Scholar search on remote work and work from home in relation to spatial planning. In the

5. These reports include Randall et al. (2022-a), Randall et al. (2022-b), Ormstrup Vestergård (2022), Stjernberg et al. (2024), Granath Hansson and Guðmundsdóttir (2024), and Bogason et al. (2024-a); see "Synthesis of the research project *Remote work and multilocality post-pandemic*" below.

review process, researchers excluded several articles that were deemed irrelevant to the theme of spatial implications—for example, articles focussing on management processes of remote work. Several additional articles cross-referenced in the selected literature led the researchers to add 17 academic articles to the total number of articles reviewed. This was especially important for collecting additional, Nordic-based studies that did not initially emerge in the Scopus database searches.

The researchers made a thematic coding analysis of the articles, tagging them first according to time period (pre-, during, or post-pandemic) and geographical scope of the article, and then sorting them according to common emerging themes (e.g., land use planning, urban design, urban-rural linkages, housing, transportation, co-working spaces). The researchers synthesised these themes into six main categories, which are reflected in the six sections of the spatial dimensions of remote work used in this report. Then, the Nordic-based research from the *Remote work and multilocality post-pandemic* project was reviewed, with research findings tagged according to the themes from the international academic literature.

Complementary to the academic literature review, researchers also reviewed a limited selection of recent documents and non-academic articles on the defined themes related to remote work and spatial planning, specifically from media outlets and agencies from the Nordic countries. These included reports on surveys in various regions within the Nordics as well as European and international reports on the spatial implications of remote work (e.g., Eurofound and OECD).[6]

The literature review gathered a broad spectrum of information from a wide variety of geographical contexts, including many international studies from cultural, geographic, and institutional contexts different to that of the Nordic countries. Despite these distinctions, many international studies remained relevant as a starting point for understanding the spatial implications felt worldwide during and after the pandemic. Moreover, it helped to identify interesting research questions and provided insights on data and methods used to assess remote work, thereby highlighting gaps and areas that warrant deeper investigation.

6. Going forward, it would be useful to expand the document study in this fast-moving research field, especially as the academic literature tends to be published at a slower pace due to peer-review processes. Moreover, document studies in the Nordic context, where academic literature is sparse, might uncover perspectives not found in the academic literature. In this project, surveys made by regions are examples of that.

Photo: Melker Dahlstrand / imagebank.sweden.se

Synthesis of the research project *Remote work and multilocality post-pandemic*

The project *Remote work and multilocality post-pandemic* was established by the Nordic Council of Ministers in 2021, with project management and research activities conducted by Nordregio. Since the start of the project, researchers have published five reports and a policy brief:

- In 2022, an initial literature review was published (*Remote work: Effects on Nordic people, places and planning*; see Randall et al., 2022-a), followed by a quantitative study on various Nordic geographies (*Local and regional experiences of remote work and multilocality*; see Randall et al., 2022-b). The policy brief, *Strengthening Nordic cooperation on remote work and multilocality* (see Ormstrup Vestergård, 2022), summarises the findings of the two first reports and provides input to policy.
- In 2024, two reports on remote work in smaller towns (*Remote work in smaller towns: Possibilities and uncertainties*; see Granath Hansson and Guðmundsdóttir, 2024) and rural areas (*Remote work in rural areas: Possibilities and uncertainties*; see Bogason et al., 2024-a), as well as one report on the Nordic territorial typology developed within the project (*Towards a grid-based Nordic territorial typology: A new tool for analysis across the urban-rural continuum;* see Stjernberg et al., 2024*)*, were presented.

This report marks the conclusion of the project (Figure 3). In the appendix, the main findings of the five previous reports are presented in chronological order.

A comprehensive summary of the project, as well as all published reports and policy briefs, can be found on the project website.[7]

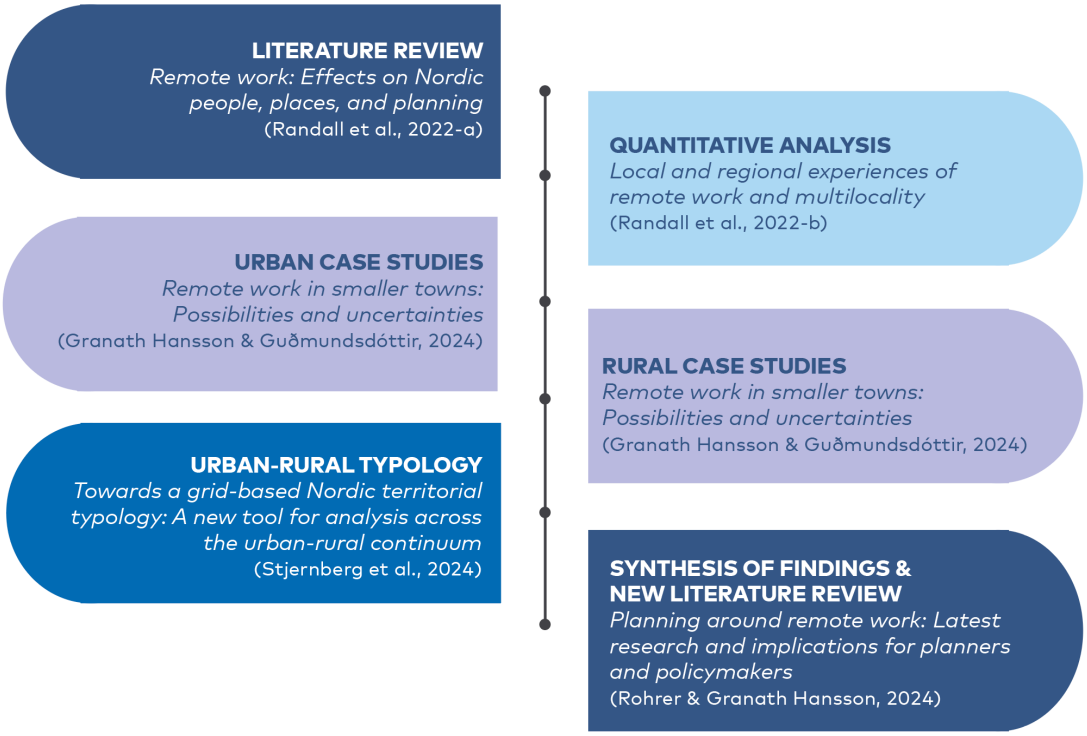


Figure 3. Overview of the contents of the six project publications

This project has taken the form of explorative research as it started during the COVID-19 pandemic and was carried out in its direct aftermath as a new normal unfolded and new working habits developed. During the pandemic when the research agenda was set, there was only limited knowledge on remote work and its potential spatial implications. To discover more, the project set out to explore how remote work and multilocality could be understood in this new context of work-from-home regulations and later optional remote and hybrid work arrangements. As of autumn 2024, when this report is being written, negotiations between Nordic employers and their employees are still underway; hence, it is still an open question what shape remote and hybrid work will take long-term in different Nordic geographies. However, as this report will show, we can begin to identify how remote work may influence and be influenced by the built and natural environment. Below, we provide a synthesis of the main results from the first five reports. In the chapter *Spatial dimensions of remote work*, we report more detailed research results linked to the highlighted themes.

7. https://nordregio.org/research/remote-work-and-multilocality-post-covid-19/

Hybrid work is the new normal for a share of the population

Already before the pandemic, Nordic labour markets were characterised by high levels of trust and flexibility, as well as digitalisation, allowing higher levels of remote work. Post-pandemic, hybrid work, with work hours spent both at the workplace and at home or elsewhere, has emerged as the new normal for a share of the population that is characterised by higher education and self-employment levels. This has entailed new work arrangements in offices and homes as well as new mobility patterns. As will be outlined below, hybrid work—rather than fully remote work—has distinct spatial implications. Concurrently, the majority of the work force does not work remotely, which has varying implications for employers' remote work policies, including social impacts related to, for example, control, trust, and equal treatment.

Remote and hybrid work can be a tool in regional development policies

Remote work and multilocality are already on the regional policy agenda in Nordic countries, as remote work has been considered a tool in regional development for some time. Finland and Iceland had regional policies related to remote work and multilocality already before the pandemic, and these policies were given momentum during and after the pandemic.

In Iceland, the majority of jobs are concentrated in the greater capital region. To counter this imbalance, the "jobs without specified location" initiative was launched in 2018 as part of the Strategic Regional Plan 2018-24. This initiative is intended to promote remote work from rural co-working spaces with the aim that staff selection shall not be influenced by place of residence. In the Regional Development Policy 2022-36, the initiative was further underlined as all state jobs are now considered "site-less" unless the work is specifically tied to a certain location.

Against a backdrop of population decline in some regions, Finnish policy supporting a balanced regional development has been on the agenda for a longer time. Remote work and multilocality, based on technology and location-independent norms, is generally seen as a partial solution.

In Denmark, Norway, and Sweden, links between regional policy and remote work are less clear. The preconditions for increased remote work are present, however, and fit well into broader regional development goals. In Norway, there is also an ambition to have a balanced distribution of government workplaces throughout the country, and a pilot project creating local public sector co-working hubs in four municipalities has been implemented.

The regional policy initiatives above are mainly focused on public jobs and co-working premises. The rural and urban case studies conducted within the project also pointed to the importance of including remote work in policies on transportation and digital infrastructure, including needs created by private employment. In cases when municipal interests need to be balanced, town centre development and housing might also be included in regional development dialogues. Emerging policy recognition of remote work impacts in regional planning are also noted (e.g. ÖMS 2023; Di Marino et al., 2024 on the Helsinki and Oslo regions; Regional Council of North Savo, 2024).

Remote work practices lead to new residential preferences and mobility patterns

Migration data from the pandemic showed that migration mainly took place to municipalities surrounding the capital areas and smaller towns or rural areas within commuting distance of larger cities. This was supported by a study on Copenhagen for the years 2018-2021 conducted within this project. However, case studies of smaller towns showed that there is a limit in terms of distances and the level of attractiveness where smaller towns and rural areas are not able to attract larger numbers of remote workers. The dominance of hybrid work arrangements and the resulting need to travel regularly to a workplace entail that the zone around cities and larger towns that has the potential to attract hybrid workers will have its limits and be strongly linked to attractiveness and time and ease of travel.

Some rural areas that witnessed population decline before the pandemic experienced a slowing or reversing population development, as well as an increased demand for second homes during the pandemic. The extent to which these trends persist post-pandemic, in what areas, and how these trends are related to remote work, has yet to be studied in more depth throughout the Nordics. Meanwhile, the project results have shown that also smaller shares of in-migration might have distinct effects in less populated areas.

In the urban case study, researchers suggested that hybrid workers could be viewed as a sub-group of commuters that spend more time locally and therefore might increase demand for local goods and services. Although this is a simplified way of viewing hybrid workers, it may assist planners in getting a clear understanding of how new working habits influence spatial planning. In a similar way, some

interviewees in the regional and rural case studies mentioned "part-time dwellers" and second homeowners as a sub-group that comes with its own sets of possibilities as well as challenges when it comes to planning.

Remote work has been associated with environmental sustainability if it reduces the need for travel. However, the lifestyle choices remote work enables may be accompanied by negative environmental impacts such as increased resource use and travelling longer distances through less environmentally friendly means. Moreover, lower demand for public transport has proven to impact service availability and cost in some areas.

Remote work opportunities are one of several potential ways to increase attractiveness

In regional policy, increased remote work opportunities are often expected to make smaller towns and rural areas more attractive and thus create opportunities for regional development. New skill sets, more innovative business environments, and improved public and private services could assist in countering out-migration and improve quality of life. Many municipalities and regions already worked around such strategies before the pandemic, trying to attract remote workers (Kull et al, 2020). Post-pandemic, despite the persistence of remote and hybrid work, there has not been general evidence for such a development. However, some places have reported a long-term effect, typically those that already were attractive and were able to build on those foundations. This calls for an active policy by municipalities and regions that wish to harness remote work as a catalyst for development. As expressed by municipalities interviewed in this study (and touched upon in the section *Available data and methods* below), there are considerable challenges to collect reliable data upon which planners and policymakers can build strategies. The case study municipalities in the research by Granath Hansson and Guðmundsdóttir (2024) and Bogason et al. (2024-a) did not have explicit policies for remote workers; instead, they opted for including remote workers in their general strategies to increase attractiveness.

The case studies made on smaller towns (Granath Hansson & Guðmundsdóttir, 2024) and rural areas (Bogason et al., 2024-a) pointed to the centrality of attractiveness and quality of life for sustaining or increasing population in less populated areas (see Box 2). In their work to increase attractiveness, municipalities regarded remote workers as part of a larger population they wished to retain or attract, including persons with roots in the society and skilled workers needed for economic vitality. Attractiveness was not conceptualised distinctly differently for remote workers compared to other existing and potential new residents. However, attractive housing, swift and comfortable mobility solutions as well as good digital infrastructure were mentioned as especially important for remote workers. Access to quality digital infrastructure was underlined in the rural case studies where such

services were not taken for granted in all geographies. Here, good connections from co-working areas might have special relevance. Public and private co-working spaces were deemed a central tool to increase attractiveness in the studied rural areas. In the smaller towns, however, such spaces existed but were not used much by remote workers. The researchers hypothesise that remote workers in rural areas might have larger remote work allowances creating more demand for serviced space (e.g., co-working spaces providing resources like printers and meeting rooms) as well as general social interaction, networking, and cooperation. By contrast, standard hybrid work with some days every week in the office is more common in smaller towns; therefore, the need for office space outside of the home is in less demand.

An increase in population might entail larger demand for local goods and services, as well as infrastructure, which might have both positive and negative effects on existing populations, land use, and economic vitality. Municipalities and local public and private actors need to consider the prerequisites of a socially sustainable development where the needs of newcomers, temporary residents, and the existing population are balanced. In relation to multilocal populations, taxation regulations that provide striving municipalities with income to finance increasing service costs and needed development measures from those part-time inhabitants is a point of discussion.

BOX 2. KEY WORD: ATTRACTIVENESS

ATTRACTIVENESS

The terms *retention* and *attraction* of populations describe the various factors that encourage people to either remain in or relocate to these geographical areas. These terms are not straightforward– critically, geographers have challenged the notion of attractiveness in urban planning discourse by highlighting its subjectivity and its tendency to characterise cities predominantly as entities competing for capital in the form of its citizenry (Hidman, 2018). However, the term can also provide planners and policymakers with a better understanding of the macro flows of migration as they seek to identify the many complex push and pull factors that may contribute to individuals' decisions and/or capacities to move or remain in place.

The concept of urban attractiveness in smaller Nordic towns is the theme of a related research project at Nordregio which evaluates characteristics of attraction and retention, specifically public space, housing, and connectivity.[8]

8. The publications in this project are found on the project website: https://nordregio.org/research/small-town-attractiveness/

Remote work enables work force exchange between settlement areas

The urban and rural case studies showed that municipalities see remote or hybrid work as a two-way exchange which both has the potential to attract new permanent or seasonal populations, but also creates opportunities to recruit highly qualified personnel not living in the area. Many municipalities struggle to find qualified staff and possibilities to recruit well-qualified and experienced staff working remotely or hybrid might assist in maintaining important functions and services that benefit the permanent population and hence make towns more attractive. The case studies showed that remote and hybrid recruitments were made in smaller towns and rural areas already before the pandemic, but that this practice has gained momentum based on experiences during the pandemic. This two-way exchange might also mean that local residents compete with remote or hybrid workers living elsewhere for local jobs, or that local employers lose employees living locally as they seek new opportunities in other areas based on remote or hybrid work arrangements. Moreover, recruitment was said to be facilitated when the future employee's spouse had the opportunity to work remotely, as this could make the relocation decision easier and also allow for a greater amount of alternative employment opportunities.

There is a lack of available data and methods for studying the nuances of remote work

This research project has explored various quantitative and qualitative methods to better understand the spatial implications of remote work and multilocality. However, available statistical data turned out to be a major constraint as it could not explain the drivers and effects of remote work in a reliable way. The shortage of data was echoed by municipalities taking part in interviews in the case studies. The lack of data was said to prevent municipalities from taking action in relation to new working trends as they could not fully identify potential new populations and understand their local impact and/or needs. Further, response rates to the survey limited generalisability of answers. Selected interviews and document studies generated rich data, which was limited to specific spatial contexts. Going forward, new statistical data customised to catch remote work patterns would be valuable as a basis for further research. Moreover, theory and methods need to be developed and customised to data limitations. Here, national agencies and regions could take a front seat along with academic researchers.

Future studies could utilise the urban-rural typology developed within the project to better understand the implications of remote work. The Nordic typology categorises all urban and rural areas into seven groups (inner urban areas to

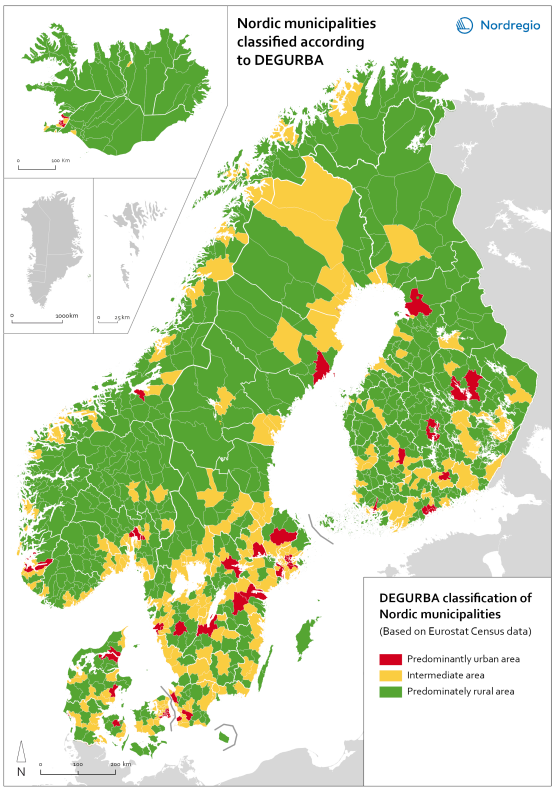
sparsely populated rural areas) on a detailed grid level. Users can then add selected statistical data to reveal geographical patterns. This enables users to compare, for example, population trends and settlement patterns between different types of areas in different countries. The detail of the typology greatly improves results and analysis for the Nordic Region compared to commonly used tools (Figure 4). The EU is financing the development of a similar typology for Europe, and Nordregio takes part in this work through the research project GRANULAR (Box 3).

BOX 3. NORDIC AND EUROPEAN URBAN-RURAL TYPOLOGIES

The Nordic urban-rural typology[9] is a free tool that can be used for analysis of settlement patterns and trends as well as other phenomena in different types of areas, ranging from the sparsest rural areas to the densest urban areas, across the Nordic countries. The details of the typology compared to the DEGURBA classification can be seen in Figure 4. The Nordic typology is presented in a recent report by Stjernberg et al. (2024), along with analyses of territorial and settlement patterns, as well as demographic change dynamics across the urban-rural continuum.

Nordregio is also taking part in the European research project GRANULAR[10] focusing on rural development. Within this project a similar typology as the Nordic described above is being developed on a European level.

9. See https://nordregio.org/blog/a-new-nordic-urban-rural-typology/ and https://nordregio.org/a-new-typology-tool-available-enabling-spatial-analysis-more-detailed-than-ever/
10. See https://nordregio.org/research/granular/



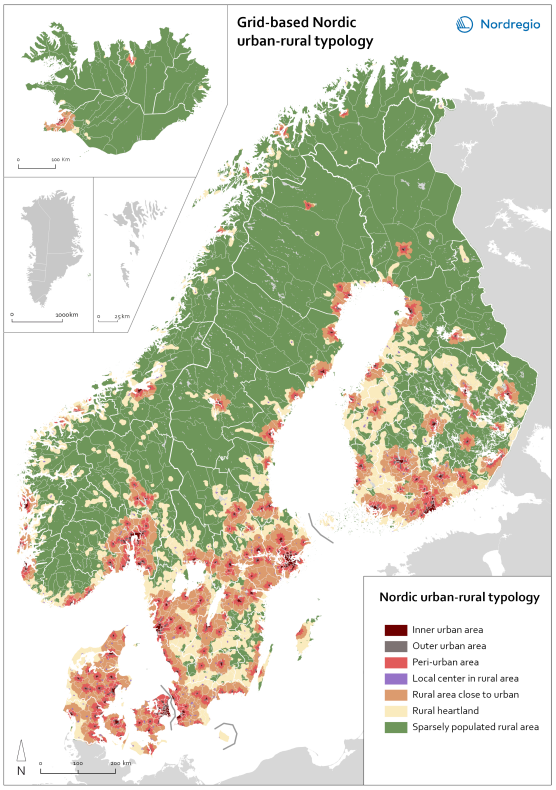


Figure 4. Comparison of how territories are classified in the Nordic urban–rural typology and in the DEGURBA classification.

Nordic policymakers can capitalise on emerging remote work trends by hosting knowledge-sharing events, establishing a taskforce on the topic, and developing partnerships among local and regional stakeholders

Remote work has the potential to impact society in a variety of ways, but the project revealed a considerable uncertainty as to what remote work opportunities will bring long term. Simultaneously, there is a window of opportunity to shape remote work policy in a way that supports outcomes in line with the Nordic Vision. Therefore, remote work-related developments need to be followed and scrutinised by both policymakers and researchers going forward.

The policy recommendations from this project have thus far emphasised knowledge exchange between the Nordic countries showcasing good practices and elucidating common challenges. Input gained could inform national level responses and prevent Nordic actors from "reinventing the wheel," so to speak, or working in isolation. As the most notable differences between the countries are their regional policy responses, the greatest potential for Nordic added value might be found in that area.

In the project's previously published policy brief (Ormstrup-Vestergård, 2023), the Nordic Council of Ministers was recommended to: (1) host a Nordic knowledge-sharing event aimed a national policymakers and senior officials, (2) establish a Nordic taskforce on multilocality, and (3) develop a partnership program aimed at supporting knowledge exchange between local and regional stakeholders in the Nordic countries.

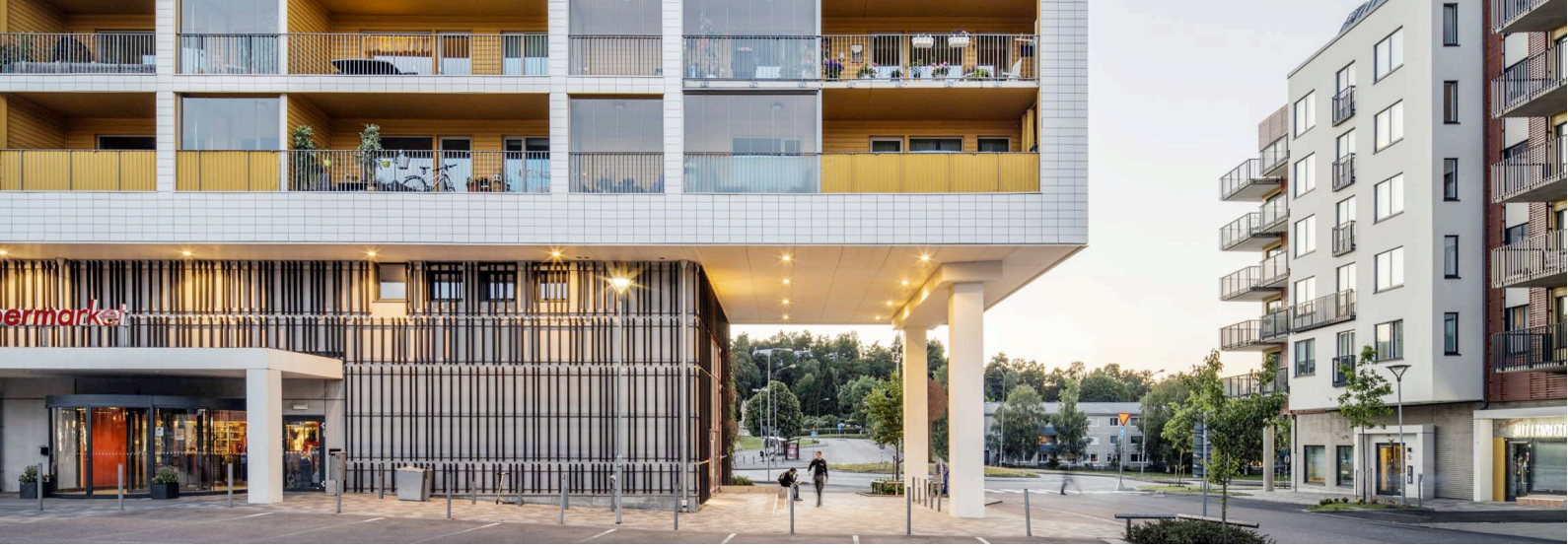


Photo: Felix Gerlach / imagebank.sweden.se

Six themes for remote work and spatial planning

The study of remote work habits and policy is a moving target. The aim of this report is to compare the research results within the *Remote work and multilocality post-pandemic* project with the latest international research as a way to gain a fuller understanding of the implications of remote work for the Nordic Region as of 2024. Conducted in the spring of 2024, the literature review sought to capture the latest developments as applied to the field of spatial planning and policymaking. In the literature, several key themes emerged as areas in which remote work influences spatial planning. These include:

(1) challenges and opportunities for transportation
(2) urban-rural linkages
(3) digital nomadism, co-working spaces, and third places
(4) attractive and affordable housing fit for work-live arrangements
(5) impacts on urban cores
(6) polycentric cities and the 15-minute city ideal

These areas have emerged from studies based in a wide variety of geographical contexts, but each section includes a cross-analysis of the literature with Nordic-based studies and reports, including those made previously within the *Remote work and multi-locality post-pandemic* project. In doing so, we show the prevalence or distinctions of these emerging spatial planning themes in the Nordic context to understand the planning implications of remote work practices for Nordic cities and regions.

While remote work is not an altogether new topic, the COVID-19 pandemic has solidified it as a more common and viable option for many in the workforce. Remote working patterns can be explored from various perspectives, ranging from evaluating the changes to the work environment and managerial practices to the

design of office space. This report focuses on the spatial dimensions of planning. The term "telecommuting" frames remote work practices according to the change in mobility and, therefore, accessibility. By depending on ICTs to access work-related files and connect with colleagues, Budnitz et al. (2021) emphasise how, when taken as a commuting practice, remote work "blurs the distinction between residential and employment land uses" (Budnitz et al., 2021, 157). In doing so, practicing remote work changes how one accesses various activities that are traditionally fixed by space and time. By dismantling these previously fixed notions, remote work has the potential to greatly influence our living environments.

One caveat when discussing these topics thematically is highlighted by Sepanta and O'Brien (2023), who point to the intra- and interrelationships between housing, offices, transport, and ICT. The researchers claim that these areas cannot be studied separately but must be assessed together. In their study, for example, remote workers' energy use was said to be impacted by home size, home affordability, neighbourhood accessibility, lifestyles and behaviours, and internet accessibility. Similar intra- and interrelationships are expected among the sections below. Moglia et al. (2022) also identify multiple factors that drive remote work (attitudes, subjective norms, perceived behavioural control, and tasks), spotlighting how the nuances of individual work activities, lifestyles, and perceptions play a major a role in workers' mobility patterns, housing choices, spending behaviours, and use of the natural and built environment. These factors have varied implications for spatial planning.

Photo: Melker Dahlstrand / imagebank.sweden.se

1. Challenges and opportunities for transportation

The potential to work remotely has major implications on travel behaviour and public transport service. Since the transport sector is also a main contributor to GHG emissions, including in the Nordic countries, mobility changes also have a great effect on the environment and our aims towards achieving key sustainable development goals.[11] It is no surprise, therefore, that the theme of transportation is prominent in the latest academic literature. On the one hand, remote work has challenged public transport service. On the other hand, some studies suggest that remote work can act as a tool for reducing emissions from the transport sector by encouraging less travel. However, studies on the changes in travel behaviour thus far have mixed results. Despite these uncertainties, it is evident that remote work influences transportation and how planners and researchers think about commuting. As described by Budnitz et al. (2021), remote work "could favour urban forms different from those traditionally supported by commute-oriented transport networks and mode-identified commuting practices" (157).

Public transport service provision

While the major threats from COVID-19 have dissipated, many public transport operators continue to suffer from low ridership and reduced attractiveness of public transport due to remote work (Axhausen, 2022; Currie et al., 2021; Beck & Hensher, 2022). Transportation systems in the Nordic Region are no different. The Stockholm region's public transport system has decreased by about 30% since 2019, which has led the transport authority to reduce service for about 40 bus routes and increase ticket prices for residents (Nordström, 2024-a). Citing a traffic

11. Since the pandemic , some discussions have continued in the Nordic countries about how to use remote work as a tool for achieving environmental goals. For example, in Finland, the 2023 government programme established by Petteri Orpo suggests that the government will "examine opportunities for remote work in public administration positions with the aim of reducing emissions from travel ..." (Finnish Government, 2023, 127).

analyst for the region, one media article has directly linked the high numbers of remote workers in Stockholm as the reason why transport numbers remain (and will continue to remain) low (Nordström, 2024-c). While Helsinki's public transport has also seen a decrease in ridership compared to pre-COVID days, the regional transport authority has taken the opposite approach, reducing fares by about 5% as a way to incentivise passengers to return and testing alternative ticket packages (Lönnqvist & Salorinne, 2022; Nordström, 2024-a; 2024-b). In Oslo, a pilot project was introduced to test out discounted single-trip public transport tickets. The project provides discounts the more frequently one travels using single tickets and is targeted towards people who "commute 1-3 days a week or have a more unpredictable travel pattern" (Ruter, n.d.). As of September 2024, Oslo's public transport authority, Ruter, has also reduced the cost of 30-day and annual transport cards within Zone 1 (covering the bulk of the municipality; Ruter, 2024). The regional operator Vy also offers "smart tickets" that are price-tailored to the uneven travel patterns of hybrid workers and students who travel regularly between two specific stations (Granath Hansson & Gudmundsdottir, 2024).

At the same time, some research in the Stockholm region has pointed to the mismatch between public transport service schedules and workers in particular sectors, such as those working in care and service, leading to transport vulnerabilities (Henrion et al., 2023). Workers in these sectors are also those who have less potential for remote work, which raises further questions about how public transport systems can better serve residents. Based on qualitative interviews with transport providers in Denmark, Lindberg et al. (2023) also recommend "greater flexibility in the systems and infrastructures surrounding everyday urban mobilities," which could include "initiatives for strengthening the opportunities for establishing mobility hubs and investing in MaaS [Mobility as a Service] solutions" (14).

A majority of municipalities in the Swedish ÖMS region (central Sweden) report that remote work has had a large or fairly large effect on travelling and commuting. While demand for public transport has decreased in many municipalities (ÖMS, 2023), some reports show increasing trends in active mobility such as walking and cycling compared to before the pandemic (WSP, 2023; Henrion et al., 2023; Statista 2023-a). In a study on travel behaviour in the Nordic capitals from before and after the pandemic, researchers noted that people tend to use cars for private trips more often than public transport, with slightly more people indicating their use of the car after the pandemic for such errands and fewer selecting public transport (WSP, 2023). This has also been echoed in some media reports, for example in Stockholm, where transport authorities have noted that they need to consider how to increase public transport ridership for leisure trips rather than on commuting journeys (Nordström, 2023). While all Nordic capitals have had a decrease in public transport ridership for leisure trips after the

pandemic, Stockholm has experienced the largest decrease, from 42% to 32% (Statista, 2023-b).

Traffic congestion, pollution, and travel time

Remote work can also reduce congestion in cities. For example, Loo & Huang (2022) show how work-from-home arrangements reduced congestion in the central business district and urban core of Hong Kong during peak morning commuting hours, though little change was identified in traffic congestion during evening commuting hours. Furthermore, since work-from-home regulations were lifted, traffic congestion has generally returned to its pre-pandemic numbers. In their analysis of human mobility in New York during the pandemic stages, Shearston et al. (2021) also showed how lockdown policies influenced traffic congestion. The researchers see these interventions as a proxy for future large-scale traffic measures that can play a role in reducing mobility. Their study showed the rebound effect of traffic congestion as policies were lifted. Survey results from Currie et al. (2021) also predicted a decline in commuter volume for the city of Melbourne post-pandemic, with the most dramatic commuter volume decreases in the CBD.

Hu et al. (2023) evaluate the effects of changes in mobility behaviour on traffic congestion from another angle. They hypothesise the potential for the pandemic to spark an increase in the use of single occupancy vehicles at the expense of car-pooling or other high-density travel modes like public transport. By looking at commuting data in 118 metropolitan areas in the United States, the research suggests that, if there is a 25% mode shift from transit and carpool to single-occupancy vehicles, residents in many major American cities will experience an increase in travel time between 2 and 20-minutes for their round-trip commutes due to increased traffic congestion (Hu et al., 2023, 2). The authors also suggest that such an increase will have a major negative economic impact on the metropolitan areas. Based on this work, Hu et al. (2023) suggest that these negative time and cost impacts can be relieved by encouraging a percentage of commuters to work from home. Yum (2021) also suggests that telecommuters choose to travel at different times of days compared to regular commuters, assumedly due to congestion. Related to congestion, some literature also mentions the potential to limit noise and air pollution through less commuting behaviour, depending on the modes of transport used to commute in different cities, small towns, or rural areas (e.g., Brown et al., 2021; Arisanti et al., 2024).

Similarities can be seen in the Nordic context. For example, in Helsinki, the city reported that, as remote work becomes more common, fewer commutes are made, but they are longer on average. The effects can lead to decreased traffic performance (fewer commutes) or increased traffic performance (longer commutes on average; Metsäranta et al., 2021). Statistics Sweden (2024) reports

that commuting areas around the three largest cities increased between 2020 and 2022 with Stockholm seeing the largest increase. This is hypothesised to stem from larger job markets and larger allowances of remote work. For the 10% that commuted longest in the Stockholm area and had specialised higher education, commuting distances rose from 27 to 40 km one way. Weaker increases were also noted in the Gothenburg (3.9 km) and Malmö areas (4.4 km). Findings from the Swedish Agency for Economic and Regional Growth (Tillväxtverket; 2023) also suggest that the shift to remote work arrangements after the pandemic have enabled managers and professionals with jobs that can be done remotely to move their residence beyond the metropolitan region and combine work from home with occasional long-distance commuting to their city centre workplace. From a rural perspective, Bogason et al. (2024-a) mention the importance of investing in road infrastructure in order to expand residential and labour markets between small towns located near larger urban areas, which has been noted in national strategies such as Norway's strategy for small towns and larger towns as regional powerhouses.

Travel behaviour of remote workers

Research evaluating the relationship between remote work and travel behaviour (frequency and mode of travel) provides mixed results. In some studies, researchers find that remote workers make more non-work-related trips (Budnitz et al., 2020; Greaves et al., 2024). Results from Sepanta and O'Brien (2023) show that commute time and distance decrease for those who work fully remotely; however, they suggest that the long-term impacts of teleworking may result in longer commuting times and distances if telecommuters decide to live further from their office but still work from the office on occasion (e.g., once per week) and also work remotely from somewhere else besides their home. Based on the outcomes of mobility and predictions that people will seek out lower-density areas with more affordable housing, Axhausen (2022) also highlights that the pandemic may lead to a "new wave of sprawl" with a rise in car ownership and transport by car (Axhausen, 2022, 86).

Elldér (2020) used micro-data from the Swedish National Travel Survey to investigate how telework influences daily travel throughout Sweden. Based on the survey respondents, he found that those who telework for the whole day are less likely to travel than those who telework for a partial day or not at all. When they do travel, full-day teleworkers are more likely to use active modes of travel and to "travel shorter distances than those who do not telework" (Elldér, 2020, 6). Full-day teleworkers also made fewer trips than those who telework for a partial day or not at all. Importantly, when evaluating travel distances for teleworkers, the research showed that those living nearer to the city centre, in higher density areas, and around mixed land use tend to travel shorter distances. Elldér's results echo some

studies, but contradict others (e.g., Axhausen, 2022; Budnitz et al., 2020; Greaves et al., 2024) that suggest teleworkers may make more or longer trips compared to non-teleworkers. One reason for this potential difference is his use of micro-data from travel surveys and his research within a Scandinavian context.

Researchers point to the importance of people's ability to make chains or bundles of their trips (to make efficient use of the commute by stacking other errands into one's transport practices; see also Sepanta & O'Brien, 2023). Trip-chaining can be made more feasible for telecommuters who travel for non-related work purposes when they live in higher density areas with shorter distances between each non-work destination. In the academic literature, several studies reported an increase in walking and cycling since the pandemic, particularly in urban areas (perhaps because these environments are more conducive to active mobility given their dense morphology; Currie et al., 2021; Axhausen, 2022). There is a correlation between use of active travel modes and built environment factors such as high density, high diversity of land use, and proximity to the city centre, which is also highlighted in the context of England (Budnitz et al., 2020) and in the Twin Cities metropolitan area in the United States (Yum, 2021), where telecommuters were, in several cases, more likely to walk or bike for leisure activities.

In a case study of telecommuting centres in Stockholm, Bieser and colleagues (2021) found that when people worked from their employer's office or from telecommuting centres, they used energy efficient transport modes, but when working from home, they more often used the car for private travel needs. Therefore, the researchers conclude that, in order to make remote work more sustainable, people need to have access to and find attractive more energy efficient modes of transport for conducting leisure trips (e.g., running errands, visiting non-work destinations).

Glackin and Moglia (2022) foresee hybrid work as the most common work form and point to transport as a deciding factor on the extent of remote work. Distance to work is said to increase the probability of remote work, while access to timely transport decreases probability. The authors also bring up the possibility that infrastructure investments will depend on local politics and choices between strengthening the CBD or localised strategies working in the other direction.

Remote work as a potential tool for reducing emissions

In a survey of 11 European cities, Nicolini et al. (2022) confirmed that reducing transportation during the national lockdowns of the pandemic resulted in reduced CO_2 emissions. The findings provide a dramatic test case proving that reducing mobility behaviour through policy may be possible and can have a major impact on emissions. As Nicolini et al. (2022) state: "The temporary nature of the observed emission reductions emphasises the need to implement systematic changes in the

city ecosystem and people's lifestyles to achieve effective and sustained climate change mitigation" (10), with changes to mobility playing a major role. Reports from the European Environmental Agency have also shown the clear dip in GHG emissions within the transport sector in 2020 compared to previous years, with a rebound effect after 2021 (EEA, 2023). This is also reflected in the Nordic context where total emissions dropped by about 10% in 2020 (Nordic Statistics Database, 2022). An American study has also shown that the potential for carbon-emissions reductions is higher in car-centric cities compared to cities whose residents already rely on sustainable modes of transport; thus, remote work may play a more strategic role for reducing emissions in some areas over others (Zhang et al., 2023). However, the potential of this largely depends on remote workers' travel behaviours for non-work purposes or when travelling to a third space to work (Li et al., 2024). Furthermore, the policy discussion around the long-term effectiveness of this for holistic sustainability is more nuanced and complex, and remote work is not a silver bullet solution by any means.

The international literature also refers to links between remote work and other environmental and transport related concerns. In their research on the carbon footprint of remote work, Zhang et al. (2023) introduce factors of income level and occupation to understand how specific population groups contribute to or are affected by remote work's carbon reduction potential. By testing scenarios in four US cities, the researchers found that "low-income individuals are predominantly employed in professions with limited remote work opportunities. Paradoxically, they shoulder a more substantial burden in terms of carbon reduction efforts, underscoring the challenges faced by low-income populations in diminishing their carbon footprints" (Zhang et al., 2023).

Photo: Nick Night / unsplash.com

2. Urban-rural linkages

Historically, remote work has been an urban phenomenon (i.e., residents living in cities telework more often than those living in towns, suburbs, or rural areas) since there are often more jobs that allow for remote work in urban areas (Sostero et al., 2024). However, it is unclear whether this will continue to be the case. Due to more common forms of hybrid work, new linkages between urban and rural areas seem to be emerging.

New linkages between urban and rural areas

Several international studies highlight these new flows and linkages. For example, Bürgen et al. (2021; 2022) studied hybrid workers in rural areas in Switzerland and found that participants emphasised maintaining linkages to urban areas, both for economic activity and social interaction. In their study on co-working spaces in rural Germany, Hölzel and de Vries (2021) suggest that, with the time saved from commuting to the office, "people could get more engaged in social commitments, contribute to associations or similar activities. Their presence in the rural town could thus be higher, [resulting] in more vitality and vividness in the centre of the village and small towns" (Hölzel & de Vries, 2021, 12). However, the authors emphasise that these remote workers engage in a multi-local lifestyle, noting that regular travel to cities is still relevant for the rural-based residents. Based on the study from Bürgen et al. (2022), it is not always likely that those working remotely in rural areas will be more invested in rural life. While linkages created from urban to rural are mainly personal and involve the individuals becoming embedded in local structures, their embeddedness has limited economic effects unless the participants work for a company located in a rural area. Those working remotely in rural areas maintain important connections to economic and social activity based in urban areas, thereby creating on-demand linkages or flows between urban and rural spaces (Bürgen et al., 2022). Finally, a 2023 OECD report using housing prices as a proxy for ownership demand showed that, although housing demand has

extended outside of metropolitan areas, "we are not seeing a re-emerging preference for rural life as such, but rather an increased preferences for places that combine the benefits of both rural and urban life" (Ahrend et al., 2023, 1).

In the Nordic context, Eliasson (2023) shows that workers continuing to work in the city centre who relocate most often move to Stockholm's suburbs (which was already the case before the pandemic). However, Eliasson found that managers and professionals with remote work potential in Stockholm were more likely to move outside of the Stockholm region—to medium-sized cities or smaller cities/rural areas—than their non-remote worker counterparts after the pandemic compared to before: "The counter-urban flows of city centre workers to smaller locations are fairly small in absolute terms, but the increase has been quite substantial" (Eliasson, 2023, 23).[12] From a regional perspective, reports at Nordregio made some similar conclusions. Comparing internal migration patterns from 2020-2021 to 2018-2019, Randall et al. (2022-b) found that major urban areas across the Nordics experienced an increased out-migration. Some regions experienced higher increases of internal in-migration from the capital regions compared to others.[13] However, in their case study of Copenhagen, Randall et al. (2022-b) found that those who migrated away from the capital municipality during the pandemic (predominantly young families) tended to move nearby, to surrounding municipalities, rather than to further regions.

Strategies for attracting and retaining populations using remote work

Some research has pointed to the specific role that housing plays in attracting and retaining populations. In a 2023 study, Thulin et al. (2023) confirm the notion that teleworkers would like to continue hybrid work rhythms in the future in their interviews of Swedish public employees. The pandemic placed "greater emphasis on the home as a central hub and the primary locus of shared work/life activities and interactions," a finding substantiated by Zhang et al. (2022) as well in their discussion of the home as a key anchor for mobility studies (more so than the fluid anchor of workspace). Thulin and colleagues suggest that urban policy and planning focuses on "enhanc[ing] the attractiveness and liveability of residential areas, not only to retain current residents but also to attract new ones" (Thulin et al., 2023, 8). For some of the respondents, this meant expressing an interest in moving to the countryside; others showed interest in relocating more centrally. McCue (2021) argues that it is likely that remote workers will choose housing with amenities found in resource rich neighbourhoods, which could mean that smaller towns and

12. See section above on "urban cores" for more on these migration patterns.
13. For example, Lappi and Etelä-Savo (Finland); Region Jämtland Härjedalen (Sweden); Trøndelag, Møre og Romsdal, Vestfold og Telemark, and Vestland (Norway); and Austurlund, Norðurland vestra, and Vestfirðir (Iceland; see Map 4 in Randall et al., 2022, showing increased in-migration from capital regions to other regions in 2020-2021 compared to 2019-2019).

rural areas seeking to gain new residents through remote work opportunities might focus on housing environments as a major attraction factor.

The discussion of attracting and retaining populations is prevalent in smaller towns in the Nordics. Many smaller municipalities in the Nordic Region have, for several decades, been facing challenges associated with ageing and declining populations. For this reason, planners in such municipalities have considered initiatives for attracting and retaining new populations. However, as shown in research by Nordregio (Granath Hansson & Guðmundsdóttir, 2024), formal strategies for doing so are lacking. The rural and regional case studies conducted within this remote work project indicated the same findings, mainly that policymakers have yet to integrate specific remote work strategies into their strategic planning frameworks (Bogason et al., 2024-a). Nevertheless, they recognise its potential for fostering rural and regional development (see Boxes 4 and 5 for examples). These policymakers continue to emphasise the overall attractiveness of their regions by working on the provision of high-quality services and promoting various advantages such as affordable housing, proximity to nature, appealing town centres, quality infrastructure, and social trust. Remote work is further perceived as an integral component of this broader strategy. Rather than dedicating specific strategies for remote workers, the municipalities recognised this group as part of a larger population group which they wish to attract or retain. The COVID-19 pandemic demonstrated the feasibility of remote and hybrid work, thereby increasing awareness among both employees and employers of the viability of working from more remote locations. This awareness underscores the potential for remote work to contribute to the economic and social vitality of smaller towns and rural areas, complementing existing efforts to enhance regional attractiveness and sustainability (Bogason et al, 2024-a).

BOX 4. EXAMPLE OF PLANNING FOR MULTI-LOCALITY IN FINLAND

One example of regional planning for attracting populations through remote work has recently emerged in the North Savo region of Finland. In a project referred to as "Multi-locality to boost the attractiveness of North Savo,"[14] the region will select 5-7 municipalities to implement several measures to support multi-locality by promoting local employment and participation in the municipality. The success of the measures will be evaluated by collecting data on how many people in the municipalities have multiple places of residence, their duration of stay in the municipality, and their regional economic impacts (Regional Council of North Savo, 2024).

The project builds upon an earlier multi-location project[15] (2021-2023) organised by SavoGrow, a company co-owned by several municipalities in North Savo. The former project developed a collection of measures about how municipalities could better account for people living multi-locally within local action plans. The measures fall into the topics of will, participation, vitality, and mobility, and have been compiled into a user-friendly deck to share among municipalities and regions.[16] Though multi-locality has been a common concept and phenomenon in Finland (as well as other Nordic countries) for many years, it has not been utilised as a strategy in regional planning until recently with growing remote work opportunities prompted by the pandemic.

A new study from Iceland, conducted by the University in Akureyri, further highlights that remote work within the state sector is here to stay, but also that employees are generally thriving and viewing remote work positively. The study shows increased job opportunities for highly educated individuals in rural areas following the government's initiative, and it allows people to change jobs without relocating their families (Gísladóttir et al., 2024). However, challenges include the distance from colleagues, which can affect communication and lead to issues with supervisors and coworkers. There is also a need for better dissemination of information about remote work policies and grants. In a survey conducted for the research, respondents expressed significant interest in implementing work clusters or co-working spaces in most municipalities to combat social isolation among remote workers. This approach is considered more effective than assigning individual desks in existing municipal offices to ensure equity (Gísladóttir et al.,

14. In Finnish, *Monipaikkaisuudesta boostia Pohjois-Savon vetovoimaan*, see https://www.pohjois-savo.fi/viestinta/uutiset/monipaikkaisuus-hankkeeseen-haetaan-mukaan-5-7-kuntaa.html
15. See https://www.savogrow.fi/tietoa-meista/hankkeet/monipaikkaisuus-hanke/
16. See https://issuu.com/savogrow/docs/monipaikkaisuus-t_htiluokituskortit-v1_007?fr=xKAE9_zU1NQ (in Finnish).

2024). According to the interviewees, the Icelandic state initiative was viewed positively for regional and rural development while also influencing employers in the private market to increasingly offer remote work options.

BOX 5. INCREASING PROMOTION OF SITE-LESS GOVERNMENT JOBS IN ICELAND

In Iceland, pre-pandemic regional policy about jobs without placement has gained momentum, and post-pandemic, all government jobs should be advertised without a specific placement so as not to limit who can do the work (unless the work requires clear site-specificity; see Synthesis section of this report). A five-year action plan 2022-2026 aims to distribute government jobs more evenly outside the capital area, emphasising the balance of long-term population decline, unemployment, and monotonous economic life (Alþingi, 2022). The plan notes that "targets will be set for increasing the number of workspaces and non-local jobs with as even a distribution as possible across the country" (Alþingi, 2022).

Other recent studies from the University of Akureyri also show an increase in the percentage of jobs from ministries that could be advertised as non-local or site-less (12% of governmental jobs) compared to previous analyses (RHA, 2024). While the intention of this is to create more balance by enabling more jobs in the countryside, some concern was raised within the case studies of this project about potential unintended consequences – for example, that jobs based in the countryside can now be done remotely by those moving to the capital area (Bogason et al., 2024-a). In August 2024, a step was taken to encourage an increase in and subsidisation of government remote work in rural areas with the approval of special funding to support the goal. Government agencies in the Capital Area will be able to apply for grants for each remote position located in a rural area. The grants will cover costs associated with providing facilities for employees and travel expenses (Innviðaráðuneyti, 2024).

Within the Nordregio studies, urban and rural attractiveness was identified as essential for attracting and retaining remote and hybrid workers in the selected Nordic municipalities. Whereas the term urban attractiveness is subjective and the literature points to a multifaceted concept (see Box 2; Hidman, 2018), there seemed to be agreement on what constitutes an attractive small town in the five Nordic case towns, as more or less the same town features were brought up as important for urban attractivity (Granath Hansson & Guðmundsdóttir, 2024). The studied municipalities identified strengths, such as affordable housing, short distances, access to digital and physical infrastructure, as well as access to nature and leisure activities. However, they also strive to overcome difficulties such as more vibrant city centres (often using densification as a tool) and an appropriate housing mix.

While most municipalities continue to look towards economic growth and development as the key policy message, discussions around *smart shrinkage* are also important (see, e.g., Syssner, 2022). Despite changes and opportunities of multilocal work patterns exacerbated by the pandemic, forecasts continue to suggest a decline for municipalities outside major urban regions. While this is known, few policymakers and planners are developing strategies that acknowledge and prepare for this reality. An upcoming Nordregio report provides insights on smart adaptation strategies in Nordic rural municipalities.[17] Research from Schmit-Thomé and Lilius (2023) highlights an example from Puolanka, a rural municipality in Finland that has embraced a social and cultural identity of pessimism (see Box 6).

17. See https://nordregio.org/research/smart-adaptation-to-rural-realities-approaches-and-practices-in-nordic-municipalities-and-regions/

BOX 6. RETAINING RURAL POPULATIONS IN FINLAND—THE EXAMPLE OF PUOLANKA

Since 2006, the idea of pessimism has grown into a sort of brand for the municipality, involving Pessimistic Days, a Pessimism musical, and pessimism-themed merchandise, some of which has been co-funded by regional development programmes. The brand did *not* initiate from the municipality or mayor's office, but in a grassroots way from residents initially involved in the Pessimistic Society. Puolanka also focusses on retaining residents rather than attracting new residents, with multi-locality as one way to do so. Those who work remotely or spend time in the municipality only during the holiday seasons (summer, Christmas, Easter) are considered "part-time Puolanka citizens" (Schmidt-Thomé & Lilius, 2023, 10). The residents are viewed positively by other residents and the municipality, who view them as an opportunity for the future and worth investing in.

The municipality believes that remote working will bring more residents to Puolanka in the future, and therefore needs to invest in service provision. They are also "interested in flexibly converting secondary homes to primary homes" in order to "make multi-locals permanent residents in Puolanka" (Scmidt-Thomé & Liluis, 2023, 10-11). The authors consider how multi-locality could be used as a policy concept for the Finnish shrinking municipality by emphasising well-being of the existing residents instead of concentrating strategic efforts on growth.

Second homes

In the Nordic context, urban-rural linkages have also previously existed through the flexible lifestyles afforded via second home ownership, as around half of the Nordic population has access to a second home. Previous research has highlighted the benefits of second homes and seasonal tourism for rural development through job creation, cultural activity, and service provision. Continued forms of remote work may also contribute to these activities in rural areas with high shares of second homes. However, these urban-rural flows also complicate the territorial distinctions baked into spatial planning, which manifests in uneven tax benefits for municipalities, among other pressures placed on smaller municipal planning departments (Bogason et al, 2024-b; Slätmo et al., 2019; Bogason & Slätmo, 2023).

The Nordic survey participants in the Nordregio research project indicated a significant increase in the use of second homes during the pandemic. Over half of the Nordic survey respondents suggested an increase in a collection of factors related to second homes, including demand, price, and more time using second homes on weekends, outside of high season, and in combination with work (Randall

et al., 2020-b). While it is difficult to know precisely how changes in housing demand or second home use are directly connected to remote work, the survey participants perceived that remote work opportunities played a significant role in both temporary and permanent population changes. Rural and regional case studies carried out by Nordregio (Bogason et al., 2024-a; Bogason & Slätmo, 2023) point to problems related to the purchase of second homes by non-residents: increased demand creates housing shortages and drives up prices, which is particularly problematic to permanent residents in regions where the local economy does not support high wages. Additionally, second homes are frequently unoccupied for extended periods, leading to a lack of community cohesion and vitality. These phenomena might render rural areas less attractive to remote workers who seek attractive and affordable housing as well as vibrant and engaged communities.

In their report on remote work in rural areas, Bogason et al. (2024-a) studied the case of Keuruu, Finland, where people already living in the area or who own summer houses would benefit from remote work opportunities. The work of attracting residents has mainly focused on those who already have ties to the area (e.g., young people who have moved away but may be inclined to move back). The report states that some municipalities in Central Finland have supported this by changing zoning policies (Bogason et al., 2024-a). Several other studies have tracked the phenomenon during and after the pandemic. Using mobile phone data in Finland, Willberg et al. (2021) saw a shift in the presence of people from the Uusima region (Helinski) city centre to rural areas during the pandemic, particularly those with second homes. However, some researchers doubt that remote work from second homes (at least on a permanent basis) will become a large-scale trend, as people will continue to use their second homes as part of a multi-local lifestyle with anchor points elsewhere—such as in the city (Lönnqvist, quoted in Sandell, 2022). In a report from Aalborg University, survey results showed that only one in ten Danish employees who worked from home during the pandemic used locations other than their primary residence to do so (Haunstrup Christensen et al., 2024).

Cultural and digital resources in rural areas

In the international literature, remote work has also been discussed from the rural perspective with regards to developing a so-called rural-creative class (Duxbury, 2021). While Richard Florida's well-known concept of the creative class came to prominence in the early 2000s, his idea that a young professional demographic can influence the economics of cities has maintained its stronghold in planning discourse. Duxbury (2021) builds upon the idea by considering how cultural policies in rural areas can support a rural creative class. Her review of academic and planning documents of cultural work in non-urban areas reveals opportunities for policymakers to both attract and retain residents through a "comprehensive approach to fostering cultural and creative work in rural and remote areas" (3). Hill

et al. (2020) evaluate the situation from the perspective of retaining rural populations. In their short-term evaluation of a certification programme in rural Utah, where individuals had the opportunity to train on remote work practices, the authors suggest that remote work can enable rural residents to gain jobs based in larger urban areas without needing to relocate. Duxbury (2021) also highlights that retaining populations in rural areas is key and suggests that cultural and creative opportunities in rural and remote areas can play a significant role in facilitating rural vitality. However, the notion of the creative class—both urban and rural—has been much debated since its inception, often due to its bias towards attracting wealthy individuals to areas seeking economic growth, leading to issues of gentrification and further disparities between rich and poor residents (see, e.g., Wetherell, 2017).

Digital infrastructure has been cited as a key resource for enabling remote work (Sostero et al., 2024; Paul, 2022). In the pre-pandemic study made by Bürgen et al. (2021) in Switzerland, researchers also learned some nuances regarding how individuals use ICTs when working remotely, away from urban areas. While ICTs are important enablers of remote work, the study showed that, when choosing to work remotely from a rural location, they spent *less* time on their laptops, especially working on documents on their laptops. Rather than increasing their ICT use, the workers strategically used the remote work opportunity to work in different ways and take advantage of, for example, the inspiring scenery around them and using more analogue modes of work to accompany this. The participants also took more breaks when working remotely in these peripheral areas and worked more flexible hours compared to their time working at their jobs in urban centres. Importantly, the study considered hybrid workers, and participants noted the importance of maintaining access to the city and working from urban centres in order to inspire teamwork and collaboration among colleagues.

Photo: Yadid Levy / norden.org

3. Digital nomadism, co-working spaces, and third places

Though remote working practices had already been introduced through the expansion of ICTs before the pandemic, the continuation of remote work at higher levels since COVID-19 has reframed how work takes place across space and time. There are a variety of terms and working models that emphasise where remote work happens, and the lifestyles attached to these particular and/or fluid sites of employment activity (see Box 7). Even during the pandemic, survey results indicated that employees used a variety of locations for work activities outside of the employer's office or their own home (Eurofound, 2020). These alternative opportunities have been used to combat negative effects of working from home (e.g., isolation, home-based distractions, poor internet connection), but there is room for discussion regarding how they are enabled through spatial planning, and to whom and by what modes they are accessible.

BOX 7. KEY TERMS RELATED TO DIGITAL NOMADISM, CO-WORKING SPACES, AND THIRD PLACES

CO-WORKING

A co-working space is "a kind of office space where people work at the same location on their own project or tasks and have the opportunity to network, socialize, or cooperate with their 'space mates'" (Hölzel & de Vries, 2021, 4). Distinct from other remote working practices, co-working implies collaborative efforts among other colleagues from the same or different organisations in a space designated for work-related activities (as opposed to, for example, the home, a café, or a public library). Some larger employers may have their own designated co-working spaces, or remote employees and freelance workers may independently seek out co-working spaces.

Several new business models have developed out of this form of remote work, relying on repeated and regular visits from employees to rent space for temporary use. Examples such as Regus, WeWork, and Convendum are now also paralleled by cafés offering co-working subscriptions. Other online "matchmaking" platforms such as Workaround[18] have emerged in the past decade, within the Nordic context as well as elsewhere, to connect remote workers and office spaces, thereby supplying both companies with the opportunity to profit from underutilised space and workers to benefit by renting out the resourced spaces they require. Other related terms include *telecommuting centres*.

THIRD PLACES

In the recent academic literature, several researchers refer to third places as spaces which employees have repurposed for remote work. For example, Li et al. (2024) use third places as a categorisation of one location in which remote workers choose to work (including cafés, tea houses, libraries, community centres, bookstores, and co-working spaces).

The idea of the "third place" was first described in Ray Oldenburg's 1989 seminal work evaluating the problem of place in America. In his critique on the lack of vibrant public life, he highlights the importance of "public places that host the regular, voluntary, informal, and happily anticipated gatherings of individuals beyond the realms of home and work" (Oldenburg, 1999, 16), naming them "third places" to distinguish them from the two primary anchors of American life: the settings of home and of work. It may be useful to stress that this repurposing of the term "third place" in recent literature reimagines these spaces, not as distinct

18. https://workaround.io/se/en

from home and work, but rather as spaces where home and work merge. Such a redefinition emphasises a unique phenomenon in which places formerly providing leisure, democratic exchange, and social life have been reimagined for alternative and potentially conflicting purposes, which may be private or exclusive rather than promoting more democratic public life.

Other location-based concepts have emerged in recent literature, such as *home-based work* (Lopez & Rodriguez, 2020; Dianat et al., 2022; Zheng et al., 2022), *office-based work* (Zhang et al., 2022), and *temporary workplaces* (Di Marino et al., 2018; Asmussen et al., 2023). Such terms highlight the fluid functionality of spaces that have the minimum criteria for making work possible (e.g., IT infrastructure, spatial requirements, charging resources, audio restrictions, geographical demands, costs for access, and other potential social/cultural norms). Such criteria differ depending on the worker and the specific task. Di Marino et al. (2023) refer to *new working spaces* as a category that includes the likes of "co-working spaces and libraries which provide formal and informal spaces for working" and "attract not only self-employed workers and entrepreneurs but also an increasing number of employees (whose tasks can be remotely performed) as well as corporate teams" (Di Marino et al., 2023, 599). Di Marino and colleagues point out that these working spaces often provide residents more workplace flexibility that is at relatively shorter distances to their homes compared to the primary office space, therefore potentially enabling a more positive work-life balance.

NOMADIC WORK

If office-based work is on one end of the spectrum of location-specific concepts, the notion of nomadic work sits on the opposite end and conveys the idea of *location independence*. This is the idea that one can conduct their work from anywhere, free from the restraints of space and time. Referring to Makimoto and Manners' introduction of the term in the late 1990s, a digital nomad is "a category of mobile professionals, who perform their work remotely from anywhere in the world, utilizing digital technologies, while 'digital nomadism' refers to the lifestyle that is developed by these highly mobile location independent professionals" (Hannonen, 2020). The concept has been linked to the idea of working "anytime, anywhere" (Müller, 2016, in Hannonen, 2020; Nash et al., 2021) and often refers to a particular sociodemographic of professional – a young freelancer or entrepreneur who combines work with leisure travel, thus adopting a particular lifestyle.

Several academic studies highlight the varied expressions and perceptions of alternative spaces for facilitating remote work from a spatial perspective (e.g., where such facilities are located and how employees access them), a policy perspective (e.g., what role the government plays in providing such spaces), and from a user perspective (e.g., how do remote workers perceive these spaces and their limitations for conducting work).

Coworking and third space accessibility and potential benefits of nearby services

In their survey of rural remote workers using coworking spaces outside of major urban areas in Germany, Hölzel and de Vries (2021) found that the coworking space tenants use the services and offerings available in the area of the coworking space. "Possibly, coworking spaces will bring enough purchasing power to local centres, if they are located there, to enable any retailers that may still be present to generate substantial turnover and continue to exist" (Hölzel & de Vries, 2021, 13). Many respondents (remote workers in rural areas) also indicated that they frequent more than one coworking space. The work of Hölzel and de Vries (2021) showed that, in rural areas, those using coworking spaces accessed these remote workspaces by car rather than by bicycle or on foot. The results suggest that lower population densities in rural areas may mean that, even if people are able to work remotely, their decision to use a coworking space to do so may not necessarily have a great effect on travel mode. Similar results were seen in the study of a telecommuting centre in Stockholm (Vaddadi et al., 2022), and the notion that more people use cars for leisure trips has also been highlighted in Helsinki as a potential concern (Lönnqvist & Salorinne, 2022).

Bieser et al. (2021) established a telecommuting "living lab" to study the effects of a telecommuting centre south of Stockholm, which offered a more convenient working location for residents in the area who were employed at a major IT company northwest of the city. The study, which was developed between 2019 and 2021, reported that employees decreased their trips to the office from 86% to 57% by substituting most of these trips with working at the nearby telecommuting centre instead. In doing so, the employees in this area of the city significantly decreased their travel time. Unsurprisingly, more time was spent on chores and leisure activities on those days which employees worked from home compared to days when they travelled either to the telecommuting centre or to the employee office. Time spent on travel using car or public transport was longest on days when the employees worked at the employer office, but, perhaps surprisingly, car travel time was shortest on days when working from the telecommuting centre. When people worked from home, they spent more time travelling by car than on days when they worked from the telecommuting centre. On days when the employees worked at the telecommuting centre, they spent more time cycling or walking

compared to days when they worked from home. Overall, the study provides an interesting test case for how alternative office spaces can influence travel behaviour. However, the authors importantly note how adopting telecommuting practices at a larger scale can also influence when and where a telecommuter spends his/her time (where leisure activities, chores, errands take place) compared to days in the office.

Taking a more urban perspective, in their study of third places in Beijing in 2022, Li et al. (2024) found that of the approximately 61% of employees who had the potential to work remotely, around 11% chose to work from third places, and 4% chose commercial third places. Those who chose to work from third places tended to select places "characterized by high-density mixed-use surroundings, proximity to residential communities, and convenient access to subway stations, among other built environment attributes" (Li et al., 2024, 12). The study gives insights for how planners and designers can use third places in their own urban strategies for developing sustainable cities. The authors clarify that their results are most relevant for other "high-density international cities that house a substantial digital economic and high-tech industries" (Li et al., 2024, 11).

Several Nordic studies have looked at alternative working spaces in urban environments. In a survey conducted in the Nordic Region by WSP (2022), around 40% of respondents from the Nordic capitals expressed interest/high interest in the possibility to work from a co-working hub in their local area (WSP, 2022). Between 18% (Copenhagen) and 25% (Helsinki) were neutral to the idea. Analysing co-working spaces in Oslo and Lisbon, Di Marino et al. (2023) found that co-working spaces in Oslo were predominantly concentrated in central urban districts. The authors relate this to the city's generally monocentric, albeit multifunctional, layout. Overall, the authors conclude that new working spaces are distributed non-uniformly, thereby limiting residents' ability to live and work from a co-working space within the same neighbourhood. In a Stockholm-based study evaluating the ability for telecommuting centres to encourage sustainable travel, researchers found that placing a neighbourhood telecommuting centre near a key public transport hub (with, e.g., access to the commuter train) encouraged employees to access the centre by sustainable methods; however, this was not always the case, with some employees who would otherwise take travel by commuter train to their office (located about 30 kilometres away), elected to travel by car when working from the telecommuting centre (see Vaddadi et al., 2022).

In their survey in the Nordic countries within this remote work project, Randall et al. (2022-b) also heard from local and regional actors who expressed some initial planning strategies for addressing population changes (both permanent and temporary) related to remote work. These included actions like establishing or improving co-working spaces, improving digital connectivity, and generally increasing remote work possibilities as a way to support local development. Such

strategies, if they exist at all, are context-specific, and while remote work plays a role, it is one of many factors within overall development strategies.

Government provision of coworking spaces

Perhaps the most developed strategy coming out of the Nordics in relation to remote work is with Iceland's work centres. The notion of work centres emerged when telework practices were first introduced in the 1980s and 1990s. Iceland included the strategy of introducing job centres in rural areas before the pandemic. As described in their Regional Plan for 2018-2024, such remote work hubs were part of a process to prevent residential location from disabling people from accessing jobs (Randall et al., 2022-a). In a new study in Iceland, there is considerable interest among both individuals working remotely and human resource managers in implementing co-working space in most municipalities. This is a way to counteract the social isolation of remote workers by providing them with a workspace alongside others in similar situations (Gísladóttir et al., 2024). In the international research, Gurstein (2023) also suggests that future reconsideration of work centres at the neighbourhood scale could contribute to a better work life for those opting to work from home since they provide local community members to interact with others during the workday.

Other Nordic countries have also explored alternative remote working spaces. For example, several municipalities in the Swedish ÖMS region report that increased remote work has led to the establishment of co-working facilities and office hotels (ÖMS, 2023). In Jämtland Härjedalen (Sweden), the region has a plan for enabling hybrid work by establishing regional work hubs for remote workers across the region's municipalities. However, positive development with in-migration and remote work opportunities is not witnessed evenly across the regions, with some municipalities benefitting much more than others. Sometimes this is the case because of lacking digital infrastructure or an uneven spread of coworking spaces, or other differences in services that are provided in the municipalities (Bogason et al., 2024-a).

Spatial needs and limitations of alternative workspace

It is also apparent that the role of space itself plays a unique role in shaping how we work—an idea picked up on by Nash et al. (2021) in their study of nomadic work. By conducting interviews and analysing images from digital nomads, they challenge the concept of location independence, identifying the reality that despite being unbound to traditional office spaces, nomadic workers maintain "a pattern of distinguishable spatial needs that they must seek out in order to facilitate practices that are imperative to their lifestyle" such as internet connectivity, electrical outlets, and spaces that foster concentration, collaboration, or other work requirements. These concerns were also highlighted in a study of a neighbourhood

telecommuting centre pilot project in the Stockholm region, where participants expressed the need for technical adjustments of the centre in order to correspond to the actual needs of workers (e.g., meeting booths, private rooms, or computer monitors; see Vaddadi et al., 2022).

Several authors also challenge the dichotomy of home and work, especially for understanding everyday travel patterns in an increasingly mobile and urbanised society. For example, Zhang et al. (2022) highlight how "personal heterogeneity and increasingly complex activity-travel patterns" complicate the otherwise fixed anchors of human mobility between home and work/school. "The assumption that people's schedules are anchored at home (or home and work) applies to the majority of people. However, it may fail to account for those non-typical behaviours and then lead to biases in behaviour description, travel demand estimation, and potential activity space and accessibility measures" (Zhang et al., 2022). This applies to those who work from alternative locations (co-working spaces or other public spaces) or under hybrid circumstances.

Digital nomadism

Literature on digital nomadism is most often connected to the discourse on tourism. The intricacies of the topic are beyond the scope of this particular report, but the concept was mentioned in one report: Gurstein (2023) notes that remote work is often offered as an inducement when recruiting highly skilled workers. In parallel, remote work is also said to produce potentially precarious gig-based work conditions, most often affecting digital nomads and lower skilled workers. According to the Global Remote Work Index—an evaluation of factors such as cybersecurity, infrastructure, economics, and social safety produced by NordLayer – the Nordic countries rank highly as attractive "remote work destinations" (with Denmark placing first, Sweden in fifth, Finland ranked 11th, and Iceland 13th. Norway ranks 20th).[19] The ranking targets digital nomads by taking into account social, economic, and cultural factors linked to remote working that attract or repel employees with location flexibility. The index also provides insights regarding factors like tourism attractiveness, cost of living, healthcare, personal rights, and English proficiency. While the index measures only by country, some of these indicators could be valuable for municipalities to consider at a municipal level to understand attraction factors, not only for digital nomads seeking the right back drop for their work, but also remote workers considering which neighbourhoods or areas nearby urban centres enable the work-life settings they seek.

As described in the urban case studies made in the *Remote work and multilocality post-pandemic* project (Granath Hansson & Gudmundsdottir 2024), the Finnish

19. https://nordlayer.com/global-remote-work-index/#countries-score-table

municipality Raseborg launched competitions where the prizes were one-week remote work stays in the municipality. Prizes included accommodation in picturesque houses and an introduction to town life by local hosts. The competitions were well-received, and the municipality hopes that the initiative will induce people to spend more time there. In the rural case studies, Bogason et al. (2024-a) highlight Jämtland Härjedalen as a region in Sweden that experiences high degrees of lifestyle migration during the COVID-19 pandemic, with people relocating to the area to enjoy skiing and other outdoor activities. The ability for people to work remotely from such a region could increase its attractiveness for digital nomads. Similarly, the Icelandic municipality of Stykkishólmur attracts many tourists, especially to Snæfellsjökull National Park. The municipality sees remote work as a potential to transform tourists who may otherwise participate in digital nomadism into more permanent residents. Åland also uses remote work as a tourism strategy, inviting visitors to extend their holiday on the islands by working as well. This is made possible due to Åland's digital infrastructure and Visit Åland provides a list to help tourists find accommodations well-suited for remote work. Bornholm also strategically attracts digital nomads by investing in digital infrastructure and co-working spaces on the island and seeks to benefit from temporary workers both socially and economically (Bogason et al., 2024-a).

Photo: Steffen Muldbjerg / unsplash.com

4. Attractive and affordable housing fit for work-live arrangements

Much attention has been granted to the question of housing during the pandemic, especially at the granular, social/psychological scale as residents change their expectations and demands on the home to meet a wider range of functions. As Gurstein (2023) argues, the home has reemerged "as a central unit in society with enhanced economic, educational, and social functions" (349). She also notes that, as home becomes more work-focused, more home-like amenities are introduced in workspaces. From a planning and policy perspective, housing plays a key role in providing citizens with basic needs, and the topic of housing is commonly referenced in the academic literature on remote work and spatial planning.

Attractive and affordable housing versus remote work effects on demand and property prices

In the Nordic case studies made in this project, attractive housing options and relative affordability compared to more densely populated areas were pointed out as main attraction factors of smaller towns and rural areas. However, civil servants identified housing as a dilemma because if remote workers, including second home owners, find small towns and rural areas more attractive, this may lead to increased housing prices, which has the potential to exclude parts of the permanent population from certain neighbourhoods. In rural areas, increased demand was also linked to renovation and use of empty housing (Granath Hansson & Guðmundsdóttir, 2024; Bogason et al., 2024-a). A previous survey also pointed to this result as local and regional actors indicated that "increased housing demand" followed by "rising property prices" were among the greatest challenges associated with population growth during the pandemic (Randall et al., 2022-b).

The international literature echoes these findings. In a paper written during the pandemic, Florida et al. (2023) points to dampened residential demand and

lowered rents in central locations, as well as mixed developments of real estate prices. However, they caution that pandemic effects might be temporary and are difficult to disentangle from historically low interest rates and high savings. However, Mondragon and Wieland (2022) caution that increased housing demand related to higher levels of remote work in certain locations could drive prices also post-pandemic. According to Mondragon and Wieland (2022), there is a connection between migration, house prices, and remote work in the US context. When seeking larger homes, remote workers were seen moving towards smaller, more affordable communities. Sweet and Scott (2024) discuss previous research suggesting that remote work is likely to disconnect work from home, leading to a flatter density gradient, or even residential sprawl, as well as larger indoor and outdoor residential spaces. Further, they claim that place-based amenities are becoming more central to real estate markets. This is supported by McCue (2021) who argues that remote workers are likely to choose housing with amenities found in resource rich neighbourhoods.

In the context of Oslo and Helsinki, Di Marino et al. (2024) argue that possibilities for some to live multi-locally and move to more affordable areas may exacerbate inequality as those who do not enjoy this flexibility are trapped in more expensive areas. Researchers in Helsinki also note that remote working has influenced demand for larger apartments that facilitate remote work, especially for households containing two workers with the potential for remote work (Lönnqvist, cited in Sandell, 2022). Meanwhile, in Stockholm, researchers found that, compared to renters, homeowners were more likely to stay in Stockholm City rather than moving to suburban parts or outside of the region even if they had remote work potential (Eliasson, 2023). A survey conducted in Denmark showed that, of those moving to more remote areas during the pandemic, only a tenth was motivated by conditions created by the pandemic (Haunstrup Christensen et al., 2024). This group was younger and more highly educated than the average mover and was motived by larger dwellings with possibilities to work remotely as well as proximity to friends, family, and nature. A desire to live in areas with less inter-personal encounters was also a driving factor.

The Nordic case studies made by Nordregio (Granath Hansson & Guðmundsdóttir, 2024; Bogason et al., 2024-a) showed that an appropriate housing supply was deemed an essential issue in relation to the attraction and retention of remote and hybrid workers in both rural areas and smaller towns. Interviewees suggested that the possibility to have a larger home, preferably a house, for an affordable price is one of the most important reasons for people to choose to live in a smaller city or rural area. As a response, planners facilitated housing construction taking both quantity and a variation of housing types and sizes into consideration. In some of the towns, it was hypothesised that remote and hybrid workers would have higher education levels and salaries and, therefore, might create a demand for more expensive and higher standards of housing quality, which was not always easy to

find in the present housing markets in these towns.[20] Planners considered development of attractive, age-friendly housing as it might induce the elderly population to relocate and make single-family housing available to younger generations. Remote work trends were reported to have accelerated already planned housing development in some towns during the pandemic. However, interviewees in three towns brought up scarcity of suitable building land and competing interests—for example in relation to neighbours, second homes, and farming—as an issue.

The relationship between residential location of remote workers and travel behaviour

Granath Hansson and Guðmundsdóttir (2024) suggest that, as hybrid work has become the new normal, hybrid workers' housing demand is more likely to be geared towards areas that have easy access to transportation nodes, although less so compared to population groups that commute every day. The need to travel regularly to a workplace indicates that the zone around larger towns that has the potential to attract hybrid workers will have its limits and be strongly linked to time and ease of travel. Further, demand for space might decrease as the need for a separate office space might be perceived as less important in a hybrid work format as compared to when all work is done remotely. The Swedish Regional Cooperation ÖMS reports a strong link between increased remote work and demand for housing in rural locations. The link to demand in urban areas is far less pronounced and mainly related to single-family housing (ÖMS, 2023). According to the report, it is possible that workers will be willing to live further away from their office space if they only commute 2-3 times per week. However, a 2022 survey of Nordic residents from Stockholm, Oslo, Copenhagen, and Helsinki also challenges the notion that remote work opportunities will make people more tolerant of longer commuting times. The qualitative survey results showed that the main reason people chose to move houses during the pandemic was to live closer to nature and other green areas, followed by living either closer to work or being able to better work from home. However, "of those who have moved, in all cities [Copenhagen, Helsinki, Oslo, and Stockholm], over 80% have moved closer to, or to the same distance [to their workplace] as their previous home" (Brand & Öhman, 2022, 23).

20. This hypothesis was supported by regional reports in other Nordic settings (e.g. HBS Economics & Hanne Shapiro Futures; ÖMS 2023).

In the international research, Sweet and Scott (2024) emphasise that "it is unclear whether individuals choose more disconnected work–home arrangements in anticipation of teleworking (implying that telework induces 'sprawl') or whether teleworking becomes an adaptation strategy for individuals with longer commutes (implying that telework offsets commuting-related travel)" (570). In other words, it is difficult to pin down whether remote work stimulates or is stimulated by housing, or both.

Making housing fit for work-live arrangements

Zenkteler et al. (2023) emphasize the importance of a varied housing supply when cities wish to attract remote workers. In a paper investigating housing quality in connection with the coronavirus lockdown in London, Blanc and Scanlon (2022) also point to the importance of adaptability and flexibility when leisure activities and work are carried out in the same spaces. They call for qualitative home designs permitting flexible uses and furniture arrangements, and they regard both size and spatial configurations as important in this respect. Further, it is said that design approaches and planning policy need to take flexible and varied uses into account. In the same vein, Orman et al. (2023) emphasize the importance of understanding variations in workers' agency to shape time-spaces. Tenure is said to be central when it comes to experiences of physical space and possibilities of making home adaptations that facilitate remote work. The authors find that the socio-material consequences of tenure power structures should be considered in remote work regulations, for example in the context of long-term rental and shared housing. A Danish survey showed that nine percent of respondents had made pandemic-related alterations to their homes (Haunstrup Christensen et al. 2024). Higher-income homeowners with children were over-represented in this group. The most common alteration was the creation of a workplace at home (54%).

Holiss (2021) brings up positive experiences of self-created mixed working and living spaces during the pandemic and the potential residential re-use of redundant office space. She also asks the question of how planning systems could be adapted to accommodate mixed housing and workspaces. Zenkteler et al. (2019) mention flexibility in planning and building approval processes to be essential for adapting the current housing and commercial stock to accommodate remote working and related amenities in the area. In Slovenia, where institutional tolerance of work at and from home has been historically high, unexpected spatial development has occurred, for example in the form of business-related buildings changing perceptions and use of single-family housing areas (Čok et al. 2022). The authors call for "the establishment of regulation, monitoring, and supervision of work at home in terms of spatial planning" (24). Local housing mix and the need for workspace in the home is also pointed out by Denham et al. (2023) as a dimension that could have impacts on remote work patterns. Housing outcome in terms or price and characteristics of homes could be influenced by development processes.

A report evaluating housing policy measures in Australia during the pandemic, point to the crucial role of social housing provision for avoiding homelessness, especially in times of external economic and public health shocks (Leishman et al., 2022). In the Nordic small town case studies conducted by Nordregio, the Danish urban case also pointed to the importance of social housing in affordable housing provision (Granath Hansson & Guðmundsdóttir, 2024).

Photo: Yadid Levy / norden.org

5. Impacts on urban cores

At the height of the pandemic, many feared a decline in the vitality of urban cores as employees without essential, site-specific jobs were encouraged or required to work from home and maintain social distance. While the impact on urban cores post-pandemic has been less dramatic than expected in many geographies, several strategic planning questions regarding the city centre have emerged.

Migration patterns within and outside of urban cores

Studies in the Nordic Region show how urban centres experienced population decline in relation to increased remote work during the pandemic, but the implications on urban cores can be difficult to track. Using the grid-based Nordic Urban-Rural Typology, researchers found that the general trend of population growth continues to be most dramatic in urban regions, with inner and outer urban areas experiencing the greatest population increases (Stjernberg et al., 2024). During the pandemic, the Nordic countries in general experienced positive internal net migration for outer urban areas and rural areas close to urban areas, and negative internal net migration in inner urban areas.[21] However, data from 2022 show that internal net migration has returned to similar patterns as before the pandemic, with inner urban areas in Denmark, Finland, and Sweden all experiencing internal net migration increase, and fewer people migrating towards rural areas (Sanchez Gassen & Stjernberg, 2024).

21. Denmark, Iceland, Norway, and Sweden all experienced a change from negative to positive internal net migration to rural areas close to urban areas in 2021; simultaneously, Denmark, Finland, Norway, and Sweden all saw decreases in internal net migration in inner urban areas whilst outer urban areas experienced an increase from 2020 to 2021 (Sánchez Gassen & Stjernberg, 2024). These shifts suggest that the pandemic may have contributed to encouraging people away from inner urban areas and towards more suburban areas and nearby rural towns.

A study published by Region Stockholm in 2022 also provided evidence linking remote work opportunities to migration patterns, showing that 33% of people who moved away from Stockholm County to another county in the region expressed remote work opportunities as a factor in their decision-making, alongside housing and access to nature (Andersson & Wolf, 2022). In qualitative interviews with employees of several Swedish public agencies, Thulin et al. (2023) learned that remote work opportunities triggered several people to relocate away from central urban areas, aiming for more space within their homes to work and around their homes for enjoying nature. Yet Haunstrup Christensen et al. (2024) report that, in Denmark, only about 10 percent of those who moved during the pandemic restrictions were motivated by the pandemic itself. And Thulin et al. (2023) also heard from several interviewees that they decided to relocate to the city centre to be closer to their workplace. Another 2023 study from Tillväxtverket delivered results showing that those with remote work potential in their jobs are more likely to participate in trends of counter-urbanisation whilst maintaining their jobs in the City of Stockholm (Eliasson, 2023). Tønnesson (2021) examined migration in Oslo, finding that people who moved away from the city in 2020 were, to a greater extent, those who had teleworkable jobs compared to previous years. The study suggests that, if telework continues to be possible, there may be a greater chance that such residents may not return to the city.

In 2022, the City of Helsinki reported that an increase in remote work may have an impact on employees' choice of place of residence. While city centre locations are likely to remain attractive, the research suggests that remote work may increase residents' interest in nearby suburbs, smaller towns, and even sparsely populated areas (Lönnqvist & Salorinne, 2022). Referring to research by Delventhal et al. (2020), the report predicts that jobs in cities are likely to focus all the more on the best and most accessible locations, despite remote work opportunities providing more locational freedom for employees. Similarly to the international perspective from Florida et al. (2023, see below), they suggest that this is due to agglomeration benefits of large cities (Lönnqvist & Salorinne, 2022).

Despite some people's changing mobility patterns, research suggests that the high interest in a hybrid style of remote work may mean a less dramatic emptying out of urban cores than once predicted (Randall et al., 2022-a; Eurofound, 2024). Within this remote work research project at Nordregio, Granath Hansson and Guðmundsdóttir (2024) considered the possibilities of remote work in smaller Nordic towns. They indicate that hybrid work will limit the distance that people may be willing to live outside of capitals since they may continue to require access to the city centre. But if the city centre is to continue to thrive in a new era of remote work, urban attractiveness seems to play a key role. The continuation of hybrid work also poses a challenge to the office space dilemma. One article from Finnish media outlet YLE has highlighted the importance of location, accessibility, and adaptability of office spaces that continue to accommodate employees gathering

(Sandell, 2022). This means that, depending on the type of company, it may be unlikely that centrally located offices will relocate entirely, especially if they already benefit from the urban agglomeration effects.[22] Despite these discussions emerging during and immediately following the pandemic years, researchers from a Swedish study are clear to note that "whether the observed mobility patterns impose a serious challenge for urban centres, and a renaissance for cities and rural areas outside of the metropolitan regions, is of course too early to say" (Eliasson, 2023, 24).

Agglomeration effects

From an international perspective during the pandemic, Florida et al. (2023)[23] discuss potential post-pandemic changes in the urban form and system, as well as the potential measures to secure the urban built environment against future risks. The authors foresee an increased interest in suburbs close to major cities, but also the opposite trend of "work-live neighbourhoods" in cities which offer many amenities but where transport over longer distances is not necessary. Furthermore, university towns and tourist destinations may be potentially positively affected by remote work trends. Authors predict that "outside of these limited cases, most intermediate cities, towns and rural areas are less likely to benefit much from the advantages of remote work. First, because only a limited share of their existing workforce can telework. Second, because they lack the agglomeration economies that knowledge-intensive and creative industries require" (Florida et al., 2023, 1522). Although the authors speculate that hybrid work is a probable "new normal" with effects on mobility, transport, and real estate, the article also considers that we may see further movement into the centre due to lower rents and an increased interest in having access to urban amenities. Overall, the authors maintain that the city is an irreplaceable and attractive place to live and work because of its rare opportunities for clusters of people and the exchange between them—particularly young people who gain access to career building opportunities in major cities that cannot be replaced by smaller or online settings. Several authors echo the theory that larger cities could retain agglomeration benefits or develop towards an alternative polycentric spatial model, while smaller towns might have to fight harder for vitality in their cores (see, e.g., Delventhal et al., 2023; Sweet & Scott, 2024).

Other international studies discuss the impact of the pandemic on urban cores. A study investigating post-pandemic recovery of Central Business Districts (CBD) in 62 US and Canadian cities found that the form and function of downtown cores

22. These results are emphasised in much of the academic literature.
23. Importantly, this paper provides a social analysis of urban cores without conducting a methodologically rich study, and the ideas proposed by Florida et al. (2023) are more speculative than scientifically substantiated.

have changed, but this change started already before the pandemic (Chapple, 2023). Furthermore, they report that cities with larger and more densely populated downtowns, larger professional and tech sectors, and higher dependence on public transport, have struggled more to recover. In another study, Srivastava (2022) identified three effects of the pandemic on downtown San Francisco: less demand for office space, declining retail demand and closure of stores, as well as lower tax returns. A Canadian-based study by Sweet and Scott (2024) points to lower activity in downtown Toronto which might have long-term effects and lead to spatial restructuring and new uses of space. When cores are deemed less valuable, real estate prices and wages may change. However, the authors caution that outcomes will depend on reactions by real estate owners and changes in aggregate economic activity. Currie et al. (2021) conducted a questionnaire with residents of Melbourne, Australia, during the pandemic to demonstrate how people would work and move within and outside of the Melbourne CBD. Based on residents' expectations, they predicted that working from home would continue to increase after the pandemic, but at a much higher rate within the CBD compared to the rest of the city.

Possible impacts on the use of retail and office premises

Florida et al. (2023) discuss future potential developments of central shopping areas. They point out that retail was under pressure before the pandemic due to the rise in online shopping. Entertainment is said to gain on goods-selling and there is an increasing acceptance of more experimental and showroom retail premises. In line with Holiss (2021), a mix of production-living-working spaces are referred to as something that could reshape high streets. Further, the authors state the need for more flexibility in planning if housing or live-work spaces are to be incorporated into high street textures, and the urban form should be adapted to potential future health risks. Increased hybrid work and a related decline in the presence of high-income earners in central areas could have a negative impact on real estate prices and rents there. It is hypothesised that this could increasingly turn cores into cultural and civic gathering places rather than shopping and office hubs. The authors suggest this could have a counter-gentrification effect and allow for more people to live centrally, including artists and creatives (Florida et al., 2023).

From a retail and office perspective, Mischke et al. (2023) investigated the impact of the pandemic on real estate in "superstar" cities in Asia, Europe, and the US. They report that office attendance is down 30 percent, and that this has ripple effects on demand for retail and office space, as well as housing. However, they caution that real estate is local, and that demand will vary substantially by neighbourhood and city. They also suggest that demand may be lower in neighbourhoods and cities with dense office space, expensive housing, and large employers in the knowledge economy. To adapt to, and even thrive, in this new

reality, the authors suggest embracing a hybrid approach, for example, by developing mixed-use neighbourhoods, constructing more adaptable buildings, and designing multi-use office and retail space.

Scenarios for urban cores under hybrid work practices

Globally speaking, some unfolding patterns show signs of a "business as usual with greater use of hybrid working model" scenario. Initially described by the OECD (2021), this scenario suggests that macro trends of urbanisation will continue, predominantly due to cities' capacity to cluster economic and social activities for innovation and productivity, as well as having positive environmental benefits by enabling large populations to live compactly (OECD, 2021). In their original formulation of the scenario, the OECD predicted that most workers would remain in urban areas in order to maintain access to centralised workplaces at least some of the time, but that the increase in remote working in a hybrid form would mean reduced pressure on public transport, increased mobility between localities of remote work outside of cities (e.g., second homes), and greater flows of people in and out of non-urban regions (OECD, 2021). However, some patterns also suggest that the doughnut effect[24] might be extending.

In his paper "The post-pandemic city: speculation through simulation", Batty (2022) underlines the difficulty in predicting long-term effects of pandemic practices but suggests a number of potential scenarios for London. The results of these simulations show that the central city regains its primacy post-pandemic in the majority of the scenarios. Delventhal et al. (2022) model a permanent increase in working from home arrangements in the Los Angeles metropolitan area. They find three effects "(1) Jobs move to the core of the city, while residents move to the periphery; (2) Traffic congestion eases and travel times drop; (3) Average real estate prices fall, with declines in core locations and increases in the periphery" (Delventhal et al., 2022, 1). Both remote workers and populations with on-site jobs are claimed to make welfare gains—remote workers save time and money through less commuting and moving to more affordable neighbourhoods, and on-site workers spend less time commuting thanks to easing traffic congestion and have improved access to jobs and lower average real estate prices. Delventhal and Parkhomenkoc (2023) add that broader access to jobs has the potential to reduce wage inequality between residential areas and thus work against spatial concentration of talent and spending.

24. The doughnut effect implies that people will move out of urban cores and settle in commuting zones in the outer rings of major metropolitan areas. An extension of this would indicate that the area of the commuting zone would widen as people opt for lower density and more affordable housing while maintaining proximity to urban amenities (OECD, 2023).

Photo: Casper Johansson / unsplash.com

6. Polycentric cities and the 15-minute city ideal

If urban cores are impacted, what does remote work mean for the multiple cores in our cities or the potential to develop in this trajectory? For many years, the idea of polycentricity has been discussed as a sustainable planning model, as well as the 15-minute city. In recent years, urban planning discourse has considered "chrono-urbanism" as a concept that suggests people gain a higher quality of urban life when they enjoy shorter, active forms of mobility (Moreno et al., 2021). Can remote work catalyse these planning ideals while ensuring they are carried out in equitable ways?

Links between remote work and dense urban forms

Several international studies have considered the links between remote work and dense urban forms. In reference to an earlier study (Circella & Mokhatarian, 2017), Sweet and Scott (2024) note that remote work opportunities may "induce polycentric sub-centres and regionally scaled agglomeration[s]" which would become more important than traditional, downtowns or city centres. Greaves et al. (2024) echo the idea of planning neighbourhoods according to principles of the 15- or 20-minute city, but as a way to encourage healthy lifestyles and active mobility in the same neighbourhoods where people are working from home. The most well-known of these models stems from Moreno et al. (2021) who lay out six key functions that an area should provide within a 15-minute active mobility radius: living, working, healthcare, commerce, education, and entertainment.

Glackin et al. (2022) argue that increased day-time populations in non-central areas might contribute to higher levels of localisation and less car-dependent cities, which has important planning implications. The authors link larger day-time population density to urban amenities, walkability, and liveability. In their study on Melbourne and Sydney, Australia, they find that the potential to regenerate areas based on remote work-related population changes is large in residential areas (but negative in CBDs and other high job-density areas). They argue that remote work

patterns could be used as a catalyst in strategic planning and regeneration with the aim of creating higher levels of amenities in suburban areas. To promote such a development, planners could identify areas for increased services and residential infill as well as land which could be reactivated or amended. Land use planning, community engagement, and localised place-making policies are mentioned as critical in the development. The authors suggest that the polycentric, neighbourhood-based cities that planners have been advocating for over decades could find a new form if less focus was made on high job-density areas and instead turned to transforming suburbs into more sustainable localised living areas.

Gurstein (2023) discusses the potential of creating more liveable and sustainable neighbourhoods through the integration of home and work activities. Yet, she stresses that active policy and planning is needed to prevent urban sprawl and negative development pressures in rural areas as well as negative effects related to land use and private and public transport. Čok et al. (2022) also highlight the need for active planning for remote work. Based on their research of mixed developments in predominantly single-family housing areas in Slovenia, Čok and colleagues raise a concern for how planners should respond to business activity taking place in traditionally residentially zoned spaces. They highlight the need for new social agreements to ensure that the changing functionality of planned spaces can provide people with healthy environments for living and working.

Similarly, Budnitz et al. (2020) highlight the importance of land use planning to respond to emerging patterns of work flexibility by providing greater access to amenities for telecommuters in order to facilitate shorter travelling distances for non-work-related trips. In their review of several studies, Budnitz and colleagues (2021) point to the desirability of telework in neighbourhoods where workers have other services and activities accessible by foot or public transport, a claim substantiated to a degree by Li et al. (2024) who find that remote workers prefer to work from places in mixed-used, high-density areas that are in proximity to residential areas. Because telework is both a work practice and an accessibility practice, Budnitz et al. (2021) state:

where the urban form and local land uses enable easy access to nonwork practices, the practice of telecommuting is more likely to mean spatial and temporal flexibility and integration with other practices to those performing it. If, furthermore, access to a variety of nonwork activities is possible without recourse to the private car because telecommuting is encouraged in mixed-use, walkable places, then its practice is also likely to mean environmental and social sustainability to those performing it (166-167).

The main kind of environment to stimulate sustainable remote work is that of mixed-use urban design, which could be in the shape of compact urban cores or polycentric spatial structures. According to Li et al. (2024), "this transformation can create diverse spatial combinations, provide flexible office spaces, and decrease commuting distances by making services easily accessible via public transport,

walking, or cycling. This, in turn, helps reduce carbon emissions and energy use, contributing to the development of sustainable cities" (11). As planners consider how to organise the necessary needs and functions for residents in a city, international research has highlighted the importance of green and blue spaces for supporting health and well-being, particularly for residents who are working from home (Astell-Burt & Feng, 2021; Greaves et al., 2024; Zenkteler et al., 2023).

Gurstein (2023) claims that remote workers need to be better recognized in the planning of services, as well as social and recreational facilities, and neighbourhood design needs to facilitate locally based activities. Rather than being prohibitive of home-based work, municipalities should support economic activities in the home, as this could stimulate economic growth. This could be especially relevant in relation to new businesses. However, Gurstein (2023) also recognizes resistance in some neighbourhoods, as home-based work is said to create heavy traffic, noise, and demand for parking, highlighting all the more the need to plan such neighbourhoods in ways that link to sustainable transportation.

Chrono-urbanism in the Nordics

The 15-minute city concept (also sometimes described in terms of 10-minutes or 1-minute, or as nearby towns) is not a wholly new idea in the Nordic countries, but it has gained traction in recent years. Several recent studies have explored the concept in Oslo (e.g., Di Marino et al., 2023; Akrami et al., 2024) and in Swedish cities (e.g., Elldér, 2024). Akrami et al. (2024), highlighting the work of Di Marino et al. (2023), note that, while the inner urban area of Oslo already largely abides by the principles of the 15-minute city, the success of the model beyond the city centre depends, in part, on the distribution of work. "Supporting increased remote working (from home, co-working spaces, etc.) could be a way to strengthen Oslo as a 15-minute city..." (Akrami et al., 2024, 13).

Taking Oslo (and Lisbon) as case studies, Di Marino et al. (2023) explore whether new working spaces, such as co-working spaces and libraries, play a role in promoting sustainable urban development models like the 15-minute city concept. The researchers found that new working spaces in cities were not evenly distributed, indicating that residents are limited in their options to work remotely (but not from home) in the same neighbourhood in which they live. However, the researchers suggest that planners and decision-makers can incorporate co-working and other remote working spaces (libraries, cafés, etc.) into urban strategies as a way to revitalise both central and peripheral neighbourhoods into attractive towns that abide by the 10 or 15-minute city principles (Di Marino et al., 2023).

Elldér (2024) has also explored the evolution of the 15-minute city in Sweden. In a longitudinal study of 200 Swedish cities, he finds that regardless of scale, cities seeking to develop according to the 15-minute city ideal require reducing urban

sprawl and increasing density and mixed land use, specifically by establishing housing developments where jobs are currently located. However, given the nature of remote working practices, it is also possible that the 15-minute city can be achieved through adding working spaces and other social functions into predominantly residential areas. A 2022 report from Helsinki looked at remote workable jobs at the district level. At the time of study, workplaces suitable for remote work were concentrated in the inner city and in a few major Southern and Western districts (Lönnqvist & Salorinne, 2022). This spatial imbalance suggests some potential unequal distribution at a more granular scale and could indicate where polycentricity is already pronounced. A Danish study has also pointed to the importance of services and meeting points as well as green space in disadvantaged areas (Haunstrup Christensen et al., 2024).

Potential inequalities

Other remote work research touches upon potential inequalities that can be exacerbated by remote work. Planners need to be aware of how, for example, creative-city inspired urban development approaches can widen gaps between white collar remote workers and service-industry workers (Lusoli, 2022) or how developing attractive residential areas for remote work can lead to socioeconomic class segregation in cities (Thulin et al., 2023). Gurstein (2023) and Greaves et al. (2024) also warn against the potential for cities to become further spatially segregated—with those who can work from home living in "amenity-rich neighbourhoods" while those who cannot are subjected to poorer neighbourhoods (for example, areas where walking and cycling are more possible and are able to provide greater opportunities for physical activity and health lifestyles). This concern is further emphasised by Axhausen (2022), who warns that, if people pursue less dense living environments with larger, affordable housing, policymakers will need to consider how this affects spatial equity: "movers might sort themselves by income and taste into problematic patterns" (86), and Akrami et al. (2024) warn that "planning based on accessibility studies should take into consideration the socio-economic inequalities within urban areas" (15). Florida et al. (2023) echo these concerns and ask whether such developments will be inclusive and public-oriented. Zenkteler et al. (2022-a) also argue that, while remote work could facilitate walkable neighbourhoods in urban village formats, remote work is not evenly distributed spatially, but concentrated in attractive, high-amenity areas, which has implications for urban inequalities. Based on their research in the city of Gold Coast (described as a lifestyle destination) the authors argue that spatial proximity is not enough to foster the transfer of knowledge and ideas that many remote workers seek, but that third spaces must be available. In a linked publication, researchers find that remote workers prefer built environment and design features that make collaboration and knowledge exchange possible. This has implications for local neighbourhood centres which may involve collaboration between owners and tenants (Zenkteler et al., 2022-b).

There is also a discussion of the potential of remote work to assist in revitalising existing communities and supporting new communities in distressed areas (Gurstein, 2023). Florida et al. (2023) foresee a limited remote work effect at the inter-metro scale. However, they warn that regional inequality will not be addressed through remote work but needs continued policy attention. Denham et al. (2023) investigate the potential to revitalise suburbs in Melbourne, Australia, based on remote work opportunities of populations. They find correlations between concentrations of people that are able to work remotely and suburban liveability and socioeconomic advantage. The authors conclude that, whereas remote work has the potential to revitalise suburbs, it also could add to differences between advantaged and disadvantaged neighbourhoods, and policy should address spatial disadvantage. According to the authors planning in disadvantaged areas should include public transport that supports links between housing and employment at the suburban level, and improved amenities such as access to green spaces and high-quality mixes of shopping and services that can be reached by walking.

While many of these studies discuss the potential of remote work on compact urban forms from various international contexts, the research provides relevant insights for Nordic cities and regions who also stand to benefit from steering development in these directions while taking into account the potential inequalities if these models are not applied in balanced ways. Within Nordregio's *Remote work and multilocality post-pandemic* project, spatial models like polycentricity or the 15-minute city have not emerged as key topics. In part, this is because such plans or strategies for compact urban forms have pre-dated the pandemic, and the topics of previous reports have not covered the spatial component in depth or lacked data to do so at the time of study. However, the lack of discussion around these spatial models in the case studies for smaller towns or rural areas could also suggest that planners have not yet linked remote working practices to these kinds of spatial implications.

Photo: Roar Paaske / visitdenmark.dk

Implications for policymaking and planning

The latest remote work research implicates the work of planners and policymakers. As Greaves et al. (2024) comment: "These is an onus on those responsible for land use/transport planning and policy to respond to the impacts of this shift [towards remote work practices]" (10). Several academic articles provide explicit policy recommendations based on the research, or otherwise indirectly point to ways in which local, regional, and national decision-makers might respond to the changes. That the pandemic has been classified as a "work-life shock event" (Thulin et al., 2023) suggests it will have ramifications which require both a strategic response and a proactive vision for how our built, social, and economic environments might evolve to guide, encourage, or dispel remote work practices.

Already in 2021, the OECD suggested that, in light of increased remote working practices, governments should:

... establish flexible policies to adapt to changes in settlement patterns, especially with land use and public transport policies as well as the promotion of resource efficiency and circular economy practices among households. The long-term preparedness of local governments and co-ordination policies to improve structural attractiveness and factors for development (including energy efficiency) of all regions is of chief importance for benefiting any future scenario. (OECD, 2021)

Box 8 highlights policy and planning recommendations discussed in the academic literature, while the text below elaborates on these points in parallel with the previous reports published during the *Remote work and multilocality post-pandemic* project. Despite the segmented list, policies should also be cross-sectoral in nature. In the coming years, it will be important for planners and policymakers in the Nordic Region to consider how remote work strategies can align with achieving

the goals to become the most sustainable and integrated region as outlined in the Nordic Vision 2030.[25]

BOX 8. SPATIAL PLANNING AND POLICY RECOMMENDATIONS FOR RESPONDING TO REMOTE WORK PRACTICES (AS SUGGESTED IN THE INTERNATIONAL RESEARCH)

TRANSPORTATION POLICY

- Consider developing a **transport policy bundle** in which remote work is one strategy connected with other policies (e.g., congestion pricing, parking costs, crowd-pricing in public transport, transit-oriented development, developing a jobs-housing balance, developing high quality Mobility as a Service (MaaS) systems, offering mobility sharing). Integration of mobility and the organisation of the built environment is key. The specific bundle of policies should depend on the needs, interests, and context of the municipality/region.
- **Safeguard public transport** as a form of sustainable mobility given that remote work opportunities may prevent ridership from returning to economically sustainable numbers.
- **Promote sustainable regional transport** by encouraging transit-oriented development. Regional transport policy should also enable active mobility for hybrid commuters who have relocated to outer urban areas but maintain the need to visit centrally located offices. The research suggests that, for those who can work remotely in urban areas, people are likely to stay within the vicinity of the major city due to agglomeration effects. To prevent urban sprawl, new development in outer urban areas should be encouraged along transport lines and organised in ways that can encourage polycentricity in larger cities or nearby the existing town centres in smaller towns and rural areas.

25. See https://www.norden.org/sv/var-vision-2030

POLICY FOR THE BUILT ENVIRONMENT

- **Enable active mobility through changes in the built environment.** This means guiding development that ensures a compact urban form, investing in walking and cycling infrastructure, and providing essential services to residents within a 10 to 15-minute active mobility radius.
- **Invest in measures that boost small-town and rural attractiveness.** Attractive and relatively affordable housing, as well as qualitative and affordable modes of transport and digital infrastructure are areas of special relevance to remote workers. Although developments are always local, research cautions that many larger cities, university towns, and touristic destinations might retain their agglomeration benefits despite remote work trends, while actors in smaller towns most probably need to have **more explicit strategies** for their urban cores.
- **Consider alternative and flexible uses of real estate, public space, and land use**. Changes in demand for office, retail, and housing in urban cores should be surveyed and incorporated into local planning. Larger changes in demand have the potential to adapt the form and function of urban cores. Planners might explore adaptive reuse methods for real estate and public space to maintain attractiveness albeit in new, multi-functional forms. In rural municipalities, this should include providing flexible space in centrally located areas that enables co-working for remote workers. Such third places as crucial to improving attractiveness (also in suburban locations), including potential for transfer of knowledge and ideas.
- Remote work trends have spurred interest in suburban locations close to larger cities. However, **planners might consider work-live (or mixed-use) neighbourhoods** in cities that are rich in amenities (e.g., public services, diverse housing supply, green spaces) but do not require extensive travelling, which aligns with the 15-minute-city ideals and are already present in many smaller towns. However, development of work-live environments might cause unwanted externalities; therefore, developments should be sustainably anchored so as to prevent creating socially and economically segregated neighbourhoods. To create higher levels of amenities in suburban or distressed areas, strategic planning could identify land which use could be reactivated or amended, for example, into service areas or for residential infill. Land use planning, community engagement, and localised placemaking policy are mentioned as critical in the development.

- There is evidence that neighbourhoods and cities with dense office space, expensive housing, and large employers in the knowledge economy may be highly affected by remote work trends. Policymakers in such areas should **consider adaptive strategies that ensure sustainable development.**
- **Promote a diverse housing supply and housing affordability** as these are central in the development of attractive locations for a wider spectrum of citizens.

POLICIES FOR SOCIAL, ECONOMIC, AND ENVIRONMENTAL SUSTAINABILITY

- **Ensure residents have access to high-quality digital infrastructure** that supports remote work opportunities, among other services that support a high quality of life. This is particularly important for rural municipalities. Furthermore, national policies might consider providing dedicated support for local initiatives aiming to attract or retain residents, particularly for rural municipalities that may rely on skilled workers from elsewhere.
- **Consider those who can and cannot work remotely**. Policymakers must account for discrepancies across gender, sector, and socioeconomic status in future policies in order to ensure remote work strategies benefit both those who can and cannot work remotely.
- **Review income tax distribution models** with the aim of financially compensating municipalities with high proportions of second homes.
- Policymakers working with labour issues should **be aware of how different population groups experience flexible work arrangements**. This may imply, for example, how housing may be adapted or developed to support different kinds of people who may work from home. It is important to keep in mind that remote workers are a heterogeneous section of the population, and different employees from different sectors may require different kinds of flexible work arrangements (both in terms of work environment and employer agreements). It is therefore important that remote work continues to be arranged through collective agreements and at the individual level among employees and their employers.

New developments in transportation policy

With regards to transportation, both internationally and in the Nordic countries, it is clear that public transport services continue to suffer. This may require increasing state funding to support regional transport systems and/or incentivising ridership for commuting and leisure purposes by maintaining high service levels that make or keep public transport as an efficient and reliable way to move through one's city or region. It is especially important for public transport authorities to maintain timetables that enable those who cannot work remotely to continue to access their workplaces. Major regions have different approaches for incentivising riders, but long-term strategies remain unclear as hybrid work continues.

While the congestion issues pointed out in studies from other global cities may be less applicable for the Nordic context, the discussion around travel behaviour and active mobility is highly relevant. The academic research suggests that remote work as a transport policy needs to be integrated with other policies such as congestion pricing, parking costs, transit-oriented development, and developing a jobs-housing balance in order to produce sustainable results. However, the specific elements of a transport policy bundle should reflect the local context and unique goals of the municipality and/or region.

Studies show mixed results as to whether or not remote workers travel more or less on the whole than those who do not work remotely (depending on factors such as residential location and non-work related trips); however, remote workers may be more likely to choose active modes of travel for their trips (for leisure, to the office during hybrid work weeks, or to co-working spaces) if the built environment supports such modes. This is important when considering how remote work can play a role in lowering GHG emissions. The increase in remote work during the pandemic showed how limiting mobility can definitively decrease emissions from transport and energy sectors, but some areas may have more potential than others to benefit from these changes, and the offering of and investment in sustainable transport options plays a key role.

Remote work is, in many ways, a mobility behaviour; therefore, local transport policymakers need to consider how policy can guide rather than merely react to changes in commuting practices, home and work locations, and mobility. This may ensure that these new ways of living and working are managed in a sustainable way.

Policy opportunities related to changes in the built environment

When it comes to spatial planning to enable sustainable remote work practices in the future, several key principles stand out from the research, namely that urban environments should be compact, accessible, and attractive. Overall, there is a need for planners to understand the opportunities of, demands for, and flexibility around remote work, where these are manifested spatially in an urban environment, and what kinds of actual and perceived access people have to necessary amenities. Land use planning can then effectively respond to people's needs while guiding behaviours and daily working practices to happen in environmentally, socially, and economically sustainable ways.

Though evidence showed some notable changes in migration patterns during the pandemic, with some people moving out of urban centres to outer urban areas and rural areas, research points to continued trends of urbanisation. As of 2024, it is difficult for studies to show whether or not remote work will affect how centrally people choose to live, but in general, research and evidence of continued work in hybrid formats supports the idea that, if people do move, they may more likely remain within commuting distance to office locations.

While some municipalities witnessed reduced demand for office and retail space during the pandemic, research points to the potential of emerging live-work environments, following existing mixed use, sustainable development models. Major urban areas are not likely to experience heavy flows of out-migration. However, due to the two-way effects of remote work, it is possible that such urban areas may have greater numbers of employees who live but do not work locally, or that those living in smaller towns or rural areas may take advantage of employment opportunities in larger urban areas based further away. Though the intensity of these dynamics is still uncertain, they may nonetheless affect individual employees' mobility patterns and social behaviours. Since studies provide some mixed results as to whether remote workers travel less than non-remote workers, it is important that the urban environment can accommodate efficiency in travel by providing mixed-use neighbourhoods, made accessible by active modes of travel so that residents can link errands within a single trip and/or access multiple services by environmentally friendly means of transportation (e.g., walking, cycling, public transport). In larger cities, this may mean planning for polycentricity, or multi-centred spatial structures.

While agglomeration effects might protect many larger towns and cities from negative impacts of remote work, smaller towns and rural areas need to be strategic by maintaining and developing attractiveness to retain existing populations and to appeal to new residents, including remote workers. In the case of smaller towns and rural centres, these need to be compact, accessible and

incorporate attractive features like a varied and relatively affordable housing supply, amenity rich cores, and close access to nature. This might also include measures enabling active mobility and ensuring quality digital infrastructure. Alternative and multi-functional uses of public space and real estate could be incorporated in urban planning to maintain attractiveness and increase adaptability. In rural areas, co-working spaces and other third spaces can play a crucial role in improving attractiveness and in facilitating the transfer of knowledge and ideas among remote workers.

With greater remote work flexibility for many employees since the pandemic, the international and Nordic-based research points to the importance of alternative working spaces outside the home or the traditional office. Co-working spaces, including government-initiated work centres, were more prominently discussed as key for rural areas. Additionally, public spaces, such as libraries, or private spaces like cafés, may enable remote work. How individual employees utilise these spaces depends heavily on the kind of work they conduct as well as their accessibility to such spaces. And how employees travel to such spaces also depends on the transport infrastructure and built environment. To support other social, economic, and environmental benefits, co-working spaces should be located in central, accessible areas of the municipality. This has been exemplified in some regions of Sweden and Iceland even before the pandemic, where dense co-working areas have provided remote workers spaces to collaborate, build social networks, and introduce new businesses. Providing good working conditions and meaningful work opportunities is also a way for smaller towns and rural areas to attract newcomers, in addition to high quality service provision.

The use of alternative spaces for working purposes also challenges existing divisions of land use and functional planning, pointing instead to the need to plan and analyse space according to multiple purposes and greater fluidity. Related to this, housing supply and housing layouts may also be influenced by larger shares of remote work in certain areas. Housing policy could aim to supply affordable living organised in ways that accommodate inhabitants spending more time at home or in their immediate neighbourhood.

Sustainability concerns in remote work policy

Remote work can be a tool for improving work-life balance, but it also has the potential to exacerbate existing inequalities. Policymakers must account for discrepancies across gender and socioeconomic status in future social and economic policies in order to ensure that remote work strategies benefit both those who can and cannot work remotely. For example, the benefits provided by 15-minute-city interventions need to be equally distributed throughout the city or town so as to avoid creating socially segregated neighbourhoods based on factors like

income level or ability to work remotely. In rural areas, potential transportation disadvantages, especially of socioeconomic disadvantaged populations, need to be monitored and subject to follow-up policy. Various policies related to public service provision and housing also need to be considered in ways that provide an equitable balance for residents regardless of where they live or work. This is important with regards to digital infrastructure as well as mobility services—both for those who do and do not work remotely. It is always important to keep in mind that the majority of the population in the Nordic countries continue to work on site.

Providing necessary digital infrastructure is a question of equal accessibility as internet connectivity becomes an integral part of daily life and a determinant for equal opportunity. Researchers suggest providing work readiness programmes preparing people already living in rural areas for positions that can be done remotely. According to results from the Nordregio remote work project, while the private sector may play a role in things establishing co-working spaces or developing technologies that enable remote work, the public sector may need to initiate such services in rural municipalities.

A varied and to some extent affordable housing supply has the potential to create inclusive housing markets where households of different sizes, economic capacity and tastes may find housing attractive in relation to their life-situations. In both the international literature and the studies made by Nordregio, attractive housing was pointed out as a main argument for remote workers to stay in smaller settings or move there from cities. The research pointed to the importance of strategies towards achieving inclusive housing markets when creating attractive rural areas, towns and cities.

Remote work practices are part of the work-life balance in the Nordic countries. However, as various municipalities and regions in the Nordics continue to fight issues like climate change, pollution, social segregation, economic decline, and various inequalities, planners and policymakers have the opportunity to evaluate how remote work practices address or exacerbate such concerns. This report has shown various spatial implications of remote work, and these different themes have clear linkages to the goal for the Nordics to become the world's most sustainable and integrated region. For example, how remote work affects and is affected by transportation or housing will impact goals towards carbon neutrality and social sustainability. However remote work on its own will not intrinsically contribute to the Nordic Vision, and strategies to guide the planning of our built environments and the behaviours within them are crucial for remote work to be a tool that supports the Nordic region's sustainability goals.

Photo: Melker Dahlström / imagebank.sweden.se

Reframing perspectives on territory and future research

This sixth and final report from the *Remote work and multilocality post-pandemic* project has sought to review the latest academic literature on the spatial implications of remote work and put such discourse into dialogue with the findings of the Nordic-specific reports made throughout the project. In doing so, we find that many of the themes brought up in the international literature are present also in the Nordic Region. The work has also revealed many opportunities for further research and new ways of conceptualising work to account for hybrid practices that will continue in our post-pandemic situation.

Reimagining how we conceptualise and measure spaces of work

New working patterns may suggest a rethinking of how space is conceptualised and used. The way individuals navigate their environments may no longer adhere to pre-existing divisions of, for example, urban versus rural, work versus leisure, or production versus consumption. Zheng et al. (2022) notes how most studies tend to divide urban space into central areas versus suburban areas, but this divide fails to account for the complex reality of urban space, which requires a more nuanced classification system. This is especially true as urban and suburban spaces take on new and multiple functionalities, thereby changing notions of what constitutes a functional urban area or a labour market area.

Scholars acknowledge that these emerging complexities make it difficult to measure remote work, let alone incorporate it into policy (Zenkteler et al., 2022). Di Marino et al. (2018) emphasise that cities and regions must be viewed "less as a contained functional area inside administrative borders, and rather more as a network of places that is both attractive and sufficiently flexible to allow appropriation by different users for different purposes" (25-26). Gurstein (2023) also calls for conceptualising our living environments as a "network of locations that includes the central office, the home office, satellite offices, and third spaces, social spaces such as coworking spaces and cafés in neighbourhoods" (350). Therefore, spatial planning may need to adopt new approaches, for example, a networks-based, flows-based, or temporal-based approach. Such ways of reframing our perspectives on territory have existed long before the pandemic,[26] but the increase in and persistence of remote work calls for a reconsideration of these alternative approaches to understanding how space is used in complex ways. The continuation of hybrid forms of work also challenges previous methods for analysing mobility patterns. Planners, policymakers, and researchers may need to test new methods for data collection and analysis of how people live and work within the built environment. As a tool for understanding more detailed settlement patterns related to the existing urban structure, the urban-rural typology developed through this remote work project could be one starting point.

Future research

This project revealed a need for further research on the spatial implications of remote work in the Nordic context. The following themes are particularly relevant:

1. This project has pointed to the potentials of remote work to increase the attractiveness of smaller towns and rural areas. However, limitations and uncertainties related to the extent and character of remote work impacts over time and potential adverse effects of remote work patterns were also uncovered. The international literature covered in this report questions the power of remote work to change the fate of less densely populated areas. To strengthen regional development policy, it would be valuable to know more about what remote work could realistically bring to different geographical contexts, with emphasis on areas with a shrinking population.
2. Spatial implications of remote and hybrid work on cities have been an important theme in international research. However, in the Nordic context, such research is limited, despite the high levels of remote work in these countries. Further, impacts on medium-sized towns are generally under-researched. As the international literature shows, remote and hybrid work

26. See, for example, Henri Lefebvre's *The Urban Revolution* (1970), Doreen Massey's "A global sense of place" (1991), and Manuel Castells' "Towards a sociology of the network society" (2000).

arrangements have the power to change the function of urban cores. They can also reinforce the need to develop polycentric cities or incorporate the 15-minute-city ideal into spatial planning, among other things. Studies that investigate the positive and negative impacts of remote work in Nordic cities and towns could inform policymakers and planners so that they can determine whether, and how to, steer remote work practices strategically so as to benefit from long-term opportunities while mitigating negative effects.

4. On the regional and national scales, migration and other population movements between areas caused by remote work need to be better understood to support regional development policy. One core theme of future research should be the impacts of remote and hybrid work habits on mobility solutions, as is underpinned by the international literature. In the Nordic context, impacts on and development of public transport solutions would be essential for securing the availability and attractiveness of such services long term, as well as how to support active mobility from a regional as well as local perspective.

The Nordic Council of Ministers could contribute to this research through the activities suggested in the policy brief linked to this project, arranging a knowledge sharing event, establishing a Nordic task force and developing a partnership program.

References

Ahrend, R., Banquet, A., Bétin, M., Paula Caldas, M., Cournéde, B., Diaz Ramirez, M. Pionnier, P-A., Sanches-Serra, D., Veneri, P., & Ziemann, V. (2023). *Expanding the doughnut? How the geography of housing demand has changed since the rise of remote work with COVID-19*. OECD Regional Development Papers, No. 54, OECD Publishing, Paris. https://doi.org/10.1787/cf591216-en.

Akrami, M., Wojciech Sliwa, M., & Karoline Rynning, M. (2024). Walk further and access more! Exploring the 15-minute city concept in Oslo, Norway. *Journal of Urban Mobility 5,* 100077. https://doi.org/10.1016/j.urbmob.2024.100077

Alþingi. (2022). *Þingsályktun um stefnumótandi byggðaáætlun fyrir árin 2022–2036 [Parliamentary resolution on a strategic regional development plan for the years 2022–2036.].* Parliamentary Document 1383 – Item 563. Accessible at: https://www.althingi.is/altext/152/s/1383.html

Andersson, E. & Wolf, S. (2022). *Flyttstudie 2022 [Relocation study 2022].* Region Stockholm.regionstockholm.se/48fd10/contentassets/9ee4ea05765d4b9ca2d97034f3749e6b/flyttstudie/

Arisanti, R., Purnamawati, S., & Muslim, A. (2024). Determinants of Greenhouse gas emissions in the transportation sector in Indonesia: Official statistics and big data approach. *International Journal of Energy Economics and Policy, 14,* 1:86-97. https://doi.org/10.32479/ijeep.15035

Asmussen, K.E., Mondal, A., Bhat, C.R., & Pendyala, R.M. (2023). On modeling future workplace location decisions: An analysis of Texas employees. *Transportation Research Part A: Policy and Practice, 172,* 103671. https://doi.org/10.1016/j.tra.2023.103671

Astell-Burt, T. & Feng, X. (2021). Time for 'green' during covid-19? Inequities in green and blue space access, visitation and felt benefits. *International Journal of Environmental Research and Public Health, 18*, 5:1-21. https://doi.org/10.3390/ijerph18052757

Axhausen, K.W. (2022). The dilemma of transport policy making and the COVID-19 accelerator. *Transport and Sustainability, 17*. 39-51. https://doi.org/10.1108/S2044-994120220000017003

Batty, M. (2022). The post-pandemic city: speculation through simulation. *Cities, 124*, 103594. https://doi.org/10.1016/j.cities.2022.103594

Beck, M., Hensher, D., & Wei, E. (2020). Slowly coming out of COVID-19 restrictions in Australia: Implications for working from home and commuting trips by car and public transport. *Journal of Transport Geography, 88*, 102846. https://doi.org/10.1016/j.jtrangeo.2020.102846

Beck, M.J. & Hensher, D.A. (2022). Working from home in Australia in 2020: Positives, negatives and the potential for future benefits to transport and society. *Transportation Research Part A: Policy and Practice, 158*. 271-284. https://doi.org/10.1016/j.tra.2022.03.016

Bereitschaft, B. & Scheller, D. (2020). How might the COVID-19 pandemic affect 21st century urban design, planning, and development. *Urban Sci., 4*, 4:56. https://doi.org/10.3390/urbansci4040056

Bieser, J. C.T., Vaddadi, B., Kramers, A., Höjer, M., Hilty, L.M. (2021). Impacts of telecommuting on time use and travel: A case study of a neighbourhood telecommuting center in Stockholm. *Travel Behaviour and Society, 23,* 157-165. https://doi.org/10.1016/j.tbs.2020.12.001

Blanc, F. & Scanlon, K. (2022). Sharing a home under lockdown in London. *Buildings and Cities, 3,* 1:118-133. https://doi.org/10.5334/bc.182

Bogason, A., Brynteson, M. & Salonen, H. (2024-a). *Remote work in rural areas: possibilities and uncertainties,* Nordregio Report 2024:7. https://doi.org/10.6027/R2024:71403-2503

Bogason, Á., Rohrer, L., & Brynteson, M. (2024-b). The value of social sustainability in Nordic Tourism Policy. Nordregio Report 2024:18. https://doi.org/10.6027/R2024:18.1403-2503

Bogason, Á., & Slätmo, E. (2023). *Essential Service Provision and Access to Services in Nordic Rural Areas*. Nordregio Policy Brief 2023:1. https://doi.org/10.6027/PB2023:1.2001-3876

Brand, L. & Öhman, B. (2022). *Travel habits before and after the pandemic—a comparison of the Nordic capitals. The mobility study 2022*. WSP. Accessible at: https://www.wsp.com/sv-se/insikter/nya-normer-for-resvanor-och-pendlingstrafiken

Brown, L., Barnes, J., & Hayes, E. (2021). Traffic-related air pollution reduction at UK schools during the COVID-19 lockdown. *Science of the Total Environment, 780,* 146651. https://doi.org/10.1016/j.scitotenv.2021.146651

Budnitz H.; Tranos E.; Chapman L. (2020). Telecommuting and other trips: An English case study. *Journal of Transport Geograpy, 85*, 102713. https://doi.org/10.1016/j.jtrangeo.2020.102713

Budnitz H.; Tranos E.; Chapman L. (2021). The potential for telecommuting to offer sustainable and resilient accessibility. *Urban Form and Accessibility: Social, Economic, and Environment Impacts,* 157-171. https://doi.org/10.1016/B978-0-12-819822-3.00006-7

Bürgin, R., Mayer, H., Kashev, A., & Haug, S. (2021). Digital multilocality: New modes of working between center and periphery in Switzerland. *Journal of Rural Studies, 88*, 83-96. https://doi.org/10.1016/j.jrurstud.2021.09.024

Bürgin, R., Mayer, H., Kashev, A., & Haug, S. (2022-a). Analysing digital multilocality between urban centres and rural peripheries: Combining and integrating digital and analogue research methods. *Raumforschung und Raumordnung, 80,* 3: 279-295. https://doi.org/10.14512/rur.116

Bürgin, R., Mayer, H., Kashev, A., & Haug, S. (2022-b). Far away and yet so close: Urban-rural linkages in the context of multilocal work arrangements. *Regional Studies, Regional Science, 9*, 1:110-131. https://doi.org/10.1080/21681376.2022.2042370

Haunstrup Christensen, T., Bøje-Kovacs, BJ., Stender, M., Bech-Danielsen, C., Nørgaard, H., Jensen, JO., Wiell Nordberg, L., Rudolf Lindberg, M., Mechlenborg, M., Javakhishvili-Larsen, N., Skovgaard Nielsen, R., Grangaard, S. & Bonderup Christensen S. (2024) *Pandemien spor: Hvordan forandrer corona livet i det byggede miljø?,* BUILD report 2024:5. https://vbn.aau.dk/ws/portalfiles/portal/740501572/Pandemiens_spor_01.pdf

Chapple, K. (2023) *Post-Pandemic Downtown Recovery: Downtown is for People*. School of Cities, University of Toronto, https://schoolofcities.utoronto.ca/wp-content/uploads/2023/04/CityResearchInsights_v2.3.pdf

Čok G.; Mrak G.; Breznik J.; Foški M.; Lamovšek A.Z. (2022). Spatial regulation instruments of work at home: The case of Slovenia as a post-transition country. *Sustainability, 14*,7: 4254. https://doi.org/10.3390/su14074254

Coppola, A. (2021). Looking through (and beyond) a truly total territorial fact. Notes on the pandemics and the city. *Territorio, 87,* 7-13. https://doi.org/10.3280/TR2021-097001

Currie G.; Jain T.; Aston L. (2021). Evidence of a post-COVID change in travel behaviour – Self-reported expectations of commuting in Melbourne. *Transportation Research Part A: Policy and Practice, 153.* 218-234. https://doi.org/10.1016/j.tra.2021.09.009

D'Apuzzo M.; Santilli D.; Evangelisti A.; Nicolosi V.; Cappelli G. (2022). *Estimation of pedestrian flows in urban context: A comparison between pre and post pandemic period.* Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics). 13380 LNCS. 484-495. https://doi.org/10.1007/978-3-031-10542-5_33

Delventhal M.J.; Kwon E.; Parkhomenko A. (2023). Work from home and urban structure. *Built Environment, 49,* 3:503-524. https://doi.org/10.2148/benv.49.3.503

Delventhal M.J.; Kwon E.; Parkhomenko A. (2022). JUE Insight: How do cities change when we work from home? *Journal of Urban Economics, 127*, 103331. https://doi.org/10.1016/j.jue.2021.103331

Delventhal M.J.; Kwon E.; Parkhomenko A. (2023). Work from home and urban structure. *Built Environment, 49,* 3:503-524. https://doi.org10.2148/benv.49.3.503

Denham T.; Davern M.; Dodson J.; Li T. (2023). Suburban liveability and post-pandemic workplace transitions. *Urban Policy and Research, 41*, 4:368-386. https://doi.org/10.1080/08111146.2023.2263030

Di Marino, M., Lilius, J., & Lapintie, K. (2018). New forms of multi-local working: Identifying multi-locality in planning as well as public and private organizations' strategies in the Helsinki region. *European Planning Studies, 26*, 10:2015-2035. https://doi.org/10.1080/09654313.2018.1504896

Di Marino, M., Tomaz, E., Henriques, C., & Hossein Chavoshi, S. (2023). The 15-minute city concept and new working spaces: A planning perspective from Oslo and Lisbon. *European Planning Studies, 31*, 3: 598-620. https://doi.org/10.1080/09654313.2022.2082837

Di Marino M., Tiitu M., Rehunen A., Chavoshi H. & Lapintie K. (2024) Multi-locality in the regions of Oslo and Helsinki: A regional planning perspective after the Covid-19 pandemic, *Regional Studies.* https://doi.org/10.1080/00343404.2024.2355290

Dianat A.; Hawkins J.; Habib K.N. (2022). Assessing the impacts of COVID-19 on activity-travel scheduling: A survey in the greater Toronto area. *Transportation Research Part A: Policy and Practice, 162*. 296-314. https://doi.org/10.1016/j.tra.2022.06.008

Duxbury N. (2021). Cultural and creative work in rural and remote areas: An emerging international conversation. *International Journal of Cultural Policy, 27*, 6: 753-767. https://doi.org/10.1080/10286632.2020.1837788

EEA. (2023). *Greenhouse gas emissions from transport in the EU, by transport mode and scenario.* Accessible at: https://www.eea.europa.eu/en/analysis/maps-and-charts/greenhouse-gas-emissions-from-transport-7

Eliasson, K. (2023). *Work from home and big city out-migration before and after the pandemic*. Tillväxtverket. WP 2023:05. Accessible at: https://www.tillvaxtanalys.se/download/18.50008ca118c63645f0abf0a/1702649113871/WP_2023_05_%20Work%20from%20home%20and%20big%20city%20out-migration%20before%20and%20after%20the%20pandemic.pdf

Elldér, E. (2017). Does telework weaken urban structure-travel relationships? *Journal of Transport and Land Use, 10, 2*(187-210). http://dx.doi.org/10.5198/jtlu.2015.719

Elldér, E. (2020). Telework and daily travel: New evidence from Sweden. *Journal of Transport Geography, 86*, 102777. https://doi.org/10.1016/j.jtrangeo.2020.102777

Elldér, E. (2024). Built environment and the evolution of the "15-minute city": A 25-year longitudinal study of 200 Swedish cities. *Cities, 149*, 104942. https://doi.org/10.1016/j.cities.2024.104942

Eurofound. (2020). *Living, working and COVID-19*, COVID-19 series, Publications Office of the European Union, Luxembourg. https://doi.org/10.2806/467608

Eurofound. (2024). *Living and working in Europe 2023.* Publications Office of the European Union, Luxembourg. https://doi.org/10.2806/49049

European Trade Union Federation. (2002). *Framework agreement on telework.* Brussels. Accessible at: https://resourcecentre.etuc.org/sites/default/files/2020-09/Telework%202002_Framework%20Agreement%20-%20EN.pdf

Eurostat. (2023). *Glossary: Information and communication technology (ICT).* Accessible at: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Information_and_communication_technology_(ICT)

Eurostat. (2024-a). *Employed persons working from home as a percentage of the total employment, by sex, age, and professional status (%)* [dataset]. Accessible at: https://ec.europa.eu/eurostat/databrowser/view/lfsa_ehomp__custom_12562832/default/table?lang=en

Eurostat. (2024-b). *Employment by sex, age, and citizenship (1 000)* [dataset]. Accessible at: https://ec.europa.eu/eurostat/databrowser/view/lfsa_egan/default/bar?lang=en&category=labour.employ.lfsa.lfsa_emp

Ezeadichie N.H. (2023). Post-Pandemic Home-Based Work in Cities of the South Lessons from Enugu, Nigeria. *Built Environment, 49*, 3:464-478. https://doi.org/10.2148/benv.49.3.464

Finnish Government. (2023). *A strong and committed Finland: Programme of Prime Minister Petteri Orpo's Government.* 2023:60. Accessible at: https://julkaisut.valtioneuvosto.fi/bitstream/handle/10024/165044/Programme-of-Prime-Minister-Petteri-Orpos-Government-20062023.pdf?sequence=4&isAllowed=y

Florida R.; Rodríguez-Pose A.; Storper M. (2023). Critical commentary: Cities in a post-COVID world. *Urban Studies, 60*, 8: 1509-1531. https://doi.org/10.1177/00420980211018072

Gísladóttir, S., Gústafsdóttir, R., & Víkingsdóttir, A.S. (2024*). 'Ef þú vilt búa úti á landi þá þarft þú að geta haft þetta val' - Reynslan af óstaðbundnum störfum ['If you want to live abroad, you have to be able to have this choice' – The experience of non-local jobs].* Rannsóknamiðstöð Háskólans á Akureyri. Accessible at: https://www.rha.is/static/extras/images/lokaskyrsla_27.09.24_sg161.pdf

Glackin S.; Moglia M. (2022). Working from home in Australian cities as a catalyst for place-making? *Journal of Urbanism*. Https://doi.org/10.1080/17549175.2022.2146157

Glackin S.; Moglia M.; Newton P. (2022). Working from home as a catalyst for urban regeneration. *Sustainability, 14*, 19:12584. https://doi.org/10.3390/su141912584

Gorman-Murray, A. & Bissel, D. (2018). Mobile work, multilocal dwelling and spaces of wellbeing. *Health and Place, 51*, 232-238. https://doi.org/10.1016/j.healthplace.2018.04.004

Government of Iceland. (2021). *Sáttmáli um ríkisstjórnarsamstarf: Framsóknarfokks, Sjálfstæðisfokks og Vinstrihreyfngarinnar - græns framboðs [Agreement on government cooperation: Progressive Party, Independence Party and the Left Movement - Green Party*]. Accessible at: https://www.stjornarradid.is/rikisstjorn/stjornarsattmali/

Granath Hansson, A. & Guðmundsdóttir, H. (2024). *Remote work in smaller towns: Possibilities and uncertainties.* Nordregio Report 2024:5. http://doi.org/10.6027/R2024:51403-2503

Greaves S.; Beck M.; Cobbold A.; Standen C.; Rissel C.; Crane M. (2024). Working from home, active travel, health and wellbeing: Legacies of a pandemic. *Travel Behaviour and Society, 34*, 100707. https://doi.org/10.1016/j.tbs.2023.100707

Gurstein, P. (2023). Revisiting Wired to the World, Chained to the Home: Telework in Daily Life. *Built Environment, 49,* 3:344-354. https://doi.org/10.2148/benv.49.3.344

Hannonen, O. (2020). In search of a digital nomad: Defining the phenomenon. *Information Technology & Tourism, 22,* 335-353. https://doi.org/10.1007/s40558-020-00177-z

HBS Economics & Hanne Shapiro Futures. (2023). *Øgede digitale kompetencer og hjemmearbejde [Increased digital skills and remote work].* https://hbseconomics.com/wp-content/uploads/2024/01/Rapport-v6.pdf

Henrion, V., Bláfoss Ingvardson, J., & Anker Nielsen, O. (2023). The influence of the COVID-19 pandemic on travel behaviour in the Greater Copenhagen Area. *Journal of Advanced Transportation, 2023, 9964912*. https://doi.org/10.1155/2023/9964912

Hidman, E. (2018). *Attractiveness in urban design: A study of the production of attractive places.* [Doctoral thesis, Luleå University of Technology]. https://urn.kb.se/resolve?urn=urn:nbn:se:ltu:diva-70856

Hill, P., Ali, A.D., Narine, L.K., Spielmaker, D., & Schmutz, A. (2020). Evaluating Utah's rural online initiative: Empowering rural communities through remote work. *Journal of Extension, 58.* 5(1-7). https://www.scopus.com/inward/record.uri?eid=2-s2.0-85098719682&partnerID=40&md5=7c921630c3ac4aad06996f7a7a7a822e

Holliss, F. (2021). Working from home. *Built Environment, 47, 3*(367-379). https://doi.org/10.2148/BENV.47.3.367

Hölzel, M. & de Vries, W.T. (2021). Digitalization as a driver for rural development--an indicative description of German coworking space users. *Land, 10, 3*:326. https://doi.org/10.3390/land10030326

Honey-Rosés, J., Anguelovski, I., Chireh, V. K., Daher, C., Konijnendijk van den Bosch, C., Litt, J. S., Nieuwenhuijsen, M. J. (2021). The impact of COVID-19 on public space: an early review of the emerging questions – design, perceptions and inequities. *Cities & Health, 5(sup1),* S263–S279. https://doi.org/10.1080/23748834.2020.1780074

Hu Y.; Barbour W.; Qian K.; Claudel C.; Samaranayake S.; Work D.B. (2023). Estimating road traffic impacts of commute mode shifts. *PLoS ONE, 18*, e0279738. https://doi.org/10.1371/journal.pone.0279738

Huws, U., Korte, W. and S. Robinson (1990) *Tele-work: Towards the Elusive Office*. Wiley: Chichester.

Innviðaráðuneytið. (28 August 2024). *150 milljónir í styrki til að fjölga óstaðbundnum störfum á landsbyggðinni [150 million in grants to increase the number of non-local jobs in the countryside].* Stjórnarráðið. Accessible at: https://www.stjornarradid.is/efst-a-baugi/frettir/stok-frett/2024/08/28/150-milljonir-i-styrki-til-ad-fjolga-ostadbundnum-storfum-a-landsbyggdinni/

Jon, I. (2020). A manifesto for planning after the coronavirus: Towards planning of care. *Planning Theory, 19,* 3:329-345. https://doi.org/10.1177/1473095220931272

Kylili, A., Afxentiou, N., Georgiou, L., Panteli, C., Morsink-Georgalli, P.-Z., Panayidou, A., Papouis, C., & Fokaides, P.A. (2020). The role of Remote Working in smart cities: lessons learnt from COVID-19 pandemic. *Energy Sources, Part A: Recovery, Utilization and Environmental Effects*. https://doi.org/10.1080/15567036.2020.1831108

Kull, M., Refsgaard, K., Sihurjónsdóttir, H., R., Bogason, Á., Wøien Meijer, M., Sánchez Gassen, N. & Turunen, E. (2020). Attractive Rural Municipalities in the Nordic countries: Jobs, people, and reasons for success from 14 Case Studies. Nordregio Report 2020:1. https://doi.org/10.6027/R2020:1.1403-2503

Lapintie, K. (2022). *Planning and the multi-local urban experience: The power of lifescapes.* Routledge: New York. https://doi.org/10.4324/9781003124443

Leishman, C., Aminpour, F., Baker, E., Beer, A., Crowe, A. Goodall, Z., Horton, E., Jacobs, K., Lester, L., Torchia, S., Maclennan, D., Martin, C., Nash, M., Pawson, H., Rowley, S., Stone, w., Ong Vifor, R. (2022). *Australia's COVID-19 pandemic housing policy responses*, AHURI, final report no. 376. http://doi.org/10.18408/ahuri3227801

Li, W., Zhang, E., & Long, Y. (2024). Unveiling fine-scale urban third places for remote work using mobile phone big data. *Sustainable Cities and Society, 103*. https://doi.org/10.1016/j.scs.2024.105258

Lindberg, M.R., Freudendal-Pedersen, M., Hartmann-Petersen, K., Grauslund Kristensen, N., Haunstrup Christensen, T., & Grindsted, T.S. (2022). Pandemic detours or new sustainable pathways? Post-pandemic mobility futures in Danish cities. *Applied Mobilities, 8, 2*(170-186). https://doi.org/10.1080/23800127.2022.2145081

Loo, B.P.Y. & Huang, Z. (2022). Spatio-temporal variations of traffic congestion under work from home (WFH) arrangements: Lessons learned from COVID-19. *Cities, 124,* 103610. https://doi.org/10.1016/j.cities.2022.103610

López-Igual P.; Rodríguez-Modroño P. (2020). Who is teleworking and where from? Exploring the main determinants of telework in Europé. *Sustainability, 12*, 21:1-15. https://doi.org/10.3390/su12218797

Lusoli, A. (2022). Live, work, play: Exploring the rhetorical dimension of remote work attraction incentives programs. *International Journal of Communication, 16,* 5759-5781. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85176395938&partnerID=40&md5=809c3eb499cfb90b357dde101b2ba1c0

Lönnqvist, H. & Salorinne, M. (2022). Etätyötä jatkossakin – mutta kenelle ja missä? Vajaa puolet Helsingin työpaikoista soveltuu hyvin etätyöhön. Helsingin kaupunki, Kaupunkitiedon verkkolehti. Kvartti 1/2022. https://kaupunkitieto.hel.fi/fi/etatyota-jatkossakin-mutta-kenelle-ja-missa-vajaa-puolet-helsingin-tyopaikoista-soveltuu-hyvin

Makimoto, T. & Manners, D. (1997). *Digital nomad*. Joh Wiley & Sons: Chichester. Accessible at: https://archive.org/details/digitalnomad0000maki/page/n4/mode/1up

McCue, D. (2021). *The Possible Impacts of Remote Work on Cities, Neighborhoods, and Households*. Joint Center of Housing Studies, Harvard University. Accessible at: https://www.jchs.harvard.edu/blog/possible-impacts-remote-work-cities-neighborhoods-and-households

Metsäranta, H., Aro, R., Blomqvist, P., Levä, T. Nissinen, A. & Rannanpää, S. (2021). *Etätyön vaikutukset liikenteen kasvihuonekaasupäästöihin [The effects of telecommuting on greenhouse gas emissions from transport].* Valtioneuvoston selvitys 2021:4. Accessible at: https://julkaisut.valtioneuvosto.fi/bitstream/handle/10024/163413/VN%20Selvitys%202021_4.pdf;sequence=1

Mischke, J., Luby, R., Vickery, B., Woetzel, L., White, O., Sanghvi, A., Rhee, J., Fu, A., Palter, R., Dua, A., & Smit, S. (2023). *Empty spaces and hybrid places: The pandemic's lasting impact on real estate.* McKinsey Global Institute. Accessible at: https://www.mckinsey.com/mgi/our-research/empty-spaces-and-hybrid-places

Mistra SAMS. (2023). *Jobbskjuts vill pröva nytt sätt att ta sig till och från jobbet [Job shuttle explores new ways to travel to and from work]*. KTH. Accessible at: https://www.sams.kth.se/se/nyheter/job-shuttle-explores-new-ways-of-getting-to-and-from-work-1.1249385

Moglia M.; Glackin S.; Hopkins J.L. (2022). The working-from-home natural experiment in Sydney, Australia: A theory of planned behaviour perspective. *Sustainability, 14*, 21:13887. https://doi.org/10.3390/su142113997

Mokhtarian, P. (1991) Defining telecommuting. *Transportation Research Record, 1305*(273–281).

Mondragon, J. & Wieland, J. (2022). *Housing demand and remote work*. National Bureau of Economic Research, Working Paper 30041. https://doi.org/10.3386/w30041

Moreno, C., Allam, Z., Chabaud, D., Gall, C., & Pratlong, F. (2021). Introducing the "15- minute city": sustainability, resilience and place identity in future post-pandemic cities. S*mart Cities, 4*, 1:93–111. https://doi.org/10.3390/smartcities4010006

Nash C.; Jarrahi M.H.; Sutherland W. (2021). Nomadic work and location independence: The role of space in shaping the work of digital nomads. *Human Behaviour and Emerging Technologies, 3*, 2:271-282. https://doi.org/10.1002/hbe2.234

Nicolini, G., Antoniella, G., Carotenuto, F., Christen, A., Ciais, P., Feigenwinter, C., Gioli, B., Stagakis, S., Velasco, E.; Vogt R.; Ward H.C.; Barlow J.; Chrysoulakis N.; Duce P.; Graus M.; Helfter C.; Heusinkveld B.; Järvi L.; Karl T.; Marras S.; Masson V.; Matthews B.; Meier F.; Nemitz E.; Sabbatini S.; Scherer D.; Schume H.; Sirca C.; Steeneveld G.-J.; Vagnoli C.; Wang Y.; Zaldei A.; Zheng B.; Papale D. (2022). Direct observations of CO2 emission reductions due to COVID-19 lockdown across European urban districts. *Science of the Total Environment, 830*, 154662. https://doi.org/10.1016/j.scitotenv.2022.154662

Nordic Statistics Database. (2022). *Emissions of greenhouse gases down during the pandemic.* Accessible at: https://www.nordicstatistics.org/news/emissions-of-greenhouse-gases-down-during-the-pandemic/

NordLayer. (2023). *Global Remote Work Index 2023*. Accessible at: https://nordlayer.com/global-remote-work-index/#countries-score-table

Nordström, A. (2023). Stort ras för resandet med Stockholms tunnelbana [Major collapse in travel for Stockholm's metro]. *Dagens Nyheter*. 30 August 2023. https://www.dn.se/sverige/stort-ras-for-resandet-med-stockholms-tunnelbana/

Nordström, A. (2024-a). SL kapar utbudet – i Helsingfors sänks priserna [SL cuts supply – in Helsinki, prices are reduced]. *Dagens Nyheter*. 3 January 2024. https://www.dn.se/sverige/sl-kapar-utbudet-i-helsingfors-sanks-priserna/

Nordström, A. (2024-b). Kollektivtrafiken blir billigare i Helsingfors – trots färre passagerare [Public transport gets cheaper in Helsinki – despite fewer passengers]. *Dagens Nyheter*. 3 January 2024. https://www.dn.se/sverige/kollektivtrafiken-blir-billigare-i-helsingfors-trots-farre-passagerare/

Nordström, A. (2024-c). Hög andel distansarbete ligger bakom raset i SL-trafiken [High proportion or remote work is behind the decline in SL traffic]. *Dagens Nyheter*. 19 June 2024. https://www.dn.se/sverige/hog-andel-distansarbete-ligger-bakom-raset-i-sl-trafiken/

OECD. (2021). *Implications of remote working adoption on place-based policies: A focus on G7 countries*. OECD Regional Development Studies. https://doi.org/10.1787/fa744789-en

OECD. (2023). *Expanding the doughnut? How the geography of housing demand has changed since the rise of remote work with COVID-19.* OECD Regional Development Papers. https://doi.org/10.1787/267a6231-en

Orman, E., McGuirk, P., & Warren A. (2024). Emergent time-spaces of working from home: Lessons from pandemic geographies. *Geographical Research, 62, 1*(28-44). https://doi.org/10.1111/1745-5871.12602

Ormstrup Vestergård, L. (2022) *Strengthening Nordic cooperation on remote work and multilocality*, Nordregio policy brief 2022:5. http://doi.org/10.6027/PB2022:5.2001-3876

Paul, J. (2022). Work from home behaviours among U.S. urban and rural residents. *Journal of Rural Studies, 96,* 101-111. https://doi.org/10.1016/j.jrurstud.2022.10.017

Penje, O. (2022). *Access to fixed broadband at minimum download speed 100 Mpbs* [map]. Nordregio. Accessible at: https://nordregio.org/maps/access-to-fixed-broadband-at-minimum-download-speed-100-mpbs/

Pozoukidou, G. & Chatziyiannaki, Z. (2021). 15-minute city: Decomposing the new urban planning eutopia. *Sustainability, 13, 2*:928. https://doi.org/10.3390/su13020928

Rachmawati, R., Choirunnisa, U., Pambagyo, Z.A., Syarafina, Y.A., & Ghiffari, R.A. (2021). Work from home and the use of ICT during the COVID-19 pandemic in Indonesia and its impact on cities in the future. *Sustainability, 13, 12*:6760. https://doi.org/10.3390/su13126760

Randall, L., Ormstrup Vestergård, L., Rohrer, L., Huynh, D., Lidmo, J., Stjernberg, M., Weber, R., Rut Sigurjonsdottir, H., Guðmundsdóttir, H., & Kivi, L. (2022-a). *Remote work: Effects on Nordic people, places and planning 2021-2024*. Nordregio Report 2022:3. http://doi.org/10.6027/R2022:3.1403-2503

Randall, L., Jensen, T., & Vasilevskaya, A. (2022-b). *Local and regional experiences of remote work and multilocality.* Nordregio report 2022:4. http://doi.org/10.6027/R2022:4.1403-2503

Regional Council of North Savo. (27 May 2024). *Monipaikkaisuus-hankkeeseen haetaan mukaan 5–7 kuntaa [5-7 municipalities are invited to participate in the multi-locality project].* https://www.pohjois-savo.fi/viestinta/uutiset/monipaikkaisuus-hankkeeseen-haetaan-mukaan-5-7-kuntaa.html

Reilly, P.J. & Tawfik, A.M. (2022). *Do Telecommuters Make Fewer Trips? An Analysis of Telecommuting Travel Behavior in Urban and Rural Communities in the USA*. International Conference on Transportation and Development 2022: Application of Emerging Technologies - Selected Papers from the Proceedings of the International Conference on Transportation and Development 2022. 64-71. https://doi.org/10.1061/9780784484340.006

RHA. (2024). *Óstaðbundin störf Staða og framtíðarhorfur 2023 [Non-local jobs: Sttus and future prospects 2023].* Accessible at: https://www.rha.is/static/extras/images/ostadbundin-storf-skyrsla_lokautgafa157.pdf

Rissanen, P. (2021). *Promotion of multi-location working*. Ministry of Finance. https://vm.fi/en/promotion-of-multi-location-working

Ruter. (2024). *Cheaper 30- and 365-day tickets*. Accessible at: https://ruter.no/en/news/cheaper-30-day-ticket/

Ruter. (n.d.). *Reis – single tickets with a discount*. Accessible at: https://ruter.no/en/buying-tickets/reis/

Salama, A.M. (2023), "Coronavirus questions that will not go away: interrogating urban and socio-spatial implications of COVID-19 measures", *Emerald Open Research, 1, 5*. https://doi.org/10.1108/EOR-05-2023-0006

Sanchez Gassen, N. & Stjernberg, M. (2024). Population change beyond the pandemic, in G. Norlén, T. Heleniak, & K. Refsgaard (Eds.) *State of the Nordic Region 2024*. Nordregio. http://doi.org/10.6027/R2024:13.1403-2503

Sandell, M. (26 October 2022). *Etätyö tuli jäädäkseen – asiantuntija: "Vanhaan maailmaan, missä oltiin aina konttorilla, ei palata" [Remote work is here to stay – expert: "We won't go back to the old world where we were always at the office].* YLE. Accessible at: https://yle.fi/a/74-20001748

Schmidt-Thome, K. & Lilius, J. (2023). Smart shrinkage and multi-locality—The appeal of hope, illustrated through Puolanka, a rural municipality in Finland. *Urban, Planning, and Transport Research, 11, 1*. https://doi.org/10.1080/21650020.2023.2165140

Sepanta F.; O'Brien W. (2023). Review and exploration of relationships between domains impacted by telework: A glimpse into the energy and sustainability considerations, COVID-19 implications, and future research. *Renewable and Sustainable Energy Reviews, 183,* 113464. https://doi.org/10.1016/j.rser.2023.113464

Shearston, J.A., Martinez, M.E., Nunez, Y., Hilpert, M. (2021). Social-distancing fatigue: Evidence from real-time crowd-sourced traffic data. *Science of the Total Environment, 792*, 148336. https://doi.org/10.1016/j.scitotenv.2021.148336

Slätmo, E., Ormstrup Vestergård, L., Lidmo, J., & Turunen, E. (2019). *Urban-rural flows from seasonal tourism and second homes: Planning challenges and strategies in the Nordics*. Nordregio Report 2019:13. https://doi.org/10.6027/R2019:13.1403-2503

Skandul, E. (2022). *Remote work is gutting down towns, forcing leaders to reinvent the post-pandemic city.* Business Insider, 22 December 2022. Accessible at: https://www.businessinsider.com/remote-work-gutted-city-downtowns-office-real-estate-apocalypse-2022-12

Sohane, N. & Bhan, G. (2023). Thinking spatially about home-based work and workhomes. *Built Environment, 49, 3*(355-369). https://doi.org/10.2148/benv.49.3.355

Sostero, M., Bisello, M., & Fernández-Macías, E. (2024). *Telework by region and the impact of COVID-19 pandemic: An occupational analysis*. JRC Working Papers on Labour, Education, and Technology 2024:02. European Commission: Seville. Accessible at: https://www.eurofound.europa.eu/en/publications/eurofound-paper/2024/telework-region-and-impact-covid-19-pandemic-occupational

Srivastava, S. (2022) *Flexible Work Has Reshaped Downtown San Francisco. How Will the City Embrace the New Normal?* SPUR, https://www.spur.org/news/2022-11-22/flexible-work-has-reshaped-downtown-san-francisco-how-will-city-embrace-new-normal

Syssner, J. (2022). What can geographers do for shrinking geographies? *Fennia 200*(2), 98–119. https://doi.org/10.11143/fennia.120536

Statista. (2023-a). *Share of respondents using a bicycle as their primary mode of transport for private trips and errands before and after the pandemic in Nordic capitals as of 2022*. Accessible at: https://www.statista.com/statistics/1426589/pre-and-post-pandemic-private-trips-by-bike-in-nordic-capitals/

Statista. (2023-b). *Share of respondents using public transport as their primary mode of transport for private trips and errands before and after the pandemic in Nordic capitals as of 2022*. Accessible at: https://www.statista.com/statistics/1426562/pre-and-post-pandemic-private-trips-by-public-transport-in-nordic-capitals/

Statistics Finland. (n.d.). *Definition: Distansarbete*. Accessible at: https://www.stat.fi/meta/kas/etatyo_sv.html

Statistics Sweden. (2024). *Fredagsdiagram vecka 18 [Friday diagram, week 18]*. Accessible at: https://www.scb.se/contentassets/592dcafe2a3b4e65b8e5434796bab0af/fredagsdiagram_arbetsmarknad_2024-10-11.pdf

Stjernberg, M, Vasilevskaya, A., & Penje, O. (2024) *Towards a grid-based Nordic territorial typology: A new tool for analysis across the urban-rural continuum*. Nordregio report 2024: 9. https://doi.org/10.6027/R2024:91403-2503

Sweet, M. & Scott, D.M. (2024). What might working from home mean for the geography of work and commuting in the Greater Golden Horseshoe, Canada? *Urban Studies, 61,* 3(567-588). https://doi.org/10.1177/00420980231186499

Thulin, E., Vilhelmson, B., & Brundin, L. (2023). Telework after confinement: Interrogating the spatiotemporalities of home-based work life. *Journal of Transport Geography, 113*, 103740. https://doi.org/10.1016/j.jtrangeo.2023.103740

Tønnesson, M. (2021). Movers from the city in the first year of Covid. *Nordic Journal of Urban Studies, 1,* 2: 131-147. https://doi.org/10.18261/issn.2703-8866-2021-02-03

Vaddadi, B., Ringenson, T., Sjöman, M., Hesselgren, M. & Kramers, A. (2022). Do they work? Exporing possible potentials of neighbourhood Telecommuting centres in supporting sustainable travel. *Travel Behaviour and Society, 29,* 34–41. https://doi.org/10.1016/j.tbs.2022.05.003

Venter, Z.S., Barton, D.N., Gundersen, V., Figari, H., & Nowell, M. (2020). Urban nature in a time of crisis: Recreational use of green space increases during the COVID-19 outbreak in Oslo, Norway. *Environmental Research Letters, 15*, *10*. https://doi.org/10.1088/1748-9326/abb396

Venter, Z.S., Barton, D.N., Gundersen, V., Figari, H., & Nowell, M. (2021). Back to nature: Norwegians sustain increased recreational use of urban green space months after the COVID-19 outbreak. *Landscape and Urban Planning, 214*, 104175. https://doi.org/10.1016/j.landurbplan.2021.104175

Vogiazides, L. & Kawalerowicz, J. (2022). Internal migration in the time of Covid: Who moves out of the inner city of Stockholm and where do they go? *Population, Space, and Place, 29,* 4: https://doi.org/10.1002/psp.2641

Wagemann, E., Maynard, V., & Simons, B. (2024). Housing and home-based work: Considerations for development and humanitarian contexts. *Cities, 147*, 104833. https://doi.org/10.1016/j.cities.2024.104833

Weichhart, P. (2015). Residential Multi-Locality: In Search of Theoretical Frameworks. *Tijdschrift voor Economische en Sociale Geografie*, Vol. 106(4), 378–391. https://doi.org/10.1111/tesg.12156

Wetherell, S. (2017). *Richard Florida is sorry*. Jacobin. Accessible at: https://jacobin.com/2017/08/new-urban-crisis-review-richard-florida

Willberg, E., Järv, O., Väisänen, T., & Toivonen, T. (2021). Escaping the cities during the COVID-19 crisis: Mobile phone data to trace mobility in Finland. *International Journal of Geo-Information, 10,* 103. https://doi.org/10.3390/ijgi10020103

Woldorff, R.A. & Litchfield, R.C. (2021). Dig*ital nomads: In search of freedom, community, and meaningful work in a new economy*. Oxford University Press. https://doi.org/10.1093/oso/9780190931780.001.0001

WSP. (2023). *Adjusting to the new normal: Data-driven mobility insight post-pandemic in Stockholm.* Accessible at: https://www.wsp.com/sv-se/insikter/det-nya-normala-ar-har-for-att-stanna

Yum, S. (2021). Differences between telecommuters and commuters: The case of the Twin Cities metropolitan area. *Transportation Planning and Technology, 44, 3*(303-318). https://doi.org/10.1080/03081060.2021.1883229

Zenkteler, M., Darchen, S., Mateo-Babiano, I., & Baffour, B. (2019). Home-based work in cities: In search of an appropriate urban planning response. *Futures, 135*, 102494. https://doi.org/10.1016/j.futures.2019.102494

Zenkteler, M., Hearn, G., Foth, M., & McCutcheon, M. (2022-a). Distribution of home-based work in cities: Implications for planning and policy in the pandemic era. *Journal of Urban and Regional Analysis, 14, 2*(187-210).https://doi.org/10.37043/JURA.2022.14.2.2

Zenkteler, M., Foth, M., & Hearn, G. (2022-b). Lifestyle cities, remote work and implication for urban planning. *Australian Planner, 58,* 25-35. https://doi.org/10.1080/07293682.2022.2096086

Zenkteler, M., Leonard, F.R., Cushing, D., Hearn, G., Foth, M., Hansen, V.G., & Caldwell, G. (2023). Implications of Working from home for the design of health work environments in the post-pandemic city. *Built Environment, 49, 3* (423-439). https://doi.org/10.2148/benv.49.3.423

Zhang, Y., Han, H., Fan, C., & Su, X. (2023). How low-income populations work determines carbon footprint reduction from remote work. *Journal of Cleaner Production, 428*. https://doi.org/10.1016/j.jclepro.2023.139319

Zhang, Y., Li, C., Song, Y., Chai, Y., & Fan, Y. (2022). Personalizing the dichotomy of fixed and flexible activities in everyday life: deriving prism anchors from GPS-enabled survey data. *Transportation*. https://doi.org/10.1007/s11116-022-10352-2

Zheng, Z., Zhou, S., & Deng, X. (2022). The spatially heterogeneous and double-edged effect of the built environment on commuting distance: Home-based and work-based perspectives. *PLoS ONE, 17,* e0262727. https://doi.org/10.1371/journal.pone.0262727

ÖMS. (2023). *Hur påverkar ökat distansarbete kommunernas samhällsplanering? En studie av kommunerna i östra Mellansverige [How does increased remote work affect municipal planning? A study of municipalities in the Eastern Central Sweden]*. Region Stockholm, RS 2023-0133. https://regionuppsala.se/globalassets/samverkanswebben/regional-utveckling/distansarbetets-paverkan-i-ostra-mellansverige-tga.pdf

Appendix: Summaries of previous project reports

Remote work: Effects on Nordic people, places, and planning

This report is the first outcome of the project Remote work: Effects on Nordic people, places and planning 2021-2024. Its primary aim is to provide a broad understanding of the current situation (May 2022) regarding remote work in the Nordic countries, particularly with relation to potential urban and regional development effects. It provides insight into emerging trends in the countries based on Nordic research, statistical data, and stakeholder interviews.

Further, it considers the national level policy frameworks that "set the stage" for the development of remote work practices in the Nordic countries.

Our findings suggest that higher levels of remote work are likely to be maintained in the long-term in all Nordic countries, at least to some degree. Importantly however, there is little evidence to support a large-scale shift towards a "remote first" mindset among Nordic workers or workplaces. This means that, for the majority of workers and workplaces, the most likely scenario will be some form of hybrid arrangement. The effectiveness of these arrangements in promoting wellbeing and quality of life for workers, as well as the extent to which collaboration and innovation thrive under hybrid conditions, will both be key factors in determining whether remote work remains more common in the long term.

From a spatial perspective, the patterns of migration, mobility and multilocality observed in the Nordic countries during the pandemic support the idea that increased remote work will have implications for planners in Nordic cities, regions, and rural areas. Daily commuting became less common and internal migration patterns suggest that this has been accompanied by a willingness to travel further. Some rural municipalities also appear to have become more desirable. This is evidenced by the slowing, or even reversal, of trends towards population decline and also by increased demand for and use of second homes. If these trends continue, they could present substantial opportunities for positive development in some rural areas as well as for smaller cities in proximity to larger urban centres.

Although the experience of remote work during the pandemic has been relatively similar in all Nordic countries, the future direction varies somewhat in light of the pre-existing policy context in each country. In Iceland, the pandemic has given momentum to the existing regional policy priority of encouraging state jobs without specified placement. Similarly, in Finland, increased remote work fits well with the pre-pandemic focus on combating depopulation and ageing in rural municipalities through increased multilocality. In Sweden, Norway, and Denmark, the links between regional policy and remote work are less clear. At the same time, the preconditions for increased remote work are evident in all countries and the potential regional development benefits align well with broader regional policy goals.

Increased remote work in the Nordic Region should be considered in the context of the Nordic Prime Ministers vision to make the Nordic Region the most sustainable and integrated in the world by 2030 (Norden, n.d.). From a social sustainability perspective, it is important to acknowledge that most workers do not have the possibility to work remotely and, even for those who do, the advantages and disadvantages will differ between groups. From a spatial perspective, getting the most out of the opportunities increased remote work offers for smaller cities and rural areas will require careful planning that balances the needs of newcomers, temporary residents, and the existing population. Economic sustainability is an important consideration here, particularly in the case where a person's life and work are split between two or more municipalities. From an environmental sustainability perspective, it is important not to assume that remote work is inherently coupled with favourable environmental outcomes. While it may reduce the need for travel, the lifestyle choices remote work enables may be accompanied by negative environmental impacts such as increased resource use and travelling longer distances through less environmentally friendly means.

Overall, it appears that the experiences of remote work during the pandemic have been fairly similar in the five Nordic countries. Similar trends are also evident, though to differing degrees, with respect to the effects on different places throughout the region. The most notable differences between the countries relate to the regional policy responses, and it is perhaps here that the greatest potential for Nordic added value emerges. The next stages of the project will dig deeper into the ways in which these similarities and differences play out at the local and regional levels as we continue to explore the effect of remote work on Nordic people, places, and planning.

The report was written by Linda Randall, Louise Ormstrup Vestergård, Lisa Rohrer, Diana Huynh, Johannes Lidmo, Mats Stjernberg, Ryan Weber, Hjördis Rut Sigurjonsdottir, Hjördis Guðmundsdóttir and Linda Kivi in 2022. The full report can be accessed at: Remote work: Effects on Nordic people, places and planning 2021-2024 | Nordregio

Local and regional experiences of remote work and multilocality

This report is the second outcome of the project Remote work: Effects on Nordic people, places and planning 2021-2024. Its primary aim is to provide a deeper understanding of how the spatial trends associated with increased remote work are affecting Nordic municipalities and regions. It explores the usefulness and reliability of available statistical data for understanding the effects of increased remote work at the regional and local level.

Further, it draws directly on the experiences of regional and local stakeholders to understand the effects, challenges and opportunities, and planning responses associated with increased remote work.

Our findings point to substantial challenges when it comes to understanding the effects of increased remote work on regions and municipalities using statistical data alone. For example, internal migration data shows that people were more likely to move from the capital areas during the pandemic. Unfortunately, however, this data sheds little light on the motivation for these moves and there is no way of identifying the degree to which opportunities for increased remote work was a driver.

When it comes to understanding changes to the temporary population, so-called activity data can provide useful insights. Our analysis of Google Mobility Data from two sub-regions in the popular second home region of Etelä-Savo, Finland, clearly highlights the seasonal changes in activity level. When combined with other types of data and local knowledge, this could have great potential as a way of understanding fluctuations in activity levels in a region. One major limitation in our case, however, was the lack of a seasonally representative pre-pandemic baseline. As a result, it is difficult to draw any conclusions regarding potential longer-term effects of the pandemic on the temporary population in the region based on this data alone.

Surveying regional and local actors about their experiences is one way of gaining a deeper and more nuanced understanding of the implications of remote work for local development and planning. Overall, survey participants were more likely to report positive changes in their permanent or temporary populations (i.e., more people moving in or spending time in the municipality / region). This was generally seen in a positive light, generating opportunities for long-term economic growth, maintaining public services, and revitalising the community. Participants also

reported challenges, particularly related to increased housing demand and pressure on public services and infrastructure. Though increased remote work was clearly seen as playing a role in the changes observed, it was not the only factor at play and there was a degree of uncertainty evident about what the future holds. Despite this, many respondents reported proactive planning responses to supporting or promoting increased remote work in their municipalities and regions.

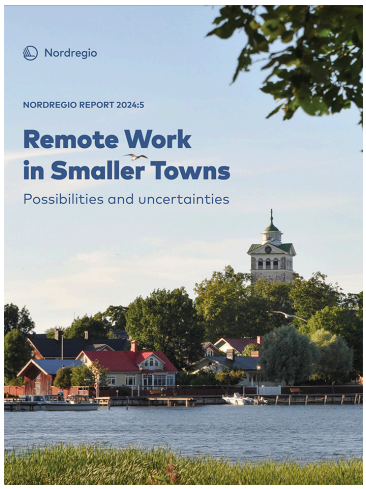
This report is the second outcome of the project Remote work: Effects on Nordic people, places and planning 2021-2024. Its primary aim is to provide a deeper understanding of how the spatial trends associated with increased remote work are affecting Nordic municipalities and regions. It explores the usefulness and reliability of available statistical data for understanding the effects of increased remote work at the regional and local level. Further, it draws directly on the experiences of regional and local stakeholders to understand the effects, challenges and opportunities, and planning responses associated with increased remote work.

Our findings point to substantial challenges when it comes to understanding the effects of increased remote work on regions and municipalities using statistical data alone. For example, internal migration data shows that people were more likely to move from the capital areas during the pandemic. Unfortunately, however, this data sheds little light on the motivation for these moves and there is no way of identifying the degree to which opportunities for increased remote work was a driver.

Overall, this second report supports the central finding of the first – that there is great potential for Nordic cooperation in developing strategies to address the challenges and make the most of the opportunities associated with increased remote work for Nordic regions and municipalities. For national policy makers, understanding the nature of the changes that have occurred since the pandemic, and the degree to which these changes relate to increased remote work, is a real challenge. At the local and regional level, the nature of the challenges and opportunities experienced appears to be fairly similar between the countries. Collaboration at both levels could be incredibly valuable in strengthening both national and local efforts to make the most of the opportunities increased remote work offers for Nordic people, places, and planning in the long term.

The project Remote work: Effects on Nordic people, places and planning 2021-2024 was commissioned by stakeholders from the Nordic Co-operation Programme for Regional Development and Planning 2021-2024. This report received additional support from the Finnish Chairmanship of the Nordic Council of Ministers under the direction of the Nordic Ministers for Regional Development.

The report was written by Linda Randall, Thomas Jensen and Anna Vasilevskaya in 2022. The full report can be accessed at: Local and regional experiences of remote work and multilocality | Nordregio



Remote work in smaller towns: Possibilities and uncertainties

This study set out to investigate if remote work opportunities post-pandemic has enlarged the area around the Nordic capitals that profit from their labour markets. However, case studies on five smaller towns located an hour and a half away from the capitals found little proof that remote work opportunities have made these towns more attractive.

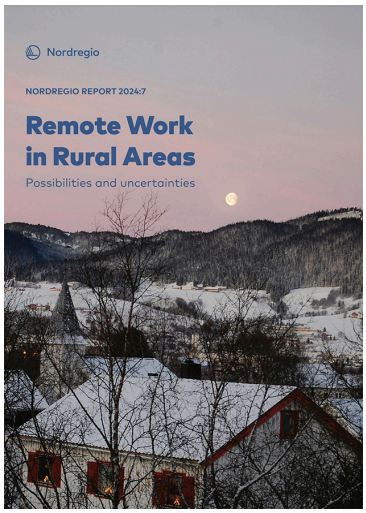
Although remote work is perceived as the new normal, municipalities reported that there are no formal strategies related to remote work and that they are uncertain as to what remote work opportunities will bring long term. A better understanding of who remote workers are and what specific needs they may have would help shape local strategies and policies. All in all, more time is needed to capture which remote work patterns will prevail long term and how these patterns might affect smaller towns near capital cities.

The study points to the centrality of urban attractiveness. Although municipalities did not have specific strategies for remote workers, remote workers were seen as part of a larger population of potential inhabitants. Interestingly, all the five towns seem to apply the same recipe to improve urban attractiveness although they have different points of departure. It is noted that features deemed to be central to attractivity do not differ dramatically between remote workers and other types of inhabitants. However, physical and digital infrastructure and housing potentially bear more weight in remote workers' relocation decisions. Co-working spaces were, however, not deemed to have greater importance to remote workers in the five towns. This might be related to the wide-spread practice of hybrid work and preferences for working from home. The potential dominance of hybrid work, rather than pure remote work, also indicates that the zone around larger towns that has the potential to attract hybrid workers will have its limits and be strongly linked to time and ease of travel.

One potentially important result of the study is that in these five towns, remote or hybrid work is seen as a two-way exchange: it can attract new permanent or seasonal populations, but it can also be an opportunity to recruit highly qualified personnel not living in the town. Although, such arrangements do not lead to population increase, they assist in maintaining important functions and services that benefit the permanent population and hence make towns more attractive.

Research on remote work and its effects after the pandemic has only recently started and is very much a work in progress. It would be useful to follow the development in different locations over time in order to better understand its potential and limitations. More knowledge on the extent and characteristics of remote work in the local context can give input to what policy and planning measures are important to attract new populations and visitors. The report ends with some suggestions of future research.

The report was written by Anna Granath Hansson and Hjördís Guðmundsdóttir in 2024. The full report can be accessed at: Remote Work in Smaller Towns: Possibilities and uncertainties | Nordregio



Remote work in rural areas: Possibilities and uncertainties

This study delves into the increasing relevance of remote work in fostering resilient municipalities and regions in rural and remote areas of the Nordic countries. By conducting policy reviews and interviews with planners and practitioners, the study examines ongoing efforts to harness remote work as a catalyst for rural development.

Emerging from the research is that hybrid work, mainly where employees split their time between home and office, is becoming the new norm in the Nordic regions. The hybrid work format's acceptance and implementation may vary and is in fact largely influenced by individual employers and employees perceptions. Notably, most public authorities do not have a formal remote work policy, relying instead on frameworks that were already in place before or developed during the COVID-19 pandemic. These arrangements often reflect the needs and wishes of individual employers and employees, emphasising a commitment to work-life balance and employee satisfaction.

Municipalities are however acknowledging remote work's potential in retaining and attracting people, particularly those with deep roots in the community, and in recruiting skilled workers needed for economic vitality. Politically, there is a drive across the Nordic region to amplify these opportunities and utilise for regional and rural development.

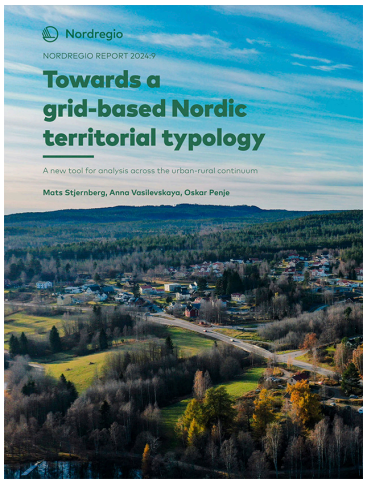
In some ways, regional and rural areas maintain more traditional, and a larger share of employment is still considered on-site jobs. However, various initiatives, including the creation of co-working spaces, spearheaded by private enterprises and public authorities alike, are bringing remote work to the forefront of rural development. Critical to this movement is the improvement of digital infrastructure without which the progress of remote work would be significantly hindered.

The study shows that this modern working trend of remote and hybrid working formats seems to be more than a mere solution to the crisis during the pandemic; it's a shift towards long-term regional development, with municipalities in rural areas engaging in providing the infrastructure and an environment conducive to such a transformation. Interestingly, it was found that there are few official remote work policies in place. Rather remote work has further been integrated into existing policies and procedures. Therefore, municipalities and regions are mainly focusing on their overall attractiveness in their pursuit of attracting remote workers, e.g.,

quality of life, affordable housing, infrastructure, environmental sustainability, social inclusivity, cultural and recreational amenities, public safety as well as physical and natural environment. There are however also some challenges to be faced such as legislative bottlenecks, ensuring adequate public services, and negotiating issues around taxation related to remote working.

In essence, the research concludes that remote work can act as a strategy for sustainable regional development, potentially enriching communities with new skill sets, innovating business environments, and improving public services. This is something that is shared across the case study areas in the research. For municipalities in the Nordic regions, there is a general agreement that this new development entails a significant opportunity to use remote work to combat out-migration and enhance the overall quality of life. To leverage the full potential of this trend, there is a need for investment in digital infrastructure, the creation of more supportive work environments, and fostering regional attractiveness for both locals and potential newcomers. When integrated into broader strategies, remote work promises a more vibrant and sustainable future for these regions.

The report was written by Ágúst Bogason, Maja Brynteson and Hilma Salonen in 2024. The full report can be accessed at: Remote Work in Rural Areas: Possibilities and uncertainties | Nordregio



Towards a grid-based Nordic territorial typology

This report presents the grid-based Nordic urban–rural typology, which was developed as a new analytical tool for studying different types of spatial phenomena across Nordic territories. In this study this meant developing a typology that classifies all Nordic territories into seven different typology classes based on different degrees of urbanity and rurality.

A key starting point for this work was the need for a territorial typology that would help enrich and provide new understanding of different types of urban and rural areas across the Nordic countries and shed light on how they are developing.

This report first presents how the typology was created, including the rationale behind the typology, key considerations at different stages of the work, and the main operational steps taken. The main purpose was to create a new territorial typology, to which different types of data could be combined, thus helping to provide a more nuanced and fine-grained understanding of territorial differences across the Nordic countries. Several key principles were specified early in the work. These include that the typology should be created at grid-level (1 x 1 km) as this allows identifying the characteristics of different types of areas at a very detailed territorial level. Another key decision was to create the typology mainly using open-source data and following a replicable method, to make any possible future updates to the typology easier and less costly. For the development of the Nordic typology, the Finnish grid-based urban–rural classification (*Kaupunki-maaseutuluokitus)* was the main source of inspiration.

This Nordic typology and population data at grid level (linked to the typology) is then used as an analytical lens for studying territorial differences, settlement pattens and demographic change dynamics in the five Nordic countries. According to the typology, the Nordic countries are predominantly rural when considering how their land areas are classified. However, an examination of settlement patterns according to the Nordic typology shows that the settlements are rather unevenly distributed in all the Nordic countries, and the majority of the population live relatively concentrated in areas that are classified as urban. In general, the population is largely concentrated in coastal areas and along waterways, where the major urban regions are found, reflecting historical patterns and features of physical geography. The Nordic typology is also used to examine what types of population change dynamics occurred in the Nordic countries during the period

2008–2022. The analysis shows that urbanisation has been a general trend during the past couple of decades, with the largest population growth occurring in the typology classes inner urban and outer urban. A relatively noticeable increase in population is also evident in peri-urban areas, suggesting suburbanisation and that intermediate areas located on the urban fringes have increasingly attracted new residents. In rural areas, the general trend shows that depopulation has occurred in many rural localities, but different types of rural areas have developed quite differently. Based on the analysis, rural areas that are in the vicinity of cities and towns appear to have become more attractive places for people to settle, while sparsely populated rural areas seem to be less favourably placed and have generally witnessed population decrease.

This report shows how this typology and more fine-grained data can help reveal territorial differences that cannot be observed with more general statistics and data. The grid-based Nordic typology shows that many municipalities are at the same time both urban, intermediate, and rural, and in many cases these different categories seem to be undergoing quite different types of development. While the Nordic urban–rural typology is used in this study to examine settlement patterns and population change dynamics, it should be stressed that the typology is also well-suited to be used in combination with other types of data and as an analytical framework for studying also other types of spatial phenomena across the urban–rural continuum.

The Nordic urban-rural typology[27] is a free tool that can be used for analysis of settlement patterns and trends as well as other phenomena in different types of areas, ranging from the sparsest rural areas to the densest urban areas, across the Nordic countries.

The report was written by Mats Stjernberg, Anna Vasilevskaya and Oskar Penje in 2024. Data, maps, graphs and figures by Anna Vasilevskaya, Jouko Järnefelt and Esa Östring. The full report can be accessed at: Towards a grid-based Nordic territorial typology | Nordregio

27. https://nordictypology.ubihub.io/

About this publication

Planning around remote work: Latest research and implications for planners and policymakers

Authors: Lisa Rohrer and Anna Granath Hansson
Contributors: Ágúst Bogason and Mats Stjernberg

Nordregio report 2024:24
ISBN (online): 978-91-8001-127-3
ISBN (PDF): 978-91-8001-130-3
ISSN: 1403-2503
DOI: http://doi.org/10.6027/R2024:24.1403-2503

Cover Photo: Nick Night / unsplash.com

Nordregio

Nordregio is a leading Nordic and European research centre for regional development and planning, established by the Nordic Council of Ministers in 1997. We conduct solution-oriented and applied research, addressing current issues from both a research perspective and the viewpoint of policymakers and practitioners. Operating at the international, national, regional and local levels, Nordregio's research covers a wide geographic scope, emphasising the Nordic and Baltic Sea Regions, Europe and the Arctic.

Nordregio
Holmamiralens Väg 10
Skeppsholmen
Stockholm, Sweden
www.nordregio.org