# Unlocking the potential of teleworking to address labour shortages in the Ems-Achse, Germany

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In the north-western corner of Germany, the Ems-Achse, a rural region, has witnessed a decade of economic growth. This growth has exacerbated labour shortages, primarily due to an aging population and the outmigration of youth. Acknowledging the potential of teleworking, regional stakeholders aim to explore its capacity to address labour gaps and attract a broader talent pool. This paper delves into three main dimensions for harnessing teleworking's potential: activating individuals who are not currently seeking employment, expanding the talent pool to include surrounding areas, and attracting workers from congested urban areas or overseas. To facilitate successful teleworking, the region can bolster its high-speed internet infrastructure, promote a culture of flexibility in management and nurture digital skills. Additionally, increasing opportunities for higher education, improving public transportation and enhancing international accessibility could help profile the Ems-Achse as an attractive hub for teleworkers.

**Corrigendum**
An early version of this report from 30 October 2023 was revised:

**Page 3:** Added last paragraph with acknowledgements and the respective logos.

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# Executive summary

**The Ems-Achse is a region in north-western Germany on the border with the Netherlands, where local public authorities, companies and educational institutions actively collaborate to foster economic growth.** Part of the federal state of Lower Saxony, the region comprises the districts of Aurich, Emsland, Grafschaft Bentheim, Leer and Wittmund, as well as the district-free city of Emden. Since 2006, co-operation on economic policy matters has been facilitated through a registered association known as Wachstumsregion Ems-Achse e.V., with the goal of enhancing its reputation as a growth region. The association has over 800 members, including companies, municipalities, chambers of commerce and local education providers.

**A largely rural region with a relatively modest presence of the tertiary sector, the Ems-Achse, despite a decade of economic growth in the 2010s, exhibits room for improvement in its basic labour market indicators.** According to an OECD classification, the six districts of the Ems-Achse are categorised as rural or intermediate regions, with an average population density 31.8% below the national average. Bremen, the nearest metropolitan area, is situated more than a two-hour drive away from the region's centre. The regional economy is diversified across industries, although the services sector is smaller compared to the national average, accounting for two out of every three jobs in the region (versus three out of four nationwide). Between 2010 and 2019, GDP per capita in the Ems-Achse surpassed that of other rural or intermediate regions in Germany and exhibited faster growth. However, labour participation rates, particularly among women, lag five percentage points behind similar regions. Additionally, although unemployment has shown improvement since 2010, it remains higher than the national average.

**The Ems-Achse also faces challenges in attracting and retaining skilled workers in the local labour market, which is currently experiencing high demand.** In the southern districts of the Ems-Achse, the ratio of job seekers to open vacancies is less than half the national average and one of the lowest reported among German regions. In the northern districts, this ratio aligns with Germany at large, where labour gaps are widely perceived as a major issue. The share of young new residents among all newcomers, and the population share of people aged 15-24, have both declined across the region between 2010 and 2021. The decreasing proportion of people of student age may be related to the limited opportunities to attain higher education degrees in the region, a situation that contrasts with the growing demand for advanced qualifications. A lower representation of foreign-born residents compared to national averages also suggests potential opportunities to attract talent. However, the level and share of the population aged 25-34, beyond the typical student age, has increased to levels above those in other similar regions and nationwide, suggesting that the region can appeal to young talent and families.

**Encouraging local employers to increase the uptake of teleworking and hybrid arrangements that combine work from home and office work can create new opportunities for the region.** Teleworking has become a widely adopted practice among firms in OECD countries. The ability of employers in the Ems-Achse to offer this option can play an important role in retaining and attracting talent, especially as younger workers have a strong preference for it. In addition, teleworking can enhance labour productivity when combined with in-person office work and supported by remote team management tools, while also promoting work-life balance through flexible conditions. Notably, firms may have the opportunity to hire individuals with the required skills who reside farther away if employees are not mandated to be present in the office five days a week. For example, extending the commuting time from 30 to 60 minutes would expand the potential labour market of Papenburg in the centre of region by five-fold

**Teleworking is part of the regional discussion, but its actual adoption is likely to be less widespread compared to other German regions.** Promoting digitalisation of local firms is at the heart of Ems-Achse e.V.'s mission, specifically driven by its subsidiary IT-Achse, an IT knowledge network. Increasing the possibilities for teleworking for employees of local firms is part of that mission, with the aim of enhancing local employers' attractiveness to talent. The COVID-19 pandemic boosted the practice of teleworking. Across the OECD, teleworking levels remain higher relative to before the pandemic. In Germany, more than 15% of workers indicate that they telework regularly. The rates in Lower Saxony are near but below the German average, while detailed numbers for the Ems-Achse region remain unavailable. However, since actual and potential teleworking levels are strongly correlated, it is plausible that teleworking uptake in the Ems-Achse is also lower compared to the average German region.

**The Ems-Achse exhibits a lower teleworking potential compared to other German regions, which can be partially attributed to its industrial structure.** The assessment of teleworking potential depends on the occupational composition of each district, reflecting their respective industrial structures. Since tasks that can be performed remotely are more common in services, the Ems-Achse's lower proportion of such employment negatively affects its estimated teleworking potential. In 2022, on average 28% of workers in the region had the potential for teleworking, against 33% in Lower Saxony and 36% nationwide. The gap between actual and potential teleworking levels can serve as an indicator of a region's prospects for teleworking expansion. Considering that this gap stands at 20 percentage points nationwide and 17 in Lower Saxony, it is reasonable to assume that the Ems-Achse exhibits a similar gap. This suggests significant potential for expanding teleworking adoption with the current industrial structure.

**Improving teleworking enablers can boost uptake among residents, widen the talent pool to nearby regions, and, by leveraging on the Ems-Achse's well-being strengths, establish it as a teleworking hub, contributing to its vibrancy.** The Ems-Achse excels in housing affordability and availability, which stands out in a national context where housing prices and limited supply are becoming growing concerns, and boasts an expanding landscape of public and private coworking spaces. Based on OECD regional attractiveness indicators, the provision of local public services, including nursery and primary education, as well as access to healthcare, is of high quality. As a rural region near the coast, its natural amenities can be appealing to some. Improving the region's teleworking infrastructure can help attract young families and a new wave of tourists who seek a blend of leisure and the ability to connect remotely to their workplaces. While attracting teleworkers to the region even if they keep working for employers located elsewhere may not directly address local labour shortages, their presence can yield benefits such as increased tax revenue, higher consumption and expanded professional networks. Over time, this presence may also encourage some teleworkers initially employed by non-local employers to transition to local ones.

**The following ten policy recommendations, grouped into three themes, aim to unlock the potential of teleworking to address labour shortages in the Ems-Achse:**

*Improving teleworking readiness: infrastructure, management, skills and practices*

The Ems-Achse could consider prioritising the following aspects to meet the fundamental requirements for teleworking:

1. **Upgrade the Internet infrastructure:** invest in high-speed Internet access throughout the region to reduce the gap in download speeds, currently at 10% and 40% in fixed and mobile networks, respectively, compared to other European OECD regions, and promote competition among providers. To expedite deployment, the region could tap into federal government funding and leverage successful local public-private partnerships.

   *International practices:* OECD resources like the Going Digital Toolkit and the "Bridging digital divides in G20 countries" report offer policies and tailored solutions for rural connectivity improvement, including competition promotion, broadband deployment barrier removal, demand aggregation models and spectrum auction coverage obligations.

2. **Promote modern managerial culture and digital skills:** field interviews indicate a continued emphasis on office presence among local managers, evident in the low demand for digital skills. In response, trust-based management styles that equally value remote and in-office work could be promoted. Expanding knowledge-sharing programmes, such as those offered by IT-Achse, could help enhance digital skills among the workforce necessary to telework.

   *International practices:* recent EU initiatives, such as the National Digital Skills and Jobs Coalitions, EU4Digital and the Digital Skills Accelerator, aim to boost digital skills and bridge the labour market gap by aligning education with evolving workforce needs.

3. **Promote regional or sectoral teleworking agreements:** the high degree of flexibility in national labour laws is positively received by social partners in the region, as it enables tailored teleworking agreements to suit team and individual needs. However, the establishment of regional or sectoral frameworks for teleworking is an opportunity to standardise practices across employers and ensure consistent rights and protections for workers.

   *International practices:* in 2021, Trentino in Italy launched a comprehensive teleworking strategy, promoting flexible arrangements, facilitating peer-to-peer learning on practices, and implementing collective agreements to improve work-life balance, enhance workforce efficiency and reduce commuting.

4. **Foster digitalisation and automation:** incentivise investment and adopt other forms of support, such as knowledge sharing and awareness raising, to facilitate the adoption of digital technologies among local employers, whose demand for ICT skills is low relative to the national average. This approach can help expand the scope of teleworkable tasks, making it easier to attract workers in a wider commuting zone and potentially contribute to productivity gains. Automation can also reduce the demand for labour, mitigating labour shortages.

   *International practices:* the OECD's Digital for SMEs Global Initiative aims to facilitate knowledge sharing on SME digitalisation, emphasising the significance of the "missing middle" of SMEs and their role in an inclusive digital transition, with research and policy insights co-created by OECD analysts, private sector partners and SMEs themselves.

### Accommodating teleworkers

To improve the teleworking environment, the Ems-Achse could consider the following recommendations:

5. **Increase public transportation accessibility:** enhance last-mile connectivity, such as by expanding bus coverage and exploring innovative solutions like public-private carpooling and bike-pooling to foster sustainable commuting arrangements. Moreover, improved connectivity to major airports could facilitate international talent's access to the local labour market.

   *International practices:* enhancing rural mobility encompasses options like shared mobility solutions (e.g. demand-responsive transport and ridesharing), active mobility strategies (e.g. pedestrian infrastructure and e-bike promotion) and integrated mobility services (e.g. mobility hubs and MaaS platforms) to simplify transportation and reduce reliance on personal vehicles.

6. **Foster a thriving teleworking community:** make use of the growing network of coworking spaces and conduct a comprehensive survey to understand the motivations behind their usage among local teleworkers. Promote knowledge and best practice exchange among coworking spaces to enhance their visibility and impact, fostering a vibrant teleworking community.

   *International practices:* Switzerland's "miaEngiadina" project and the UK's flexible work hubs embrace coworking to address digital disparities and promote local development, with coworking spaces embodying values of collaboration, community and accessibility to foster innovative work patterns.

7. **Enhance attractiveness for young talent:** recognising the importance of this group, diversify higher education opportunities (e.g. by creating additional local campuses of universities located

elsewhere), promote vocational education and training that is aligned with local industry demand, and offer youth-centric leisure activities, such as sports facilities and cultural events, to create a vibrant and attractive community for young residents.

*International practices:* the 2022 OECD Council's Recommendation on Youth Opportunities serves as a comprehensive framework for policymakers to improve youth outcomes in areas such as skills, labour markets, social inclusion and well-being.

### *Targeting specific teleworker groups to address labour shortages*

8. **Integrate inactive individuals through active labour market policies:** highlight teleworking as an option in job postings to encourage inactive individuals to enter or re-join the labour market, with a focus on those facing travel difficulties or family commitments. Develop targeted policies to match job seekers with telework opportunities and organise training initiatives to enhance the skills sets required for successful teleworking.

   *International practices:* the Flexible Working Act in the Netherlands enables employees to request flexible work, including teleworking, with safeguards against discrimination and employer refusal. Cities such as Amsterdam, Leeuwarden and Rotterdam bolster these efforts by promoting flexible work and sustainable mobility initiatives.

9. **Expand the talent pool geographically:** broaden the scope of the target audience for job postings by local employers to encompass a more extensive talent pool under less restrictive commuting arrangements. This may involve new forms of collaboration with public employment services and regional development agencies outside of Lower Saxony.

   *International practices:* the European Network of Public Employment Services fosters collaboration among EU member states to enhance labour market efficiency and integration by sharing best practices and promoting modernisation in PES service delivery.

10. **Promote the region as an attractive destination:** integrate teleworking into tourism promotion efforts to highlight the Ems-Achse's appeal as a place to visit, work and live. Showcase advantages like affordable housing, competitive public services, a diverse business environment and natural amenities, following the OECD's multidimensional approach to regional attractiveness. Customise campaigns for specific target groups, including young families and highly skilled individuals from congested urban areas in Germany and abroad. While these newcomers may not directly alleviate labour shortages if they remain employed by firms located elsewhere, they can enhance the region's sustainability and facilitate business network connections.

    *International practices:* to attract remote workers, regions and cities worldwide have implemented initiatives that involve targeting individuals through outreach and marketing campaigns, facilitating a "soft landing" by providing information and assistance for newcomers, and offering financial incentives such as grants, housing assistance and tax credits.

**The Ems-Achse is well-placed to conduct policy experimentation.** Ems-Achse e.V. has a broad and diversified membership, and it can mobilise public-private partnerships. Local stakeholders have extensive knowledge of local economic and social trends position. They can draw inspiration from a growing body of international practices for effective implementation. Rural regions worldwide are increasingly embracing teleworking as a means to attract high-skilled workers. The "work-from-anywhere" movement, which has gained momentum since the COVID-19 pandemic, offers new prospects for tourist-oriented regions aiming to diversify visitor demographics. While evidence regarding the outcomes of these innovative practices remains limited, where they exist, they point to promising results. Efforts undertaken in the Ems-Achse will further contribute valuable insights that can be shared to benefit other rural regions within Germany and beyond.

# 1 The Ems-Achse: A high-growth rural region in search of talent

## Defining the Ems-Achse

**Wachstumsregion Ems-Achse e.V. ("Growth Region Ems-Axis Registered Association") is a voluntary association operating in the north-west corner of Germany.** Established in 2006, its main goal is to foster collaboration among companies, local authorities and educational institutions to stimulate economic growth and job creation. Its membership spans six jurisdictions within the western part of Lower Saxony, namely the districts ("Landkreis") of Aurich, Emsland, Grafschaft Bentheim, Leer and Wittmund, as well as the independent city ("kreisfreie Stadt") of Emden. From this point on, the term "Ems-Achse e.V." will be used to refer to the registered association, while "Ems-Achse region", or simply "Ems-Achse", will denote the corresponding geographic area (Figure 1.1). Box 1.1 offers an overview of the association's mission and activities.

**Figure 1.1. The Ems-Achse encompasses the six western-most districts of Lower Saxony, Germany**
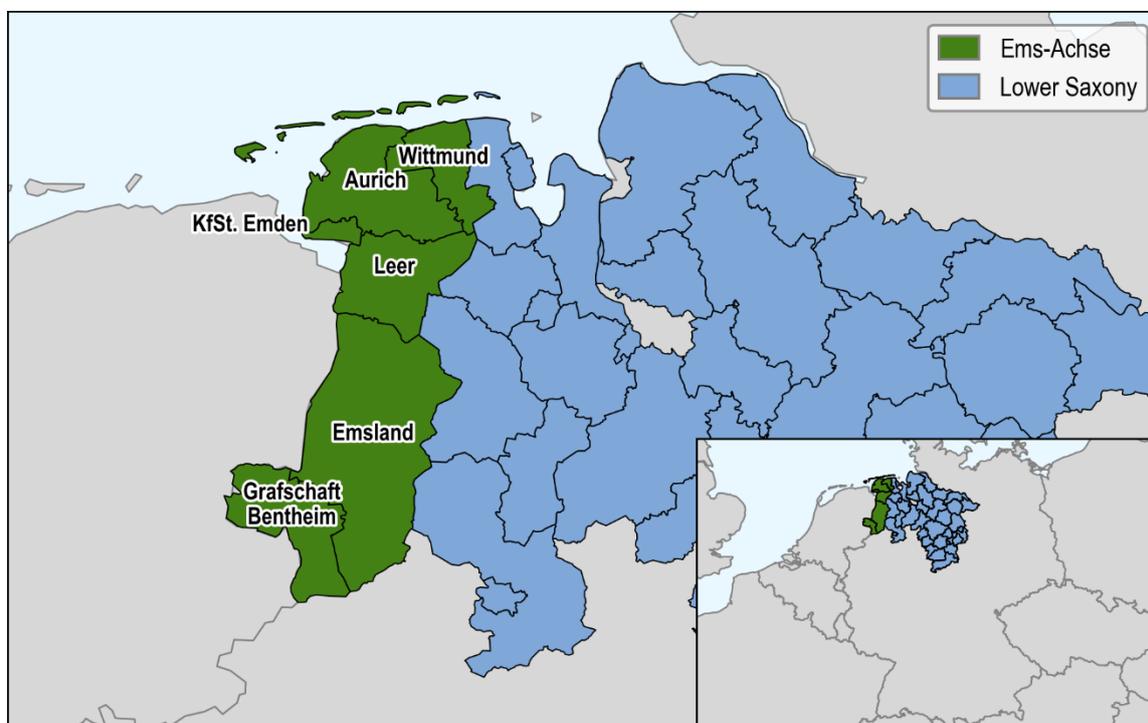


Source: OECD elaboration.

## Box 1.1. Ems-Achse e.V.: a public-private partnership driving local development

**Ems-Achse e.V. is a registered association dedicated to fostering economic development in the rural area along the Ems River in the north-western region of Lower Saxony, Germany.** Its over 800 members comprise companies, municipalities, chambers of commerce, educational institutions and associations located in the region. The association's board is equally divided between municipalities and companies. Headquartered in Papenburg, the association operates with a staff of 21. In addition to its central office, Ems-Achse e.V. operates through seven specialised competence centres in sectors crucial to the regional economy, such as automotive, energy, IT, plastics, logistics, maritime economy, and metal and mechanical engineering. The association's annual budget of around EUR 1.5 million is sourced from company membership fees (30%), contributions from member local authorities (20%) and EU programmes such as the European Regional Development Fund (ERDF), European Social Fund (ESF) and EU Research Framework Programme (50%).

**Ems-Achse e.V.'s mission is to establish a coherent regional economic profile and enhance economic growth and employment opportunities.** The main goals include attracting talented individuals, promoting innovation, improving local competitiveness and facilitating international co-operation. To this end, the association prioritises creating a favourable business environment, attracting investments and supporting the growth of local firms through project development and improved communication. In addition, the association seeks to enhance residents' quality of life by fostering a vibrant economy, preserving the environment and promoting social cohesion.

The activities of Ems-Achse e.V. encompass various areas:

- Close collaboration with local businesses and investors to stimulate economic development by providing support services, resources and facilitating networking opportunities and knowledge exchange.

- Promotion of modern infrastructure, including transportation, logistics and digital connectivity, to enhance the region's attractiveness to businesses and investors. The completion of the A31 highway ahead of schedule in 2004, achieved through a joint public-private effort, serves as a notable achievement and foundational element of the association.

- Encouragement of innovation by fostering co-operation between local enterprises, universities and research institutions, thereby stimulating entrepreneurship and the development of new products, services and technologies.

- Engagement in marketing and promotional activities to raise awareness about the region as an appealing business location. This encompasses the establishment of a job platform for local employers, active participation in trade fairs and events, and the implementation of marketing campaigns aimed at attracting companies and skilled workers.

- Coordination of projects initiated by the *Regionale Fachkräftebündnis Ems-Achse*, a coalition of local public authorities, public employment services, educational institutions, chambers of commerce and business associations that aim to attract, retain and develop skilled workers in the Ems-Achse region.

- Pursuit of international collaboration to expand the region's reach and enhance competitiveness through partnerships, cross-border projects and facilitation of international business contacts.

Source: (Wachstumsregion Ems-Achse e.V, 2023[1]).

## Regional profile

### *Geography and population*

**The Ems-Achse region is predominantly flat, with its topography consisting of a blend of low-lying plains, wetlands and reclaimed polders, interspersed with scattered hilly areas.** It is bordered by the North Sea to the north, the rest of Lower Saxony to the east, the German state of North Rhine-Westphalia to the south and the Netherlands to the west. The region is connected and defined by the presence of the Ems River, which flows north-south through it and gives it its name, the "Ems-Axis". The northern districts of Aurich and Wittmund have been shaped by their proximity to the sea. The city of Emden and the district of Leer are distinguished by their prominent seaports. In the south, the largest district of the Ems-Achse, Emsland, together with Grafschaft Bentheim, are characterised by open fields, forests and moorland.[1]

**The districts of the Ems-Achse are intermediate and predominately rural regions according to the OECD regional classification.** The intermediate regions are Emden, Aurich, Grafschaft Bentheim and Leer, while Emsland and Wittmund are classified as rural regions (Table 1.1) (OECD, 2018[2]). Emden, Aurich and Emsland are relatively remote, considering the distance to major cities. The Ems-Achse covers an area of approximately 6 000 km² and has a population of around 955 000 inhabitants (approximately the same population of Saarland, one of Germany's 16 federated states, although it has a surface almost 2.3 times as big). The population density of the Ems-Achse is 159 inhabitants/km², which is 31.8% below the national average of 233 inhabitants/km². The district of Wittmund has the lowest population density, whereas the city of Emden is the most densely populated subarea with 450 inhabitants/km². The region does not host any large cities; its three largest urban centres have populations ranging from 50 000 to 56 000 inhabitants. In comparison to the OECD classification, the German Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR) defines Emden, Aurich and Leer as "rural districts with elements of densification", and Emsland, Grafschaft Bentheim and Wittmund as "sparsely populated rural districts" (BBSR, 2023[3]).

### Table 1.1. The Ems-Achse region: intermediate and rural districts without large cities

Basic demographic indicators in the Ems-Achse region divided by district, 2022.

| District | Total pop. | Area (km²) | Density (pop./km²) | Largest city | Urban-Rural classification |
|---|---|---|---|---|---|
| Emden | 50 535 | 112 | 450 | Emden (50 535) | Intermediate region remote |
| Leer | 174 348 | 1 086 | 161 | Leer (35 078) | Intermediate region close to a city |
| Aurich | 192 072 | 1 287 | 149 | Aurich (42 544) | Intermediate region remote |
| Graf. Bentheim | 141 269 | 982 | 144 | Nordhorn (54 162) | Intermediate region close to a city |
| Emsland | 338 052 | 2 884 | 117 | Lingen (55 599) | Predominantly rural region remote |
| Wittmund | 58 359 | 657 | 89 | Wittmund (20 433) | Predominantly rural region close to a city |
| Overall | 954 635 | 6 008 | 159 | | |

Note: Population data for December 2022. "Emden" refers to Kreisfreie Stadt Emden, a district-free city.
Source: Statistisches Bundesamt, Table 12411-0015: Population: Administrative districts, reference date. OECD (2018[2]).

[1] The region's geographical features historically limited available land for habitation and cultivation, which may explain the relatively low population today. Since the Middle Ages, extensive land reclamation and drainage efforts have been undertaken to make land suitable for settlement and agriculture. Notably, the draining of the Emsland moors began in the late 18th century and continued into the 19th century, converting large areas of marshland into arable farmland. These efforts have significantly shaped the region's landscape and facilitated human settlement.

**The Ems-Achse has a higher share of young people (aged 14 and younger) and a lower share of elderly (aged 65 and higher) relative to the national average.** 14.3 % of the Ems-Achse population are aged below 15, relative to 13.9% in Germany overall, while 21.8% of the population are aged 65 or older in Ems-Achse, relative to 22.1% in Germany overall. However, the six districts are quite different from each other. Figure 1.2 panels A to C show that Grafschaft Bentheim and Emsland have a higher share of young people and a lower share of elderly among their population relative to the other districts. Wittmund and Aurich experience the reverse with a relatively high share of elderly. Consequently, the dependency ratio, which measures the share of 65-year-olds relative to the working age population, varies between 30 and 41 across the Ems-Achse districts, but the regional average (34.1) is only slightly lower than national average (34.7).

**Figure 1.2. The Ems-Achse has younger and growing population than other rural and intermediate regions in Germany**

Demographic indicators, 2022 (inter-regional net flows mobility rate and foreign-born population, 2021).
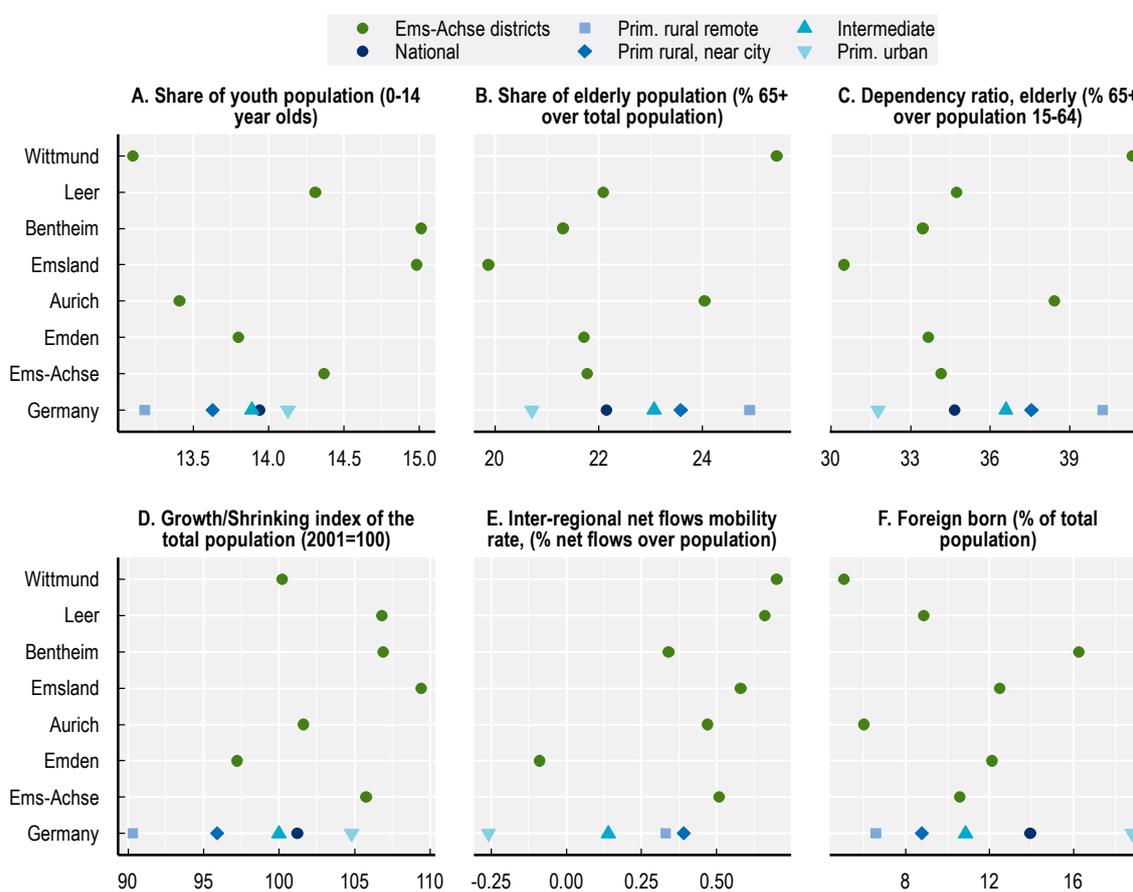


Note: For Germany, the national average and average of regions across the rural-urban typology. The Ems-Achse represents a population-weighted average of the six districts.
Source: OECD Regional Demography and Database on migrants in OECD municipalities, OECD Regional Statistics [Database], https://doi.org/10.1787/region-data-en.

**The regional population is growing at a faster pace than the German average due to net interregional mobility.** Specifically, residents climbed by 5.7% between 2001 and 2022, relative to 1.2% in Germany (Figure 1.2 panel D). Moreover, the average German rural and intermediate regions

experienced a declining population. Within the Ems-Achse, Emsland experienced the largest population growth, nearing 10%, while Emden experienced a net decline of 2.8%. Part of the population increase can be attributed to the net interregional mobility to the Ems-Achse. In 2021, net interregional migration rates for all but one district of the Ems-Achse exceeded those of other rural and intermediate regions in Germany. Only Emden experienced a net negative migration rate in 2021 (Figure 1.2 panel E).

**Increasing the share of foreign born, in line with the German average, is an opportunity to gain more workers.** In 2021, non-German born comprise 10.6% of the regional population, compared with 13.9% in Germany (Figure 1.2 panel F). Given the projections that the working-age population in the Ems-Achse is expected to decrease by over 63 000 individuals by 2031 (Wachstumsregion Ems-Achse e.V., 2021[4]), encouraging a higher inflow of foreign migrants, who are typically younger, could be part of a solution.

## *Transport infrastructure*

**The Ems-Achse region benefits from a well-developed road network and the presence of the Ems-River**. Economic activities in the Ems-Achse region are greatly supported by three major highways. The A28 serves as a crucial east-west link, connecting Leer in the north with Oldenburg. The A30, crossing the southeast-west, forms an essential part of the Amsterdam-Berlin route. Crucially, the A31, a north-south route spanning the entire Ems-Achse, ensures convenient access to highly populated North-Rhine Westphalia. Additionally, the Ems River acts as a vital inland waterway, facilitating regional trade of, among others, agricultural products and construction materials. The river's significance is further amplified by its integration with the Dortmund-Ems Canal, which links the Ems-Achse to the Ruhr industrial region and Germany's wider network of inland waterways. It also serves as a gateway to the North Sea, connecting to international shipping routes and supporting maritime trade. The Port of Emden, situated along the Ems River, plays a crucial role as a major maritime gateway, efficiently handling various cargo types including containers, vehicles, and general goods. Other seaports along the Ems include Leer and Papenburg.

**However, the region faces notable challenges in terms of long-distance passenger travel.** While it is served by conventional rail lines, such as the Cologne-Rhine/Main-Danube line, the availability of high-speed railway services remains limited. Despite the presence of several nearby airports, including Bremen Airport, Münster Osnabrück International Airport and Groningen Airport Eelde in the Netherlands, reaching these air travel facilities from specific areas within the Ems-Achse region necessitates substantial road or rail transportation, adversely affecting the region's overall connectivity. For example, reaching the airports in Bremen and Groningen from Papenburg, which holds a central position within the Ems-Achse region, takes at least two and a half hours using public transportation.

## *Industrial composition*

**The Ems-Achse region exhibits a diverse and robust industrial structure,** with a focus on the following sectors:

- **Automotive and engineering:** the Ems-Achse region has a strong presence in the automotive sector. Emden hosts a major Volkswagen production facility, where thousands of cars are manufactured annually. Additionally, the region is home to numerous engineering companies, specialising in automotive components, machinery, and equipment manufacturing.

- **Shipbuilding and maritime industry:** with its location on the Ems River and proximity to the North Sea, the Ems-Achse region has a long-standing shipbuilding tradition. Papenburg stands out as a prominent shipbuilding centre, housing the Meyer Werft shipyard, which constructs large cruise ships and luxury vessels. The maritime industry also encompasses port operations, logistics and related services.

- **Energy and renewable resources:** the region has a notable presence in the energy sector. Lingen is home to an oil refinery, while Emsland houses multiple power plants, including coal, gas and biomass facilities. Furthermore, the Ems-Achse region has embraced renewable energy sources, with wind farms and solar parks dotting the landscape.

- **Chemical industry:** the region hosts several chemical companies engaged in the production of chemicals, polymers and fertilisers. These companies benefit from the proximity to natural gas and oil pipelines, facilitating the supply of raw materials.

- **Food and agriculture:** the region is characterised by large-scale farming operations, with a focus on dairy farming, livestock rearing and crop cultivation. Additionally, food processing companies are prevalent, specialising in meat, dairy and agricultural products.

- **Tourism:** the region benefits from its coastal location along the North Sea and includes the East-Frisian Islands, providing opportunities for beach visits and water sports activities. The region's natural landscapes, including river valleys and nature reserves, attract nature enthusiasts seeking outdoor experiences. Papenburg's Meyer Werft shipyard also draws interest from tourists.

**The employment composition in the Ems-Achse region has greater shares of primary and secondary sectors and lower shares of the tertiary sector compared to other German regions.** As illustrated in Figure 1.3, the share of jobs in the Manufacturing industry and Construction surpasses that of Lower Saxony and Germany by approximately five percentage points or more. Higher shares, albeit to a lesser extent, are also observed in Agriculture, forestry and fishing, Energy supply, and uniquely among service sectors, Hotels and restaurants. Conversely, employment shares in Information and communication, as well as Professional, technical and scientific activities are more than two percentage points lower for each sector in the Ems-Achse relative to Germany overall. Additionally, smaller gaps are present in Financial and insurance activities, Real estate activities and Other business activities. In 2022, the Ems-Achse had 1.8% of total workplaces in the primary sector, 33.3% in the secondary sector, and 65.0% in the tertiary sector. In comparison, both Lower Saxony and Germany had relatively smaller proportions in the primary sector (1.4% and 1.2%, respectively) and the secondary sector (28.6% and 23.6%, respectively) (Arbeitsagentur, 2022[5]).

**Figure 1.3. Employment in the primary and secondary sectors is relatively higher in the Ems-Achse region compared to Lower Saxony and Germany as a whole**

Employment share by NACE2 sectors, June 2022.
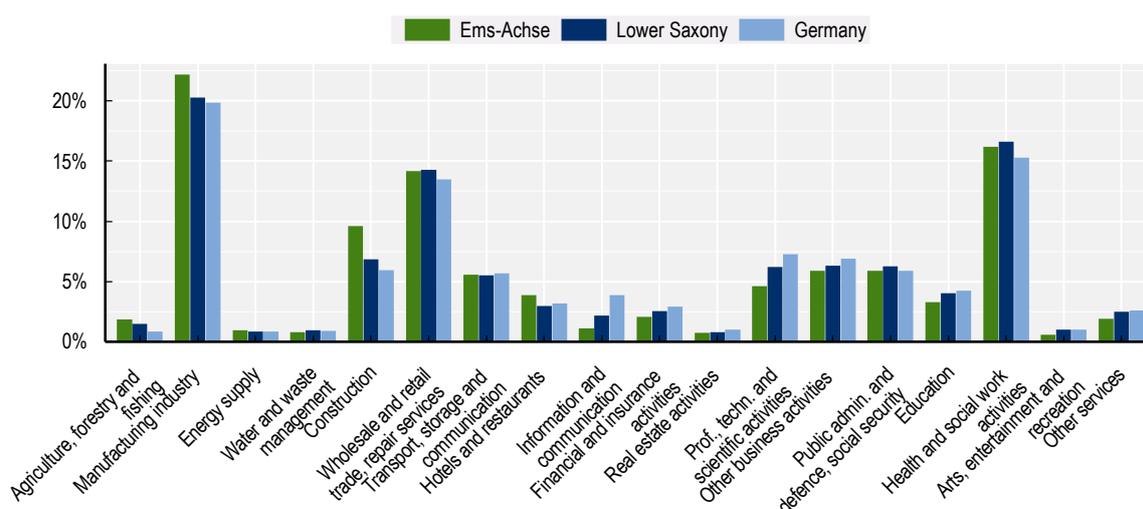


Source: OECD calculations based on Landesamt für Statistik Niedersachsen, LSN-Online, Table K70I5502, and Statistik der Bundesagentur für Arbeit, Beschäftigte nach Wirtschaftszweigen (WZ 2008) (Quartalszahlen).

*Educational landscape*

**Tertiary education in the region is focused on vocational training.** Hochschule Emden/Leer, founded in 2009, accommodates around 4 200 students and is renowned for its specialised focus on nautical sciences and shipping management. The university's curriculum is designed to provide practical and industry-oriented education, aligning with the regional emphasis on maritime-related fields. Similarly, the Lingen campus of Hochschule Osnabrück, founded in 2012, serves around 2 000 students and offers specialised programmes through its faculty of management, culture and technology. The campus fosters a hands-on learning environment, preparing students for diverse professional roles in management and technology-driven industries. No universities are available for students interested in domains other than applied science.[2]

**Students seeking higher education options beyond universities of applied science need to look beyond the region.** Multiple options exist both in Lower Saxony, including Göttingen, Hannover and others, and in neighbouring German states, such as Bremen, Hamburg, Schleswig-Holstein and North Rhine-Westphalia. Furthermore, across the border in the Netherlands, the University of Groningen may be the nearest university for residents in the northern districts of the Ems-Achse, while the technical science-oriented University of Twente in Enschede may be the nearest university for students in the southern districts of the Ems-Achse.

**The region does offer vocational education and training as well as lifelong learning programmes.** These institutions are assets for developing a skilled workforce capable of meeting the demands of various industries. The region hosts a diverse range of educational institutions, including "*Berufsbildende Schulen*" (vocational schools), "*Volkshochschulen*" (adult education centres) and an "*Institut für duale Studiengänge*" (institute for dual degree programmes).

*Regional attractiveness*

**The OECD adopts a multidimensional approach to assessing regional attractiveness.** Attractiveness cannot be adequately represented by a single factor, such as inward investments or population growth, as OECD regions face different circumstances and priorities. Consequently, the OECD methodology functions as a comparative tool for illustrating how a region compares to others within the same country or across the OECD, using indicators spanning six dimensions: economic attractiveness, visitor appeal, education, resident well-being, connectedness and the natural environment. Box 1.2 provides further background on how to measure regional attractiveness.

**The attractiveness of the Ems-Achse is greatest in the dimensions of economic attractiveness and resident well-being compared with other large European regions.** This advantage is evident across three economic indicators - GDP per capita, patent applications and employment rate - as well as three indicators related to resident well-being - access to hospital services, clean air and voter turnout (Figure 1.4). In addition, despite its relatively low share of foreign tourists, the region records a substantial number of overnight stays by tourists, reflecting its allure to visitors. In comparison to other German regions, the Ems-Achse demonstrates favourable performance across various indicators spanning all dimensions. Other strengths include the number of overnight tourist stays, access to primary education and comparatively low pollution from transportation, even though the region may not necessarily excel in a particular dimension.

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[2] In the German higher education system, universities ("*Universitäten*") differentiate themselves by offering a broader spectrum of academic disciplines and degrees, with an emphasis on research and theoretical education. Conversely, universities of applied science ("*Fachhochschulen*") are designed to provide applied and practical education tailored to specific vocational careers and professions.

## Box 1.2. Rethinking regional attractiveness

**Regional attractiveness is not solely defined by economic and demographic indicators.** The quality of the local environment and social dimensions can be important priority areas and regional strengths. Moreover, certain dimensions can imply trade-offs, while each region will have its own priority areas for policy. Regional attractiveness can align with different objectives. While some regions may wish to focus on attracting investors, other dimensions, such as the visitor economy, can be more significant for other places. In addition, the attractiveness of a region to talent is an important consideration for the region's ability to develop.

**This is the basis for the OECD's holistic approach to assessing regional attractiveness, which considers global engagement beyond international connections and financial drivers alone.** A new report provides a new methodology to assess regional attractiveness across dimensions (OECD, 2023[6]). In total, the methodology considers more than 50 indicators to develop regional attractiveness profiles, covering 14 dimensions across six domains: economic attraction, connectedness, visitor appeal, natural environment, resident wellbeing, land use and housing. Because different regions have different challenges, opportunities and comparative advantages, the aim of this work is not to rank regions but rather provide an analysis of how they perform against each dimension.

**Scores in each dimension do not automatically translate into a "higher is better" and require policy makers to situate their scores within their respective development agenda.** For example, the share of foreign visitors in a region's tourism mix is encouraging insofar as it signifies the international appeal of the territory; however, the domestic visitor base can be a vital driver of the sector's recovery and long-term resilience (OECD, 2021[7]).

Source: (OECD, 2023[6]; OECD, 2021[7]).

**Figure 1.4. The regional attractiveness of the Ems-Achse**

Ems-Achse's performance on a range of attractiveness indicators, compared to the average of European regions (blue dots) and the average of German regions (red dots).
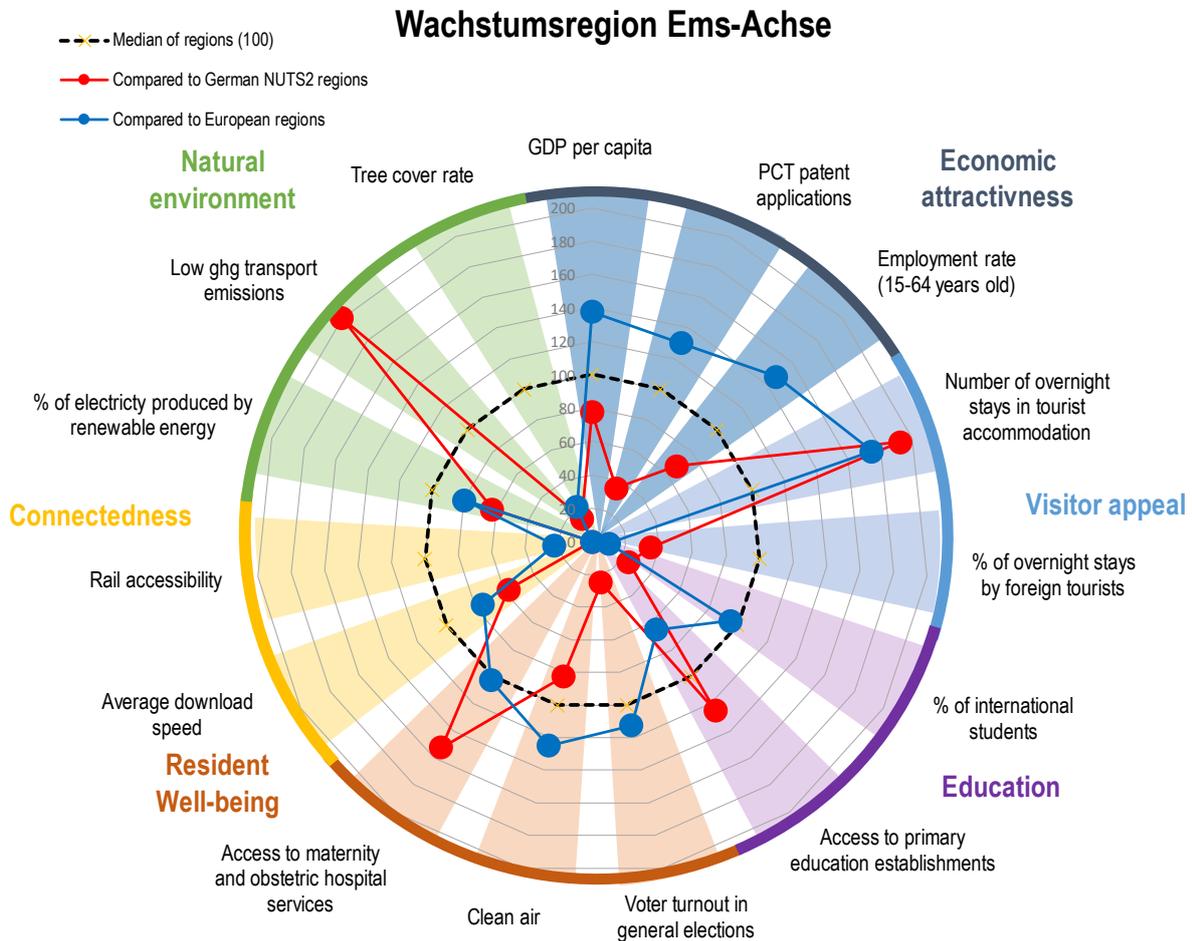


Note: For each indicator, the value of the Ems-Achse is compared against the median (normalised to 100), for German NUTS2 regions (red), and European NUTS2 regions (blue). The score for Ems-Achse is based on a (weighted) mean of its six TL3 regions. The indicators for each dimension are described in Annex A.
Source: (OECD, 2023[6]).

## Uncertainty after a successful decade

### Ems-Achse's remarkable catching up

**The Ems-Achse region experienced positive economic growth in the decade prior to the COVID-19 pandemic.** Between 2010 and 2019, Gross Domestic Product (GDP) per capita was higher and grew faster in the Ems-Achse compared with primarily rural regions in Germany. In 2010, GDP per capita was at 83% of the national average, increasing to 87% in 2019 (Figure 1.5 Panel A). The participation rate of the working-age population also showed improvement, rising from 72.1% in 2010 to 78.2% in 2019, thereby reducing the gap with the national average to 1 percentage point. Moreover, the unemployment rate decreased from 6.8% in 2010 to 4.5% in 2019.

## Figure 1.5. Economic indicators improved between 2010 and 2019
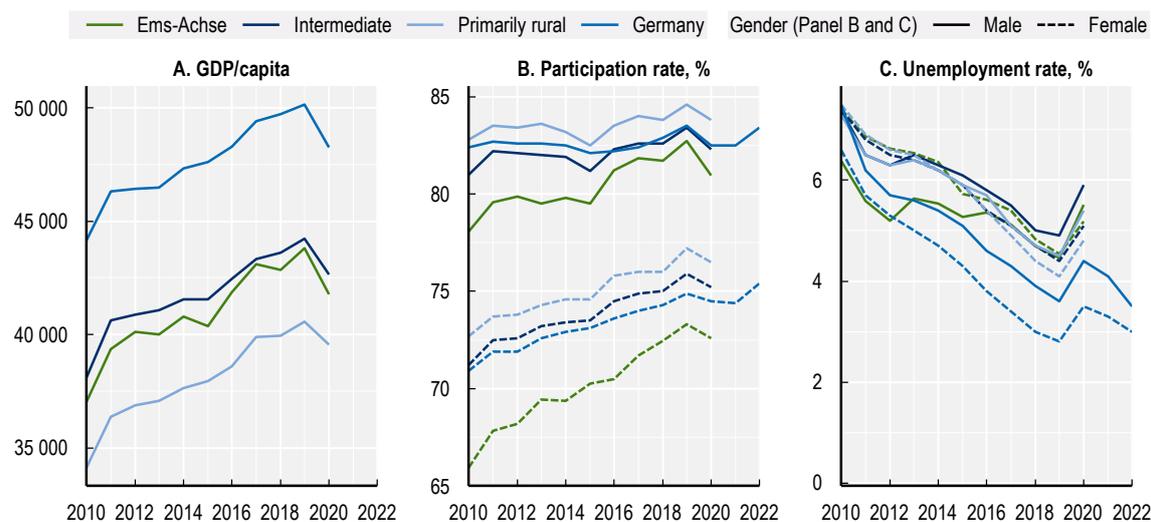


Note: Intermediate and primarily rural regions represent the average of German regions for each type. GDP/capita is real EUR2015 PPP, participation and unemployment rate for population aged 15-64. The Ems-Achse numbers are the weighted average across the districts, the weights for panels A and B: population; for panel C: labour force.
Source: OECD calculations based on OECD Regional Statistics [Database], https://doi.org/10.1787/region-data-en.

### *The risk of a slowdown*

**The COVID-19 pandemic had a detrimental effect on all regions, including the Ems-Achse.** GDP per capita in the Ems-Achse experienced a more significant decline compared to other German regions (Figure 1.5 panel A) The pandemic had a particularly strong negative impact on the male components of participation and unemployment rates in the Ems-Achse, suggesting a disproportionate effect on job sectors where men are the majority of workers.

**While indicators for 2021 and 2022 suggest that most regions in Germany were on track to recover their previous growth trajectories, the outlook for 2023 is projected to stagnate.** The global energy crisis hindered Germany's post-pandemic recovery, with high inflation reducing real incomes and savings and dampening private consumption (OECD, 2023[8]). The OECD Economic Survey shows that Germany is in recession, reporting a decline of GDP growth by 0.5% in the last quarter of 2022 and by 0.3% in the first quarter of 2023 (for comparison, the OECD area grew by 0.2% and 0.4% in these periods) (OECD, 2023[9]). In addition, headline inflation is expected to remain high at 6.6% in 2023, due to higher input costs and wage pressures, even more so in Lower Saxony at 7.8%.[3]

**The Ems-Achse faces structural challenges in its labour market, which could pose an additional hindrance to its recovery.** Participation rates for both men and women in the Ems-Achse remain below other German regions. The difference in the participation rates between men and women is around 8 percentage points across German regions, including in the Ems-Achse. However, the participation rates of women in Ems-Achse have converged towards the German average between 2010 and 2019. The unemployment rates in Ems-Achse are above the German national average, but close to the average of other German intermediate and rural regions (Figure 1.5 panel B and C). The difference in the unemployment rates between men and women, observed in 2010, largely disappeared in 2019.

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[3] For more information, visit:
https://www.statistik.niedersachsen.de/presse/pressemitteilungen-des-lsn-jahrgang-2022-183854.html

## Labour shortages, a longstanding challenge

**Despite the relatively low labour participation and high unemployment rates, employers in the region are facing challenges in filling job vacancies with qualified candidates.** This suggests that while job opportunities are available, there is a scarcity of workers with the requested skills to meet the demand for labour. Structural issues, such as skills mismatches, limited access to training, or barriers to labour market entry, may hinder full labour market engagement and prevent individuals from securing suitable employment.

**Ems-Achse e.V. has long been aware of its unique situation as a high-growth region with a declining working-age population and the challenges that come with it.** In 2009, a report prepared at the request of the Federal Labour Agency projected employment growth of 3% (+12 000 jobs) over the 2008-2025 period, mostly concentrated in the north, as well as a significant decline in the population age group 20 to 60 (-24 000). In addition, the report predicted a shortage of around 30 000 workers in the region by 2025 (GWS, 2009[10]).

**Employment growth has surpassed the projections, while ageing and the outflow of the working age persist.** In 2018, Ems-Achse e.V., in collaboration with the public employment services (PES) of Nordhorn (southern districts of Emsland and Grafschaft Bentheim) and Emden (northern districts of Aurich, Wittmund, Emden and Leer), issued an interim report comparing the situation to the 2009 forecast. Overall, more than 72 000 jobs were created in the entire region, corresponding to an increase in employment by 27.5% relative to the forecast, with similar growth observed across districts. Unemployment figures also painted a positive picture, registering rates of 2.6% in the area under the jurisdiction of the PES Nordhorn and 5.5% in PES Emden-Leer (northern districts of Aurich, Wittmund, Emden and Leer). At the same time, the analysis of natural population development shows that in all districts in the region the number of deaths exceeds births, indicating an ageing population and a shrinking future workforce (Wachstumsregion Ems-Achse e.V., 2021[4]).

**The increased demand for skilled workers is frequently unmatched in specific industries.** Labour scarcity is particularly pronounced in the crafts, care, medical, IT and hospitality sectors. Restaurants are increasing the number of days they remain closed, resorting to specialised events only to maintain operations. The situation also presents challenges in providing vocational training opportunities for young people. According to PES Nordhorn, there was a decline of 124 applicants for training positions in 2021, with vacancies in fields such as mechanics and electronics technicians remaining unfilled (Wachstumsregion Ems-Achse e.V., 2021[4]).

**Southern districts in Ems-Achse experience a structurally tight labour market.** The southern districts of PES Nordhorn demonstrate a very tight labour market between 2019 and 2023, with little more than one job seeker per open vacancy in 2022, compared with almost three in the rest of Lower Saxony and Germany overall (Figure 1.6). Between 2019 and 2022, Nordhorn consistently ranked in the top five across all PES areas in Germany for having the lowest number of job seekers per open vacancy each year. Meanwhile, Emden-Leer was positioned around 130th out of 164 PES areas. In 2022, the number of job seekers per open vacancy in Emden-Leer was 4.2, performing better than but still closely aligned with the national average, in a context where the shortage of a qualified labour force is recognised as one of the primary challenges to economic development in Germany (OECD, 2023[8]). After an increase in job-seeker numbers due to pandemic-related layoffs in 2019-2020, and a labour market rebound in 2021-2022, job seekers per vacancy increased in Germany, Lower Saxony and the Ems-Achse PES areas between December 2022 and July 2023, potentially indicating a shift in labour market tightness, possibly linked to the economic stagnation in Germany during this period (OECD, 2023[9]).

## Figure 1.6. Southern districts in Ems-Achse experience a structurally tight labour market

Ratio of the number of job seekers per open vacancy.
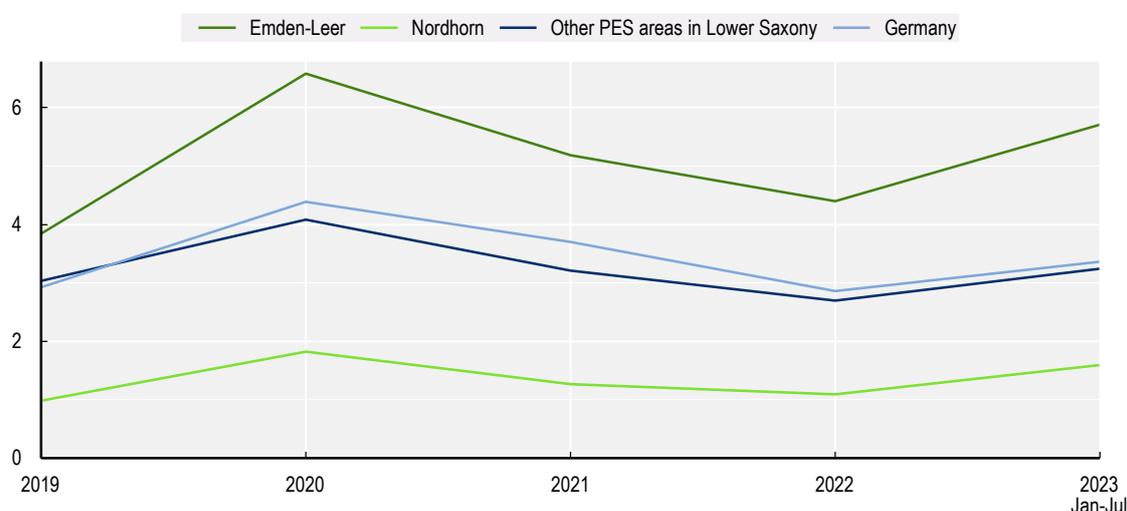


Note: Statistics are for the administrative areas of regional offices of the German Public Employment Services (PES). Emden-Leer includes the districts Aurich, Wittmund, Emden and Leer; Nordhorn includes Emsland and Grafschaft Bentheim.
Source: OECD calculations based on statistics of Bundesagentur für Arbeit, "Gemeldete Arbeitsstellen nach Wirtschaftszweigen" and "Arbeitslose – Zeitreihe".

## Rationale for greater adoption of teleworking

**The increased adoption of teleworking is not an end in itself but can serve as a means to achieve regional development objectives.** Teleworking is simply one mode of work. The rationale for policy intervention lies in whether facilitating teleworking can contribute to the attainment of regional objectives, such as regional economic development, increased economic growth or enhanced well-being among residents. When such link exists in the local context, the facilitation of teleworking can complement and integrate with existing policy strategies.

**In this report, teleworking encompasses various modes of work. Generally, teleworking refers to employees working one or more days outside the main premises of their employer**. Employees may telework from home or another suitable location but still maintain regular in-person interactions with colleagues on a weekly basis. This "hybrid" work arrangement appears to be a preferred option among many employees in teleworkable jobs and across different countries. Hybrid work falls between two extremes: on one hand are jobs that can be performed entirely remotely, with workers rarely meeting their co-workers in person; on the other hand are workers who primarily work in the office daily, with only a small portion of their tasks completed from home, such as responding to emails.

**Empirical evidence regarding the impact of teleworking on various economic and non-economic indicators remains an active area of research.** It is still too early to determine the conditions and ways in which workers, firms and regions affected by the continued widespread adoption of teleworking following the COVID-19 pandemic. This topic continues to be the subject of ongoing research. Evidence from teleworking during the pandemic cautiously suggests positive effects on worker outcomes (Aksoy et al., 2022[11]; FT, 2023[12]). Surveyed workers reported surprise at their own productivity while working from home. However, the actual contribution of teleworking to worker productivity remains unclear, although some estimates suggest some positive effect (around three to five percentage points). The pandemic created an exceptional working environment, in which may not be representative of the post-pandemic

world. Research on the impact of teleworking predating the COVID-19 pandemic exist (OECD, 2020[13]). However, studies prior to 2020 tended to be specific to certain occupations or locations, as teleworking levels among firms in OECD countries were generally low, with at most around 5% of employees reporting remote work for at least a few days a week (OECD, 2021[14]).

**The widespread adoption of teleworking presents new opportunities for labour market policies at the regional and local levels.** Several regional and local policy makers have seized the opportunity presented by the widespread adoption of teleworking to launch new initiatives aimed addressing existing challenges in their local labour markets. These initiatives range from activating currently inactive workers to increasing the supply of skilled workers to local firms and countering population decline.

### *Activating individuals who are not seeking employment or unemployed*

**By offering flexible teleworking arrangements, some individuals of working age who may not be seeking employment or are hesitant to accept traditional office-based jobs could be motivated to enter or re-enter the labour market.** Empowering individuals to work from home, either partially or fully, allows them to better reconcile personal needs, parenting and caregiving responsibilities, or overcome barriers related to physical accessibility. This not only opens up new opportunities for engagement but also aligns with the evolving preferences and expectations of the workforce. As found through the Global Survey of Working Arrangements, employees around the world would prefer to work from home an average of 2.0 days per week, with Germany's sample indicating a similar preference of 1.8 days. However, there is a noticeable gap between the desired and the actual number of days that employers allow for remote work. Globally, the latter stands at 0.9 days on average (1.0 day in Germany) (Aksoy et al., 2022[11]).

**The Netherlands demonstrates a well-established commitment to promoting flexible working.** The country issued legislation to encourage flexible working arrangements in 2016. Consistently, several cities have undertaken own initiatives aimed at promoting flexible working arrangements and sustainable mobility (see Box 1.3 for details).

> **Box 1.3. Promoting flexible working arrangements: a case study from the Netherlands**
>
> **The Flexible Working Act, adopted in 2016, represents a significant milestone in the Netherlands' approach to fostering flexible working arrangements.** This legislation was designed to grant employees greater autonomy over their work schedules, enabling them to achieve a better balance between their personal and professional lives. The key elements of the act encompass the following:
>
> 1. Right to request flexible working hours: this provision grants employees the legal entitlement to make a formal request to their employer for a change in their working hours or working patterns, including proposing work from home arrangements or other flexible scheduling options.
> 2. Reasoned refusal: the act allows employers to refuse the request under certain circumstances, typically including operational constraints or potential repercussions on productivity. Employers must provide valid and objective grounds for denying the request.
> 3. Protection against discrimination: employers are prohibited from treating employees differently or subjecting them to adverse treatment solely because they made a request for flexible working hours.
> 4. Positive obligations: employers are obligated to actively consider and accommodate reasonable requests for flexible working arrangements, where feasible.
> 5. Scope and coverage: the act generally applies to all employees, regardless of the size or type of the organisation. However, certain sectors may be exempted upon demonstration that flexible arrangements are incompatible with the nature of their business.
>
> **Following the lifting of emergency measures introduced during the COVID-19 pandemic, which included the promotion of teleworking, the Dutch government continues to advocate for hybrid work models.** Employers have some responsibility of providing teleworkers with good home offices, while employees are expected to contribute to a conducive working environment. The government advises that thorough risk assessments should incorporate mental health considerations, and ongoing research into the factors that drive teleworking is emphasised.
>
> **Several cities across the Netherlands have been promoting flexible working arrangements and sustainable mobility.** The city of Amsterdam has established several Smart Work Centres as shared office spaces, enabling employees to work closer to home. In Leeuwarden, the provincial capital of Friesland, the platform "Slim Werken Slim Reizen" (Working smartly, travelling smartly) aims to curb traffic congestion during peak hours and decrease air polluting emissions by promoting sustainable approaches to work, travel and transportation through collaboration with companies and local authorities. In Rotterdam, the "Verkeersonderneming" public-private initiative advocates for flexible work arrangements and sustainable mobility to reduce traffic congestion. Since 2021, a nationwide Mobility-as-a-Service platform has facilitated seamless connections between various transportation services, promoting the use of public transport, bike sharing, and other options to reduce dependence on private cars. These efforts reflect a proactive approach to creating environmentally friendly urban environments, leveraging the flexible work paradigm.
>
> Source: (KVK, Netherlands Chamber of Commerce, 2023[15]; Werk Slim, Reis Slim, 2023[16]; Verkeersonderneming.nl, 2023[17]; workin.space, 2023[18]; wework, 2023[19]; MaaS Alliance, 2023[20]).

*Tapping into neighbouring regions to expand the talent pool*

**Adopting work models that require reduced office presence can broaden the talent pool, enabling employers to access a wider geographic area when sourcing talent.** Teleworking arrangements offer

flexibility, reducing the need for frequent travel and encouraging individuals to consider job opportunities outside their immediate vicinity. This expansion of the talent pool can lead to better matching of skills and job opportunities, resulting in improved labour market outcomes. Both employers and employees stand to benefit from this approach, with employers gaining access to a diverse and skilled workforce and employees exploring job opportunities beyond their local area, particularly those early in their career who may have left the Ems-Achse for study or work in larger cities.

**The Autonomous Province of Trento, a mountainous region in Italy facing similar challenges to the Ems-Achse in terms of youth retention, promotes teleworking as part of its approach to fostering a more dynamic and inclusive labour market.** A primary objective of its teleworking strategy is to reduce commuting levels, as detailed in Box 1.4.

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### Box 1.4. Teleworking strategy in the Autonomous Province of Trento, Italy

**The Autonomous Province of Trento has implemented a comprehensive teleworking strategy in 2021, building on years of teleworking experimentation to improve efficiency in public jobs.** The main goal is to lower commuting demands and expand the talent pool by attracting skilled professionals through teleworking opportunities. In addition, teleworking is taken as a tool to improve work-life balance and overall well-being for employees in the region. There can also be economic benefits. For instance, the OECD estimates that extending the travel distances from 30 to 60 minutes from the provincial capital city centre, the potential labour market from which employers can draw workers expands from approximately 0.5 million to 2.2 million people.

**The strategy combines multiple instruments, ranging from the creation of teleworking spaces in villages to initiatives aimed at improving HR practices in the region.** Coworking spaces in small peripheral valleys can bring work closer to people's homes, reducing the need for long commutes to the provincial capital where high-skilled jobs are concentrated. Therefore, the province repurposes dismissed public and private buildings and reviews existing "telecentres" designed to support officials with special needs requiring proximity to their homes. Public office spaces are also being redesigned to optimise team collaboration in hybrid work settings. As a complement, employers are encouraged to offer flexible work arrangements that require minimal office presence, allowing for less frequent commuting. This is part of a broader initiative to acknowledge and incentivise efforts by employers that offer tailored family-friendly arrangements for employees with parenting responsibilities for young children ("Family Audit" brands are awarded to employers meeting special requirements in this area). Collective agreements for both public and private sector workers are also being developed, which involve loosening eligibility criteria for teleworking and offering flexible work time schedules. Finally, to promote peer-to-peer learning and share best practices in teleworking, a community of HR practitioners and specialists is being created to encourage greater uptake of teleworking practices.

Source: (OECD, 2021[21]).

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### *Attracting workers from high population density areas or abroad*

**Encouraging a more balanced distribution of the workforce across a country can help alleviate the pressures on urban areas caused by real estate shortages and congestion.** Germany can achieve a more sustainable spatial development by offering its workforce opportunities to work and relocate across its regions, including areas that provide affordable housing options like the Ems-Achse region. This bottom-up approach fosters an inclusive and efficient labour market, mitigating housing affordability challenges in major cities without significantly affecting productivity, as agglomeration would be marginally impacted.

**Ireland recognises the potential of teleworking to alleviate urban pressures and foster economic growth in rural areas.** As illustrated in Box 1.5, Ireland's rural development plan encourages teleworking initiatives, aiming to create a more inclusive and vibrant economy by providing employment opportunities outside major urban centres.

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### Box 1.5. Our Rural Future: Ireland's rural development plan 2021-2025

**Ireland's rural development plan for 2021-2025 represents the Irish Government's blueprint for post-COVID-19 rural recovery.** Objectives include optimising digital connectivity, supporting rural employment and careers, revitalising towns, enhancing public services, and transitioning to a climate-neutral society. Teleworking is emphasised for its benefits, including reduced transport emissions, support for local businesses and opportunities for youth career development within their communities. Planned actions specifically related to teleworking include, among other things:

- Investing significantly in teleworking infrastructure to offer an opportunity for people to continue to live in rural areas while pursuing their career ambitions.

- Providing financial support to local authorities to bring vacant buildings in towns back into use as teleworking hubs and create a network of 400+ teleworking facilities across the country, with shared back-office services and a single booking platform for users.

- Piloting coworking and hot-desking hubs for civil servants in several regional towns and moving to 20% teleworking in the public sector in 2021, with further annual increases over the duration of this policy.

- Exploring the potential to introduce specific incentives for teleworkers' relocation to rural towns and providing funding to local authorities to run marketing campaigns targeted at attracting teleworkers and mobile talent to their county.

Source: (OECD, 2022[22]).

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**Rural regions are also taking initiatives to leverage the expanding trend of remote work, aiming to foster interregional migration and attract new residents from urban areas.** New Brunswick, Canada, provides a notable case study in this regard, given its emphasis on data collection. This approach allows for a comprehensive assessment of the strengths and limitations of its regional campaign to attract remote workers (Box 1.6).

**Box 1.6. Remote working and the attraction of workers: evidence from Atlantic Canada**

**Many industrialised countries are facing worker shortages and skills gaps due to low birth rates, an ageing population and evolving technological demands**. In 2018, a global survey of 40 000 employers in 43 countries, including Canada, revealed that 45% experienced skills shortages. Prior to the COVID-19 pandemic, population trends in Atlantic Canada (a region on the eastern coast that includes the provinces of Newfoundland and Labrador, Prince Edward Island, Nova Scotia and New Brunswick) indicated a decrease in natural population growth, with more deaths than births recorded, as well as a shrinking labour force, with low immigration and retention rates compared to the other parts of Canada.

**In early 2020, the government of New Brunswick adapted policies to stimulate the expansion of the resident population.** New Brunswick is one of Canada's Atlantic provinces with a population of approximately 775 000 and committed to grow the province's population to one million. This goal could be achieved through multiple channels, including repatriating former New Brunswick residents that moved elsewhere in Canada, better retention of existing residents and through the attraction of residents from the other Canadian provinces. The "Live for the Moment N.B." pilot project, implemented in New Brunswick in 2021, aimed to attract remote workers by promoting the region's appeal in terms of quality of life, work-life balance, affordability and access to urban centres. The project targeted major Canadian cities in phase one and smaller regions in phase two, using online marketing strategies and regional onboarding coordinators to manage relocation requests.

**During its year of operation, the campaign yielded favourable economic results**, leading to the relocation of 21 families (comprising 35 individuals) to New Brunswick, with an additional 44 potential moves in the pipeline. These developments were estimated to have a substantial economic impact of USD 3.6 million (USD 7.3 million when factoring in spouses). Moreover, the higher visibility of New Brunswick generated by the campaign supported the province's population growth goals and coincided with a surge of interprovincial migration during the first half of 2021, with an influx of 13 487 individuals relocating to New Brunswick from other regions across Canada. The target regions of the campaign also coincided with the regions that produced the greatest number of migrants (71%). Since then, migration from other provinces and overseas has continued to bolster the local population, prompting the provincial administration to shift its focus to another persistent issue: the widespread challenge faced by local firms in finding suitable candidates for their job openings. Recognising that the "Live for the Moment N.B." campaign primarily attracted teleworkers who remained employed elsewhere, it was discontinued in favour of prioritising active labour market policies aimed at serving the needs of in-province companies.

Sources: (OECD, 2022[23]; Fang, Zhu and Struk Jaia, 2020[24]; CREA, 2022[25]); Interviews with Opportunities New Brunswick (provincial economic development agency).

**Since the COVID-19 pandemic, the "work-from-anywhere" trend has gained traction, particularly among high-skilled workers, especially youth in the ICT industry.** As a result, policymakers have initiated various strategies to attract remote workers and their families with the aim of achieving local development objectives, such as addressing labour shortages, enhancing fiscal revenue and mitigating demographic decline. At the national level, streamlined visa procedures have become popular, while at the regional and local levels, approaches involve providing financial incentives, offering "soft landing" support, ensuring convenient housing options and promoting themselves as remote worker-friendly hubs. Nevertheless, the effectiveness of these policies and their impact on local development still lacks sufficient evidence, necessitating further data collection and evaluation efforts (OECD, 2022[23]). Box 1.7 illustrates

a case study from the Basque Country, Spain, where a talent attraction initiative has been in place for years, aiming to enhance skills matching and tap into global talent flows.

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**Box 1.7. Bizkaia Talent: how a Basque region is attracting digital nomads**

**Bizkaia Talent is a public recruitment agency whose mission is to foster an environment that attracts, connects and retains highly qualified individuals and organisations in the Basque province of Biscay, Spain.** Established in 2005, the agency aims to support local companies, research organisations and universities in the recruitment of skilled workforce by removing geographical barriers to job matching. It leverages regional strengths, including high living standards, the provision of advanced public services and a vibrant and diversified economic base. Digital nomads, i.e. individuals who use technology and remote work opportunities to lead a location-independent lifestyle, constitute a major target group for the agency, given their high predisposition to relocate.

**In 2021, the Be Basque Talent Map registered over 16 000 highly qualified professionals from 100+ countries.** This innovative project links local employers with global talents based on sector and location, showcasing its main strength in effectively matching evolving skill demands with the right talent through digital platforms and networking meetings. During these gatherings, professionals directly connect with Basque recruiters, facilitated by Bizkaia Talent. Additionally, the agency allocated nearly EUR 8.5 million in financial aid and grant programs, supporting over 200 talented individuals in 70+ organisations through training, knowledge and skills development, with a particular focus on automotive, bioscience, aeronautics, energy and the silver economy.

**To facilitate the relocation of digital nomads to the Biscay province, the agency developed coworking spaces in Bilbao, San Sebastián and Vitoria, creating favourable conditions for remote work.** Some districts also offer special accommodation discounts for teleworkers. Moreover, webinars are regularly organised to provide digital nomads with accessible information about social contributions, pensions and the teleworking environment.

Source: (Bizkaia Talent, 2022[26]).

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# 2 Assessing the local conditions for teleworking

## The Ems-Achse has opportunities to increase the uptake of teleworking

**The uptake rate of teleworking in Lower Saxony is slightly below the national average in Germany.** Statistical data shows that workers in Lower Saxony are less commonly engaged in teleworking compared to the rest of the country. In 2021, 16.3% of all German workers reported working remotely at least two days per week, compared to 15.0% in Lower Saxony.[4] Across German *Bundesländer*, reported teleworking levels, or actual teleworking, varied between 7.5% and 28.8% in the same year.

**In 2021, the gap between the actual and potential teleworking rates in Lower-Saxony amounted to 17 percentage points, compared to 20 percentage points in Germany as a whole.** The calculation of teleworking potential is based on the types of occupations in each district, with each occupation associated with a level of teleworkability determined by the tasks typically performed within that occupation (Box 2.1). Figure 2.1 illustrates that in 2022, only on average 28% of workers in the Ems-Achse, 33% in Lower Saxony and 36% in Germany had the potential for teleworking. These percentages remained relatively stable between 2019 and 2022, as the assessment of teleworkability of occupations is based on a pre-pandemic model. The industrial structure of the regions was largely unaffected by the pandemic. Despite the significant increase in teleworking practices between 2019 and 2021 due to the pandemic, a substantial gap still exists between the current teleworking rates in regions and the average teleworkability.

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[4] The statistics on current teleworking across places are based on responses to the EU Labour Force Survey. Data limitations prevent the calculation of statistics for Ems-Achse specifically.

> ### Box 2.1. Assessing the share of jobs amenable to remote working
>
> The analysis in this chapter classifies occupations based on a study by (Dingel and Neiman, 2020[27]), which is derived from the O*NET surveys conducted in the U.S. Since the occupations are classified according to the U.S. Standard Occupational Classification system (SOC), the report uses a crosswalk to the International Standard Classification of Occupations (ISCO). This method classifies each occupation based on the tasks required and according to the degree to which those tasks can be performed remotely. For example, occupations that entail outdoor work (e.g. food delivery personnel) or the use of heavy equipment (e.g. vehicle operators) are considered to have a low potential for remote working. Conversely, occupations that only require a laptop and an Internet connection (e.g. accountants, finance specialists, etc.) are deemed to have a high potential for remote work. This method enables the use of the most recent administrative datasets with broad coverage and facilitates international comparisons of remote working potential across countries (OECD, 2020[28]). The percentage of the workforce that are teleworkable is a weighted average across all workers, with the weights defined by the teleworkability of each occupation.
>
> Source: (OECD, 2021[14]; Dingel and Neiman, 2020[27]; OECD, 2020[28])

**The Ems-Achse exhibits a lower teleworking potential than neighbouring regions, a phenomenon partially attributable to its industrial structure.** The region boasts a higher concentration of jobs in the industrial and construction sectors, which are generally less amenable to teleworking. In contrast, the services sector comprises a lower proportion of jobs, typically more conducive to teleworking. This imbalance in the distribution of teleworkable jobs reduces the overall teleworking potential of the Ems-Achse. Furthermore, significant gaps exist between the potential for teleworking and its actual implementation in the region. These gaps indicate that, despite the capacity for teleworking within certain occupations, the practice is not fully embraced by workers and employers.

**Approximately one in two workers in the Ems-Achse have the capability to telework for at least one day per week, and about 20% can work remotely for three days or more.** These estimates are based on the amount of time spent on teleworkable tasks for each occupation. Teleworkable tasks typically involve activities such as desk research and administrative work, which can be carried out using a computer. The number of days workers can telework per week is determined by the proportion of teleworkable tasks in each occupation. For example, if an occupation has 20% of its tasks deemed teleworkable, it corresponds to one remote working day in a five-day workweek. Around 20% of workers in the Ems-Achse fall into the teleworkable score range between 20% and 40%, corresponding to one to two days of remote work per week (see Figure 2.1). The Ems-Achse has a lower percentage of workers who can work remotely for at least two days per week compared to Lower Saxony and Germany overall. However, when considering the combined share of workers who can work remotely for at least one day per week, this covers 47%, with 19% of workers capable of working remotely for at least three days a week.

**Figure 2.1. Teleworking uptake and potential remain below Lower Saxony and the German average**
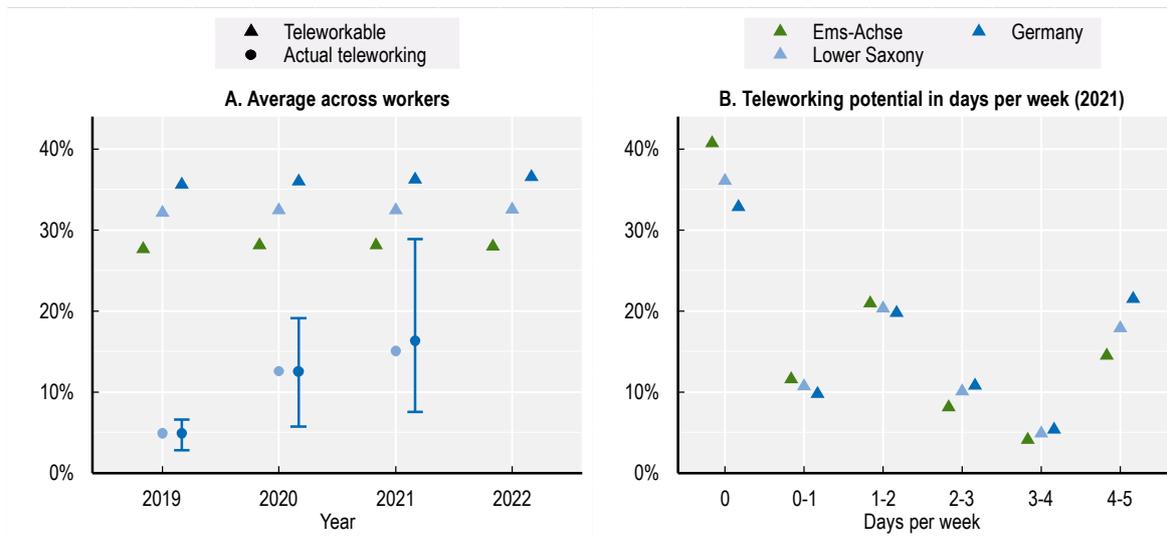


Note: Actual teleworking based on the EU Labour Force Survey, available at TL2 level (*Bundesländer*) in Germany. The bars present the minimum and maximum across German *Bundesländer*. Teleworkability scores are derived using the methodology of (OECD, 2020[28]; Dingel and Neiman, 2020[27]), where each occupation has a tasked-based teleworkable score. Panel A presents the average teleworkable levels (indicated by triangles) and actual teleworking practices (indicated by dots) across all occupations in different regions of Germany. The vertical bars in this panel represent the range between the minimum and maximum levels of actual teleworking observed across the TL2 regions of Germany. Panel B provides a breakdown of teleworkability levels across different categories. For instance, if a job is assigned a teleworkable score of 20%, theoretically, that job could be performed through teleworking for one day in a standard workweek.
Source: OECD Calculations based on EULFS and BA Statistik.

**In comparison to other regions, a greater proportion of workers in the Ems-Achse are employed in occupations that preclude remote work.** In the Ems-Achse, over 40% of jobs receive a teleworkability score of zero. Occupations such as manufacturing production operators are among those with minimal scores, as these roles traditionally require physical presence on factory floors. However, the emergence of new industrial paradigms, such as Industry 4.0, holds the potential to transform the nature of manufacturing production in the future (see Box 2.2).

> ### Box 2.2. Enabling remote work in manufacturing: the role of Industry 4.0
>
> **Industry 4.0 refers to the fourth industrial revolution characterised by the integration of advanced digital technologies into manufacturing processes.** These technologies include the Internet of Things (IoT), artificial intelligence, big data analytics, cloud computing and robotics, among others. Several ways in which Industry 4.0 can increase the number of remote work opportunities in manufacturing include:
>
> - Remote monitoring and control: with the integration of IoT and sensors in manufacturing equipment and processes, it becomes possible to monitor and control machines and production lines remotely. This enables workers to oversee operations from their homes, reducing the need for physical presence on the factory floor.
> - Virtual and augmented reality (VR/AR): VR and AR technologies can be used to provide remote workers with a virtual experience of the manufacturing environment. This enables them to participate in tasks such as quality control, maintenance and troubleshooting from a remote location.
> - Data analysis and predictive maintenance: data generated from connected devices can be analysed in real-time, allowing manufacturers to predict equipment failures and schedule maintenance remotely. This can significantly reduce the need for on-site maintenance personnel.
> - Collaborative robotics (Cobots): Cobots are designed to work alongside human workers safely. With remote access and control, workers can operate cobots from home, allowing them to participate in the manufacturing process without being physically present in the factory.
> - Supply chain management and logistics: advanced data analytics and cloud-based systems can improve supply chain visibility and coordination, making it possible for employees involved in supply chain management and logistics to work remotely.
>
> **However, not all manufacturing jobs can be performed from home, especially those requiring physical interaction with machinery or materials.** Additionally, the successful implementation of teleworking in manufacturing will depend on factors such as the level of automation, the nature of the manufacturing processes, and the company's willingness to embrace remote work practices.
>
> Source: (OECD, 2017[29]).

**Findings from a survey conducted among firms in the Ems-Achse indicate that employers expect their employees to telework for one to two days per week in the future.** On average, respondents estimated that around 30% of employees would be teleworking remotely for one to two days per week. A smaller proportion is expected to telework for more than two days per week, while the largest share would not telework at all (Figure 2.2). This distribution broadly aligns with the pattern of teleworking potential outlined in Figure 2.1 (Panel B). However, it is noteworthy that fewer individuals who have the capacity to telework full time are expected to do so according to employers' current expectations.

**The COVID-19 pandemic has brought significant changes to working practices in the region.** Prior to the pandemic, the largest share of workers did not telework. However, during the pandemic, government ordinances led to a substantial shift, with most people in amenable jobs teleworking full time. Employers' current projections for the future suggest that a midpoint between these two extremes will likely be the new reality, rather than a complete return to pre-pandemic working practices (Figure 2.2). This highlights the lasting impact of the pandemic on work arrangements and reinforces the need for adaptive and flexible policies moving forward.

**Figure 2.2. Teleworking practices among firms from the Ems-Achse region**

Mean across survey responses for the share of teleworking employees, by period and time.
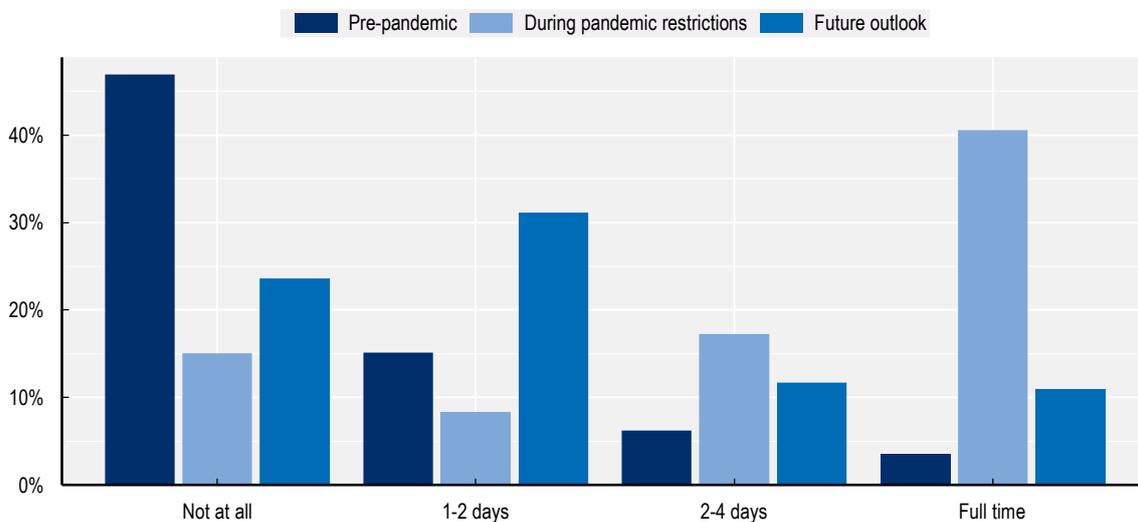


Note: Respondents were asked about the approximate share of workers who telework during specific periods: prior to the pandemic, during the home-working ordinance from March 2020 to June 2021, and their expectations for the future. Additionally, the survey sought to determine the teleworking intensity in terms of days per week. The bars in the graph depict the mean share of the responses. The bars across the periods may not add up to 100% due to incomplete responses (67 responses for pre-pandemic, 61 responses for pandemic period, and 59 responses for post-pandemic period). The respondents may not necessarily constitute a fully representative sample of businesses in the region.
Source: OECD calculations based on a survey conducted in November 2021.

## Prerequisites for teleworking adoption

**To make a strong case for teleworking as a solution to address labour shortages in the Ems-Achse, a comprehensive assessment of various factors is essential.** The key elements derived from literature on teleworking determinants can be categorised as follows:

1. **Internet infrastructure:** teleworking requires affordable and high-speed Internet to be widely available, including in rural areas.

2. **Physical workspace:** teleworkers require alternative workspaces, such as in homes or shared workspaces.

3. **Legal framework:** employment regulations can facilitate, or at least, provide a framework for delineating the rights and responsibilities of teleworkers and employers.

4. **Work culture:** a flexible working culture and modern management can foster teleworking arrangements within teams based on the preferences and needs of both individuals and the team as a whole.

Moreover, fundamental economic characteristics influencing the extent of teleworking in a region should be considered:

5. **Economic structure:** the size of service-based industries in the economy is a critical determinant because these sectors typically employ a larger proportion of individuals with job tasks that are suitable for teleworking.

6. **Digital skills:** the level of digital skills required by employers acts as an indicator of the potential for jobs to be carried out in a virtual setting across various sectors.

7. **Demographic composition:** understanding the demographic composition of the workforce is key, as certain groups, such as young people and parents of young children, may be more likely to engage in teleworking.

Furthermore, to attract teleworkers a region must provide additional fundamental conditions:

8. **Public services:** offering high-quality public services in healthcare and education contributes to a desirable living environment, enticing teleworkers to relocate.

9. **Accessibility:** well-developed infrastructure and accessibility, facilitating travel and commuting for individuals arriving from other regions within the country or from abroad, are important factors in promoting the region's appeal.

**A holistic evaluation of these factors will help demonstrate the viability of teleworking as a means to alleviate labour shortages in the Ems-Achse region**. By addressing the physical, legal, cultural and economic prerequisites, the region can position itself as an attractive destination for teleworkers, fostering a more resilient and productive workforce.

## Core teleworking requirements and conditions

### *Internet infrastructure can catch up with comparable regions*

**The speed of Internet available to households and businesses in the Ems-Achse region is notably low, especially in the case of mobile connections, when compared to the German average.** Data from Speedtest for the second quarter of 2021 reveals that the average download speed in Ems Achse, relative to the average of European OECD regions, is more than 10% lower for fixed connections and over 40% lower for mobile connections (Figure 2.3). Results from speed tests can offer insights on the availability and speed of local networks (Paula Caldas, Veneri and Marshalian, 2023[30]). Nonetheless, speed tests may not present a fully representative picture, as people might conduct them during network malfunctions or intentionally to showcase higher speeds.

**The Ems-Achse region's disparity in mobile connection speed is notable even when viewed in an international context.** On average, rural regions in both Germany and Europe experience lower fixed and mobile Internet speeds. Across Europe, including Germany, rural areas experience download speeds that are more than 20% below the OECD-European average. The Ems-Achse region, however, fares relatively well compared to other rural areas, with download speeds that are less 15% below the European-OECD average. On the other hand, the download speed of mobile connections in the Ems-Achse significantly lags behind the average of other rural regions, more than 40% lower, whereas the average download speed of mobile connections in other rural regions in Europe is approximately 20% below the OECD-European average.

**Figure 2.3. The Ems-Achse suffers from slow Internet, especially for mobile connections**

Average Internet speed tests, 2021Q2, by type of connection.
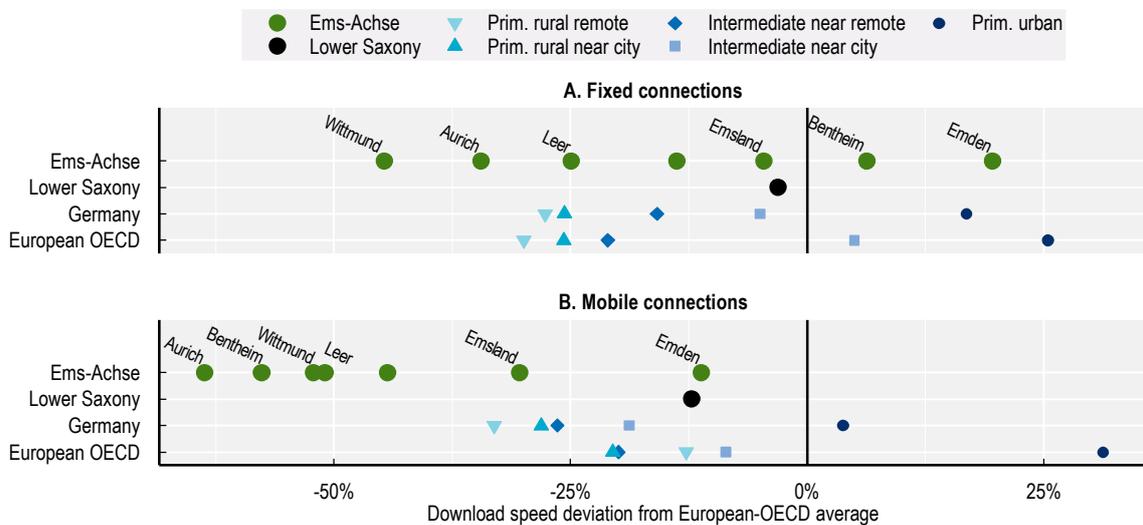


Note: The rural/urban classification represents the simple average across districts. The unlabelled dot of the Ems-Achse represents the simple average across the districts.
Source: OECD calculations based on Ookla data.

**Slow Internet speed could pose a challenge for the widespread adoption of teleworking, as a fast and reliable Internet connection is a critical infrastructural prerequisite.** Business representatives in the region acknowledge that the expansion of the fiberglass Internet network has progressed well in recent years. However, some employees may still experience difficulties in obtaining fast connections, as many homes are not yet connected to the main network. Furthermore, mobile connections cannot offer a viable alternative solution for teleworking in the region, as they lack the necessary bandwidth and stability for seamless teleworking practices. This limitation hinders employees' ability to work efficiently and effectively from remote locations, as well as while traveling or commuting.

**In four out of six districts in the Ems-Achse, over 80% of households have access to a fixed-line connection supporting a minimum of 100Mbit/second.** According to the *Bundesnetzagentur* (i.e. the federal agency for Internet networks), by the end of 2022, more than 90% of households in the districts Emden and Grafschaft Bentheim have access to Internet connections with this bandwidth, while less than 70% of households in Wittmund and Aurich have access to the same technology (Figure 2.4). The share of households covered by a fixed-line connection offering at least 100Mbit/s is in line with the variations seen across German regions. More than 80% of households in predominantly rural regions in Germany have access to such Internet speeds. Concerning mobile connections, the limited coverage of 5G networks in the region may explain the slower speeds experienced by users. In Grafschaft Bentheim and the districts of Wittmund and Aurich, fewer than 40% of households were within the coverage area of 5G networks as of October 2022. Approximately 70% of households in the districts of Leer and Emsland would have access to 5G networks, even though the reported Internet speeds are lower compared to the average of OECD-European regions.

**To support the advancement of teleworking in the region, continued efforts to improve the Internet infrastructure are essential.** The Digital Strategy for Germany, launched by the federal government in 2022, has established the ambitious goal of providing nationwide fibre optic connectivity to households in Germany by 2030. Businesses and public authorities in the Ems-Achse region recognise the importance of high-speed broadband in fostering digitalisation and competitiveness and are committed to tapping on

federal initiatives to achieve this goal. Municipalities in Grafschaft Bentheim have invested in the creation of a broadband company that provides fibre optic connections to more than 4 000 households.[5] Aurich is also making progress on fibre expansion, with over 5 000 new connections launched in 2023.[6] Through the Weiße-Flecken funding programme, which provided EUR 139 million in funding, the Emsland district has already achieved a nearly comprehensive coverage of 100% in terms of fibre accessibility, becoming a notable example of effective planning.[7]

### Figure 2.4. Households in the Ems-Achse have access to high-speed Internet through line but not mobile connections

Internet network coverage for households, 2022, by type of connection.
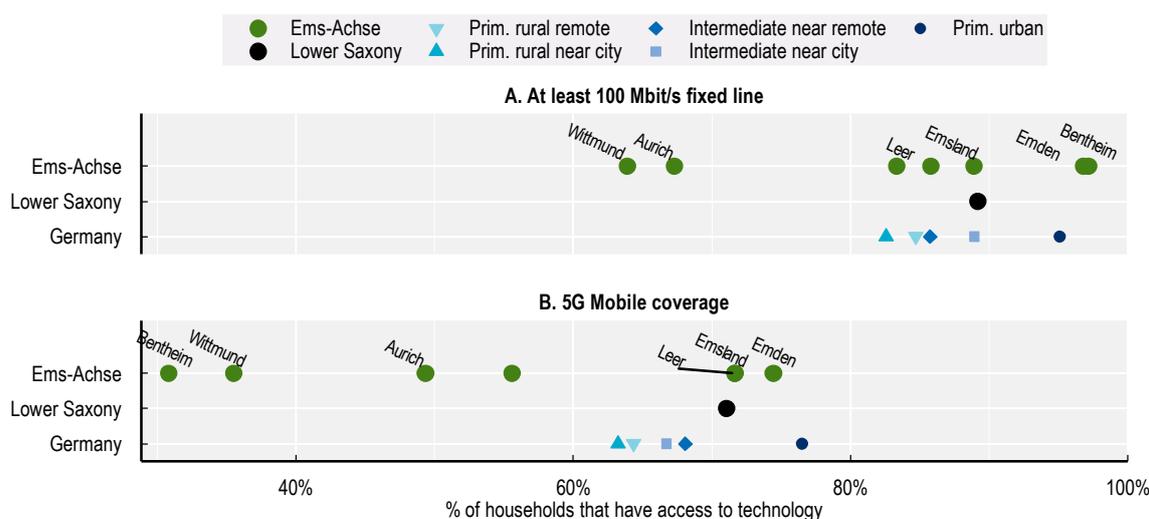


Note: Fixed line data is for December 2022, mobile network for October 2022. The rural/urban classification represents simple averages across districts. The unlabelled dot of the Ems-Achse represents the simple average across the districts.
Source: OECD calculations based on Bundesnetzagentur, Breitbandatlas.

### *Abundant and affordable workspace*

**Housing in the Ems-Achse region is abundant and affordable compared to other German regions**. The average residential property price stands at EUR/m² 2 350, with southern districts exhibiting lower prices than northern ones. In comparison, prices rise to EUR/m² 2 381 in Lower Saxony and to EUR/m² 3 140 in Germany. This difference suggests that the region may have been less affected by the surge in real estate prices across the country in recent years, especially in its urban areas (ImmoWelt, 2023[31]). The Ems-Achse region positions itself within a lower price range for rentals compared to other German regions, confirming the notion of a relatively affordable real estate market in the area. Additionally, the Ems-Achse boasts a moderate availability of vacant buildings compared to other German regions, with Emsland and

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[5] For more information, visit: https://www.grafschafter-breitband.de/index.html

[6] For more information, visit: https://www.landkreis-aurich.de/aktuelles/detail/breitband-glasfaser-ausbau-geht-in-die-zweite-runde.html

[7] For more information, visit: https://bmdv.bund.de/SharedDocs/DE/Artikel/DG/beispielprojekte-breitband-landkreis-emsland.html

Wittmund exhibiting a greater availability of empty houses.[8] The abundance of space can facilitate the creation of home offices and shared workspaces, thereby supporting teleworking arrangements. This, in turn, may also attract talent from other regions in Germany with much more limited availability of affordable spacious housing, in line with a general trend that has been observed since the COVID-19 pandemic (Box 2.3).

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### Box 2.3. How the COVID-19 pandemic is reshaping the geography of housing

**Working from home has important implications for the spatial redistribution of work and housing demand.** The widespread adoption of remote working practices has led many individuals to seek larger living spaces and to consider residences further from city centres, due to reduced commuting requirements. Thus, housing demand in many large cities has tended to shift from the city centre to the suburbs. However, this shift is not uniform across all cities and regions. It tends to be more pronounced in cities characterised by significant house price differentials prior to COVID-19, and where moving to the periphery offers better access to green spaces while maintaining reliable high-speed Internet access. Moreover, this trend is more pronounced in areas where COVID-19 restrictions were more stringent (OECD, 2022[32]).

**Rather than a renewed preference for rural areas, changes in housing demand underline a desire to move to places that combine the benefits of rural and urban life.** Housing demand increased not only in commuting zones but extended to areas beyond metropolitan boundaries. Outside the main metropolitan areas, but within the commuting zones, housing demand has increased most in low-density, more affordable (rural) settlements. On the other hand, outside metropolitan areas, where most of the land is rural, housing demand has increased most in high-density (urban) areas (OECD, forthcoming[33]). Consequently, the reallocation of housing demand away from the city centre to more affordable areas in the suburbs is expected to ease price pressures in the urban districts and increase price pressures in the periphery. In 2021, the average house price in the metropolitan areas reached 4 932 euros per $m^2$ in Berlin and 5 425 euros per $m^2$ in Hamburg, decreasing to EUR 1 447 and 2 366, respectively, when considering districts far from the city centre. Nonetheless, between 2019 and 2021, house prices increased by 22.4% and 22.6% in the Berlin and Hamburg conurbations respectively, reaching peaks of 27.5% and 24.5% in the commuter zones.

**Spatial redistribution also affected house prices.** The OECD hypothesis of negative house price gradients, whereby house prices fall with increasing distance from the city centre, was modified after the pandemic. The emergence of teleworking not only flattened the house price gradient but also restructured the distribution of local service providers. However, significant changes are only observed in large metropolitan areas. A balanced approach to housing supply is needed to avoid steep price rises and urban sprawl. Land use policies should allow for some densification in areas of increased demand, while adapting infrastructure and public services accordingly (OECD, 2023[34]).

Source: (OECD, 2022[32]; OECD, forthcoming[33]; OECD, 2023[34]).

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**The Ems-Achse hosts several shared workspaces across its districts.** These facilities can be categorised as coworking spaces, bars and restaurants that can accommodate workers, and tourism accommodations that also aim to attract so-called "workationers". While most coworking spaces tend to

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[8] For more information, visit:
https://www.deutschlandatlas.bund.de/DE/Service/Kartensuche/kartensuche_node.html?cms_filter=WieWirWohnen

be situated in or near cities, there is scope to expand the offering across the region, especially in the northern districts, as Figure 2.5 illustrates, leveraging the region's large availability of unused space.

**The provision of shared workspaces has gained momentum across OECD regions in response to the increasing trend of teleworking.** These spaces offer a convenient location for both visitors and residents to work and access the Internet, serving as an alternative for residents unable to establish a home office. One of the significant advantages of coworking spaces, as illustrated in Box 2.5, is their ability to foster a sense of community among users, facilitating business linkages that may not typically occur within traditional office settings. Numerous studies have documented the development of coworking spaces in various countries, including the UK and Switzerland, among others.

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### Box 2.4. Policy practices: how Switzerland and the UK are using telework for geographical redistribution

**In Switzerland, teleworking is being utilised to enhance and standardise connectivity across geographically diverse areas within a region.** Despite the widespread digitalisation of everyday life, not all communities have equal access to the Internet and digital technologies, with mountainous regions often lagging behind urban areas. In response to this digital divide, Switzerland has launched a local project called "miaEngiadina" (my Engiadina) in the mountainous region of Engiadina Bassa/Val Müstair. This initiative aims at fostering digital development by implementing fibre optic infrastructure, establishing Wi-Fi hotspots, and creating coworking spaces known as "mountain hubs". The objective is to attract teleworkers and digital nomads from cities to work in the mountains, thereby transforming the region into a vibrant "third place", which combines home and work within daily life. This approach to local digitalisation in rural areas presents new economic opportunities and helps diversify rural economies beyond traditional sectors like agriculture and forestry (Bürgin and Mayer, 2020[35]).

**The new work patterns that emerged due to the COVID-19 pandemic have also given rise to a new geography of work.** According to the World Economic Forum, 68% of people prefer hybrid working (WEF, 2022[36]), 74% of employers now offer hybrid work arrangements (IF, 2022[37]), and it is projected that hybrid working will apply to 20-25% of the workforce in advanced countries and 10% in emerging markets by 2030 (McKinsey, 2023[38]). To adapt to this scenario, new spatial understandings of work play an essential role in fostering local development, leading to the proliferation of innovative practices, such as the establishment of coworking spaces. In the UK, some initiatives predating the COVID-19 pandemic had already introduced flexible work hubs. Coworking is defined as the sharing of workspace and amenities by individuals who do not work for the same company, typically self-employed individuals or teleworkers. Coworking spaces embody the values originally envisioned by those who pioneered the concept: collaboration, community, sustainability, openness and accessibility (Open Coworking, 2023[39]). These intentionally cultivated values result in open social spaces and the creation of social events, as well as a new organisational culture.

Sources: (Bürgin and Mayer, 2020[35]; WEF, 2022[36]; IF, 2022[37]; McKinsey, 2023[38]; Open Coworking, 2023[39]).

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**Global practices show that the effectiveness of shared workspaces is maximised when combined with community-building initiatives.** Merely providing rentable desks may not fully leverage the potential of these spaces. Talent attraction initiatives in the United States and Canada have demonstrated that offering additional services, such as facilitating connections to the local business community for individuals

relocating from outside the region, enhances the appeal of coworking spaces.[9] Furthermore, coworking spaces can serve as access points to local public services for those interested in establishing more permanent residency in the area. Evidence from the UK demonstrates that coworking spaces actively contribute to building connections among workers from diverse backgrounds and companies, functioning as informal innovation hubs where a community of workers collaborates and supports one another.

**Figure 2.5. Shared workspaces in the Ems-Achse concentrate in central and southern districts**
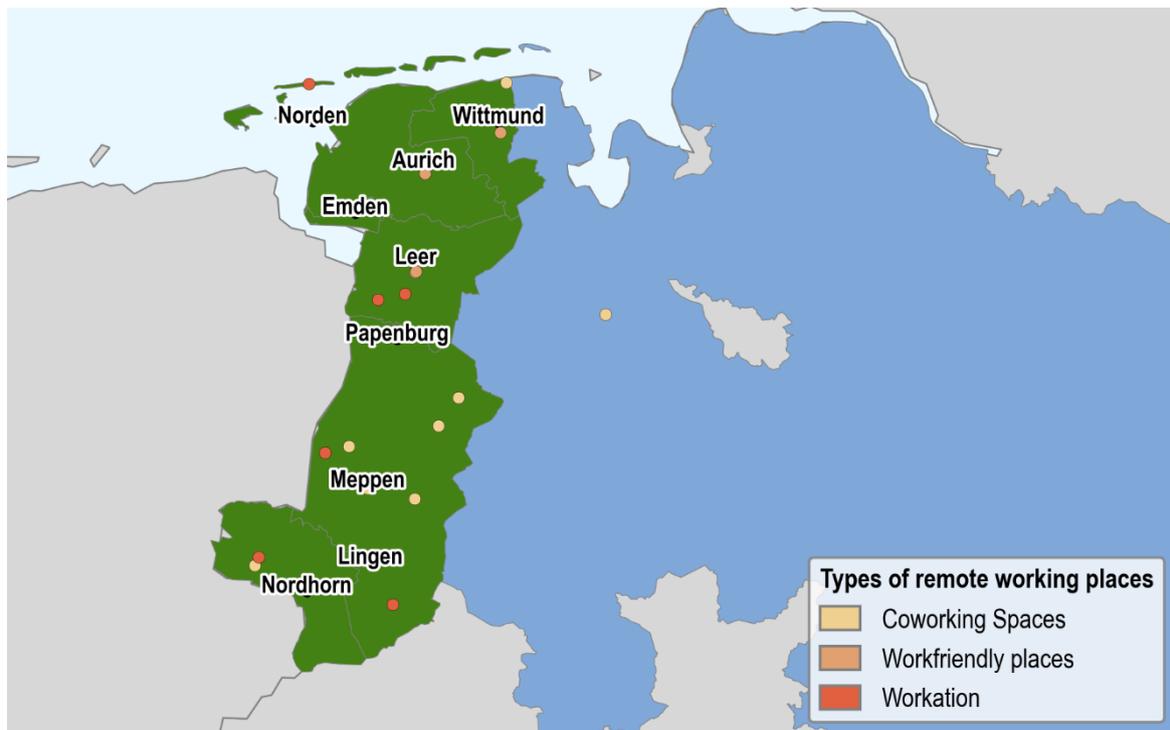


Note: Towns and cities may have multiple coworking spaces and workfriendly spaces. For details see source.
Source: OECD illustration based on Wachstumsregion Ems-Achse e.V. (2023[40]).

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[9] For example, the Tulsa Remote program launched in Oklahoma, US, in 2018 incentivised a group of 70 participants to move to the city through tax breaks, coworking space and apartment discounts and the promise of a supportive newcomer community. The programme resulted in millions of economic earnings and the creation of 600 new jobs in 2021, attracting a highly qualified cohort of remote workers and revitalising the local economy (Newman, O'Deal and Fikri, 2021[62]).

> **Box 2.5. Coworking spaces in the Ems-Achse region**
>
> **Coworking spaces in the Ems-Achse region are evolving beyond their traditional role as hubs for solo self-employed individuals and start-ups.** They are increasingly becoming places of work for a diverse range of professionals seeking the benefits of knowledge exchange and networking. The region has seen a surge in coworking projects, exemplified by an advertising agency in Meppen, which transformed an old building into a coworking space with 14 fully furnished workstations. The space attracts a mix of individuals, including digital nomads, long-term co-workers and occasional visitors, all seeking an environment conducive to productive work and collaboration.
>
> **The fundamental principle behind these coworking spaces lies in fostering collaboration and building a sense of community.** Participants, including students, employees and self-employed individuals, gain value from the networking opportunities and shared sense of purpose. Coworking spaces serve as multifunctional hubs, offering additional services such as cafés, drop-off points, online marketplaces and pop-up stores. They also contribute to bridging the divide between rural and urban areas, promoting regional cohesion and interlinkages.
>
> **However, the widespread adoption and recognition of coworking spaces face challenges.** Companies remain largely unaware of the potential benefits, which include increased flexibility and the provision of satellite offices. Concerns related to additional costs and data protection further hinder their acceptance, as employers often prefer traditional office setups. Conversely, despite being launched with enthusiasm amid the recent trend, some coworking spaces across the Ems-Achse have encountered failures or challenges in establishing a sustainable business model. Factors such as inadequate demand, suboptimal location choices, limited marketing and awareness, and a divergence in vision from prospective users may underlie the lack of success in these initiatives.
>
> **While municipalities play a crucial role in promoting coworking spaces through subsidies and facilities, encouraging networking and collaboration among coworking space operators and entrepreneurs is actively facilitated by private organisations.** To foster their growth and impact, streamlining bureaucratic regulations, improving Internet infrastructure and accessibility, and highlighting the positive economic and environmental outcomes associated with coworking spaces are seen as helpful.
>
> Source: (Wachstumsregion Ems-Achse e.V., 2023[40]); OECD field interviews.

### *A flexible legal framework*

**Regulations on working conditions for teleworking vary significantly among OECD member countries.** These regulations cover various aspects, including the process of establishing teleworking arrangements, equipment, and maintenance costs, working schedules and overtime, and more. Framework conditions are sometimes established in dedicated laws or included in general labour laws, while in other cases, they are codified through national or sectoral collective agreements. Some countries have no specific legislation on teleworking, but teleworkers are protected by standard labour protection provisions. Another significant distinction is the existence and enforceability of the right to request teleworking, with varying degrees of employer power to refuse such requests (OECD, 2021[41]).

**Responses to the expanding teleworking environment during the COVID-19 pandemic and changes in legal frameworks also varied considerably across countries.** Many countries encouraged teleworking by introducing temporary provisions, such as offering financial support to firms transitioning to teleworking, providing tax-and-social-security-free allowances to cover teleworking-related costs for

employees, and concluding tax agreements for cross-border workers working from home. In addition to adaptation measures, the rise of this practice prompted some countries to implement more permanent changes. This involved encouraging social partners to initiate negotiations on teleworking or promoting government-led reform proposals to comprehensively review the legal framework for teleworkers. Box 2.6 describes the situation in Germany amidst this variety of regulatory settings.

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### Box 2.6. Germany's flexible policy framework for teleworking

**In Germany, there is currently no specific legislation dedicated to teleworking, nor a legally established and enforceable right to request teleworking.** In response to the pandemic outbreak, the federal government provided financial support to firms transitioning to teleworking arrangements, and tax agreements were reached with neighbouring countries. The Working Hours Ordinance also authorised an extension of daily working time to accommodate the exceptional circumstances of the pandemic. Although a comprehensive codification of teleworking is still lacking, German legislation does include provisions regarding various modalities of work outside the office, distinguishing between *Telearbeit*, which replicates an office working environment at home, and *mobile Arbeit*, which allows employees to choose their work location and use mobile devices. Both models are subject to general legislation on occupational safety and health, but specific provisions are added for *Telearbeit* due to its more binding and structured nature.

**The absence of specific regulations for teleworkers in Germany results in the existing legal framework prioritising compliance with working time regulations and safeguarding workers' rights.** Teleworking agreements, for example, must include provisions to ensure adherence to the Working Hours Act and the recording of daily working hours. Digital surveillance is limited by data protection laws and can only be used in cases of concrete suspicion of serious misconduct. Works councils play a crucial role in co-determination for teleworkers, particularly concerning matters related to occupational health and safety, working time allocation and digital surveillance. As a result, businesses must consult with works councils before introducing teleworking arrangements. However, collective bargaining only marginally addresses teleworking, leading to a highly diverse landscape of teleworking practices. Larger employers often implement their own corporate policies tailored to their specific industry, needs, tasks and management preferences.

Source: (OECD, 2021[41]; Bmas, 2023[42]; CMS, 2022[43]).

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**Employers in the Ems-Achse regions are using the current flexibility in the legal framework.** As field interviews highlighted, recognise the advantage of tailoring teleworking practices to suit the unique aspects of their respective companies. There is a strong consensus among employers, regardless of their firm size or industry, that individual-level regulation of teleworking conditions is vital, as it enables a dynamic and adaptable response to the needs and circumstances of each teleworker. They express reservations about heightened state regulations, fearing potential constraints on their ability to innovate and respond swiftly to evolving workplace needs.

**The flexible legal environment appears to align with worker preferences.** Workers report that they highly value the independence and convenience that teleworking offers. In a context of labour shortages, where workers hold greater bargaining power, teleworking has become an attractive benefit that is frequently brought up by job candidates during interviews. To attract and retain top talent, employers face substantial pressure to offer teleworking opportunities. Evidence supports the idea that well-defined and

supportive teleworking regulations can significantly improve the overall work experience for employees.[10] However, as bargaining power over time may decrease, it may be in workers' interest to advocate for more formalised teleworking regulations that grant them the right to request teleworking arrangements.

### *An evolving managerial culture*

**The absence of specific legislation on teleworking could be a contributing factor to the persistence of a managerial culture that prioritises direct supervision and physical presence**. In the Ems-Achse, this traditional mindset, where business-as-usual office work is considered essential for oversight and control, appears to be particularly widespread in certain sectors, especially among small-sized and family-led enterprises, which are more likely to be managed by people in older age groups.

**On the other hand, the lack of dedicated legislation for teleworking also leads to diverse practices in firms inclined to experiment,** whereby teleworking policies are regulated at the team, company and (albeit rarely) sectoral level. A sample of such practices from the Ems-Achse, provided in Box 2.7, indicates a widespread readiness to adopt flexible working models. In some cases, firms have experimented with teleworking for years, starting well ahead of the COVID-19 pandemic.

**Transitioning to a more remote-friendly managerial culture would help foster the widespread adoption of teleworking.** Promoting outcomes-based assessment, enhancing communication channels, offering relevant training, and addressing employees' social and technological concerns related to digitalisation can create an enabling environment for a successful integration of teleworking into business operations.

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[10] A survey of employees in seven OECD countries shows that teleworkers report better work experiences when they are covered by workplace policies, such as the right to disconnect: 86% of teleworkers who benefit from it report workplace trust, compared to 67% of those not covered by such a right (OECD, 2023[60]).

## Box 2.7. Diverse teleworking practices in the Ems-Achse: adapting to the COVID-19 pandemic

**The COVID-19 pandemic has significantly boosted the practice of teleworking.** However, certain firms had already established an infrastructure and corporate policy framework for mobile working prior to its outbreak. This is notably the case for a manufacturer of machine tools and industrial machinery. When office work restrictions were enforced, the uptake of teleworking increased, with approximately 130 mobile users and a peak of 300 in administration, out of a total workforce of 700. MLS networks provided a reliable and efficient way for users to establish secure VPN connections to access the SAP company servers remotely. This enabled staff to work from any location outside the company's premises. About 40% of staff engaged in home-office or mobile working, regulated by a collective bargaining agreement, with a maximum of five days per week.

**Radical organisational transformations became a common occurrence.** For example, a beverage logistics service provider introduced remote desktops and virtual connections across its locations. While some external services were performed remotely even before the pandemic, teleworking peaked at 40% during its advent. Local devices were replaced by individual workstations accessed through the RDP protocol. Over time, the flexibility offered by teleworking was observed to reduce commuting times and enhance work-life balance, leading to maintaining levels higher than pre-pandemic.

**Adapting to the new reality of teleworking affected all economic sectors.** Despite limited previous use, one-third of their workforce (1 800 employees) had to shift to teleworking after the outbreak in a local agricultural machinery manufacturer. The company's proactive approach and provision of basic hardware, such as laptops, facilitated the smooth transition. While administrative staff benefited the most from teleworking, production has also made progress in digitalisation, combining new technologies like the MES with industrial expertise.

**The reduction in commuting time is widely regarded as a significant advantage of teleworking.** The associated well-being gains were emphasised by a local business with over 40 years of experience in door systems production. Additionally, the company recognises that teleworking can address the skills shortage by enabling the recruitment of individuals from diverse regions, thereby enhancing regional attractiveness, especially for younger generations.

**Local municipalities are facing challenges with the shortage of qualified staff.** For example, the biggest challenge for economic development in the city of Nordhorn in Grafschaft Bentheim is attracting skilled workers. To this end, they are employing teleworking as a tool for retaining talent from other regions, thus addressing the skills shortage. The municipality has established conditions for a home-office through individual agreements that, thanks to the flexibility of hours and location, allow for better work-life balance. Similarly, the public administration of the city of Norden in the district of Aurich leverages teleworking to attract talent from further away. Here, a lot of exchange on teleworking occurs between the administration of the municipality and labour unions, envisaging a long-term and sustainable plan to further foster teleworking arrangements.

Note: * Multiprotocol Label Switching (MLS): a network technology for improving data traffic flow and performance. Virtual Private Network (VPN): a secure and encrypted connection over the Internet for remote access to private networks. Systems, Applications and Products in Data Processing (SAP): a multinational software corporation providing enterprise software solutions for business management. Remote Desktop Protocol (RDP): a Microsoft protocol for remote access to computers. Manufacturing Execution System (MES): a software for managing and optimising manufacturing processes and production activities.
Source: Field interviews conducted by the OECD.

## Additional factors that influence teleworking practices

### *A traditional industrial structure*

**The Ems-Achse region has a smaller service sector compared to other German regions**, as discussed earlier in Section 1**.** This indicates that the potential for teleworking may be lower since teleworkable jobs are often more common in service-oriented industries. However, there is a transformative potential of digitisation processes in the primary and secondary sectors, which could lead to an increase in the number of tasks suitable for remote work. As illustrated in Box 2.8, IT-Achse, the competence network for IT established by Ems-Achse e.V., could meaningfully contribute to fostering the creation of digitally-enhanced jobs in traditional industries and promoting a more remote-friendly culture among managers in regional SMEs.

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#### Box 2.8. Digitalisation practices in the Ems-Achse region: the role of IT-Achse

**Enterprises in the Ems-Achse exhibit varying degrees of digital readiness.** IT-Achse, the competence network for IT established by Wachstumsregion Ems-Achse e.V., comprises IT companies, public bodies, research and educational establishments from the region. Its primary objective is to maximise the opportunities and mitigate the risks associated with digitalisation for regional enterprises. The network receives financial support from the Emsland and Leer districts and the city of Lingen. Through collaborative projects and network events, IT-Achse actively promotes industry-oriented co-operation and dialogue among the current 91 partners. With several different activities, the aim is to create an environment that encourages knowledge transfer and open dialogue, particularly on technology and innovation in the region.

**IT-Achse is dedicated to fostering regional dialogue and promoting mutual learning on emerging technologies.** Each year, the network organises the "Digital Summit", a well-established event with changing topics. In 2023 the event focused on exploring the impact of IT on life and work in the future and over 150 IT professionals gathered at the Innovation Centre of the Rosen Group in Lingen to exchange ideas and insights on digitalisation and AI. Additionally, the network recognises regional outstanding initiatives through annual awards. Supporting young people in the area of IT is an important matter for the whole IT-Achse and therefore IT-ACHSE-CARES with its rewards was established.

**The IT-Achse organises networking events on a regular basis and offers companies from all sizes a networking platform.** These events often take place in combination with a visit at one of the member companies and allows the participants to gain an insight into other companies in the Ems-Achse and their IT. Recognising the growing importance of cybersecurity, IT-Achse actively develops practical IT security solutions applicable to companies of all sizes and industries. The outcomes of these initiatives are regularly assessed during meetings attended by IT managers and working group members. The network encourages attendees to propose new discussion topics, and the meetings are hosted by different companies from the working groups to facilitate networking and provide diverse perspectives on organisational contexts.

Source: (IT-Achse, 2023[44]).

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### *Comparatively low demand for digital skills*

**General ICT skills are requested in more than four out of every ten vacancies in Germany, but only in three out of every ten vacancies in the Ems-Achse.** Digital skills can be separated between general ICT skills and advanced ICT skills. General ICT skills may be required in all types of professions, while

advanced ICT skills are demanded in specific ICT professions (see Box 2.9 for definitions). Between July 2019 and December 2022, the proportion of vacancies demanding general ICT skills fluctuated around 30% in the Ems-Achse, against 45% in Germany overall. Part of this gap in ICT skills demand may be due to the difference in economic structure of the Ems-Achse relative to the German average. To account for this, Figure 2.6 (panel A) presents deviations of ICT skills demand relative to the German average, independent of industrial structure. The figure shows that, on average, employers in the Ems-Achse were 20% less likely to indicate a need for general ICT skills in vacancies in 2019 relative to the German average. This gap has since narrowed to around 10%. A similar gap is observed for other rural regions and remote intermediate regions in Germany.

**Demand for advanced ICT skills in the Ems-Achse has climbed to one out of every three vacancies, approaching levels similar to the German average.** The proportion of vacancies demanding advanced ICT skills fluctuated around 23% for Germany between July 2019 and December 2021. It has since increased to almost 40%. In the Ems-Achse, demand for advanced ICT skills was found in around 15% of vacancies between July 2019 and December 2021. It has since increased to more than 30%. Figure 2.6 (panel B) indicates that the demand for ICT skills was, on average, 10% below that of Germany across all industries, but by the end of 2022, the gap had almost disappeared. Moreover, the relative demand for advanced ICT skills in the Ems-Achse is higher than that observed for other rural regions and remote intermediate regions in Germany.

> ## Box 2.9. Calculating ICT skills demand based on online job postings
>
> The report uses online job postings data to calculate the total number and the share of job vacancies that require generic or advanced ICT skills. It makes use of Lightcast data to proxy local labour demand. Lightcast collects online job postings in many OECD countries. The data contain information on the posting's occupation, its detailed geography and other characteristics such as skills and educational requirements.
>
> The methodology follows a three-step procedure laid out in detail in (OECD, 2022[45]).
>
> - In a first step, the total number of unique monthly job postings is calculated by region.
> - In a second step, the skill requirements listed in each job posting is used to calculate a dummy indicator of "generic" or "advanced" ICT skills for each job, in a procedure closely following previous OECD work on categorising these skills (Brüning and Mangeol, 2020[46]). The classification into generic and advanced skills is intuitive: Generic skills are simple ICT skills captured by key words such as "MS Excel" or "data". Advanced ICT skills are more specialised skills such as programming, coding and data analysis. These skills are captured by key words such as "algorithm" or "data mining" but also indirectly when knowledge of software such as "Python" or "Oracle" is mentioned in the posting. Postings selected based on advanced ICT skills are often also counted as requiring generic skills.
> - In a final step, the total numbers of job postings that require generic or advanced ICT skills are summed up by region and sector and divided by the total number of regional online job postings calculated in the first step. Regional statistics are then calculated as the average deviation across sectors, independent of the size of the sector in each region, to create regional statistics that are independent of regional-sectoral specialisation.
>
> The calculations rely on the representativeness of online job postings for job demand in regional labour markets. Analysis for Germany indicates that online job postings from Lightcast closely follow regional and occupational distributions of vacancies from data of the German Public Employment services, the *Bundesagentur für Arbeit* (Vermeulen and Gutierrez Amaros, forthcoming[47]).
>
> Source: (Brüning and Mangeol, 2020[46]; OECD, 2022[45]; Vermeulen and Gutierrez Amaros, forthcoming[47]).

**The Ems-Achse's relatively low demand for ICT skills calls for enhanced action to foster digitalisation in traditional industries and, thus, their teleworking potential,** highlighting the role of IT-Achse (see Box 2.8) and other specialised educational and training providers. Enhancing digital skills in the workforce is likely to create more teleworking opportunities as well, as indicated by the persistent labour shortages in the IT industry and other digitally-enhanced occupations. However, unlike employers' demand for skills, the currently available data does not allow for measuring regional gaps in workers' supply of skills.

## Figure 2.6. Demand for advanced ICT skills converge to the national average while demand for general ICT skills remain behind

Deviation of general and advanced ICT skills from German job postings, accounting for sectoral composition, July 2019-December 2022
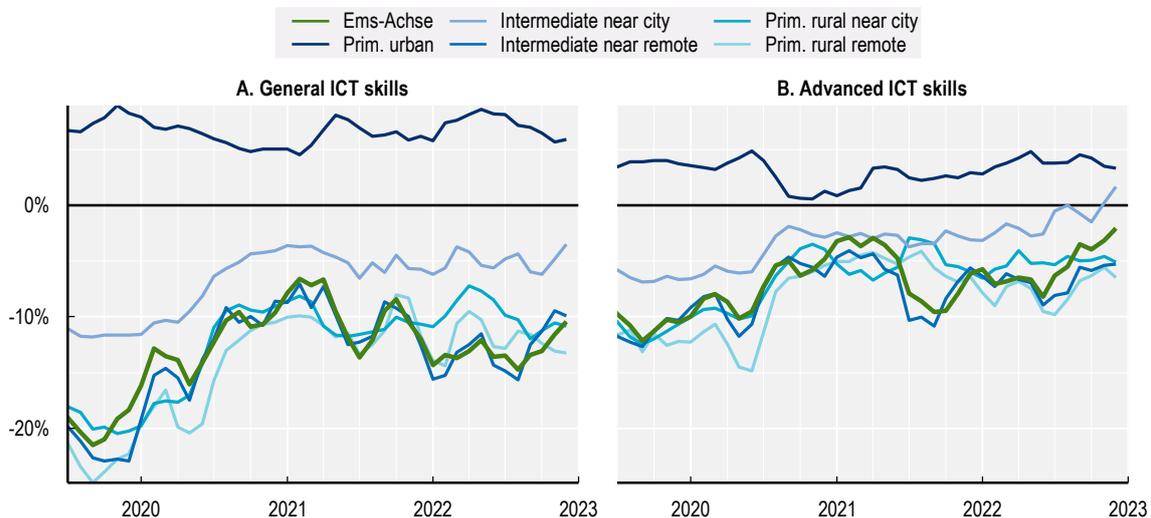


Note: Primarily Urban, Intermediate, and Primarily rural regions represent the average of German regions for each type. Details on the calculations of general and advanced ICT skills are provided in Box 2.9. Deviations relative to the Germany wide share of demand for general and advanced ICT skill by sector. The sectors are then averaged at the regional level to absorb regional differences in the sectoral composition of job ads. The lines represent a three-period moving average of the underlying values to smooth out excessive month-to-month variation.
Source: OECD calculations based on Lightcast.

### *Young adults are underrepresented in the region*

**The Ems-Achse has experienced a decrease in the share of young (aged 15-29) new residents as a percentage of all newcomers since 2010, in line with the overall trends across Germany.** The attraction and retention of young adults and those at the start of their professional careers can serve as important indicators of the opportunities that a region provides to this demographic. The share of newcomers aged 15-29 has declined since 2010, from around 40% of all newcomers in 2010 to less than 35% in 2021 (Figure 2.7, Panel A). However, this decline is not unique to the Ems-Achse, as other rural and intermediate regions in Germany have also experienced a similar decrease, indicating an overall decrease in mobility across the country. While the share of young newcomers in the Ems-Achse remains higher than in other rural regions, it is more than five percentage points below the German average. The surge in newcomers observed across regions in 2016 can be attributed to the arrival of refugees from Syria.

**The Ems-Achse may face difficulties in retaining young people in the age group of 15-24, but there is a growing population within the age group of 25-34.** Looking at the share of the population by age group provides an additional perspective, as it summarises the region's ability to attract and retain new residents to compensate for those who choose to leave. The share of the population aged between 15 and 24 years has been declining in the Ems-Achse, dropping from more than 19% in 2010 to less than 17% in 2022. However, these shares remain above the German average and that of other rural and intermediate regions (Figure 2.7, Panel B). In contrast, the share of the next age group, those aged 25-34, is increasing, rising from 16.5% in 2010 to 18.5% in 2022, surpassing the German average (Figure 2.7, Panel C). These trends are reflected in the actual population numbers as well. The number of people aged 15-24 fell from 113 000 in 2010 to 100 000 in 2022, whereas the number of people aged 25-34 increased from 97 000 to

112 000 over the same period. The declining share of people aged 15-24, coupled with the increasing share of people aged 25-34, could indicate that there are limited options in the region for individuals pursuing further education or higher training before starting their careers with employers that increasingly demand tertiary degrees. As discussed in Section 1, while the region does have some higher education institutes, it may not be able to cater to the interests of all students. However, the rising share of people at the beginning of their careers, aged 25-34, suggests that the region can still provide an attractive place for who have completed their tertiary degrees.

## Figure 2.7. Student age population leave the region, but early career workers may be attracted
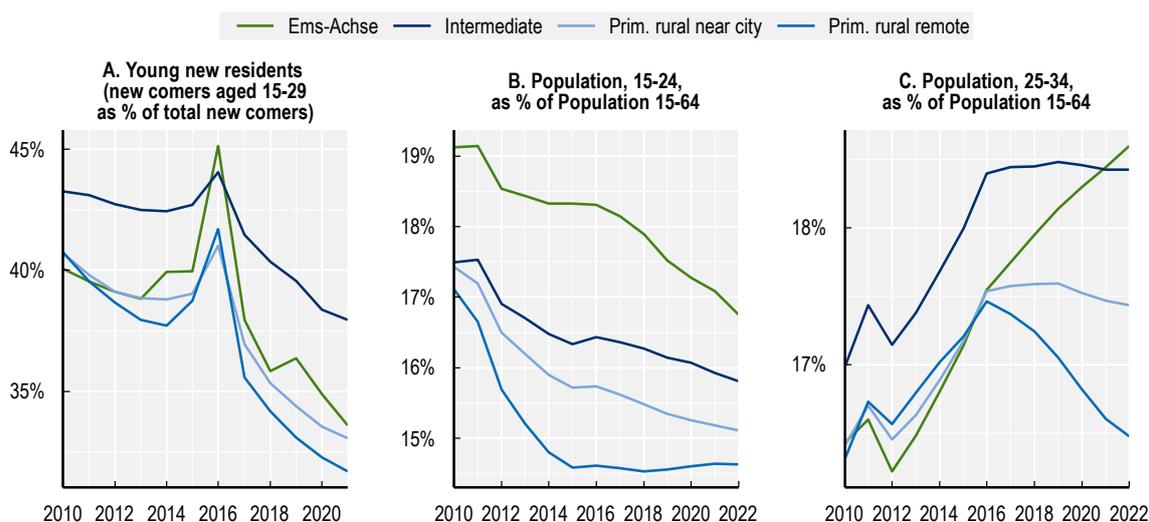


Note: Intermediate, primarily rural near city and primarily rural remote represent the average of German regions of the respective types. Panel A, New comers are those from another region. Regional mobility statistics for the Ems-Achse includes residents that move between the districts of the Ems-Achse, and the numbers are unweighted average across the districts.
Source: OECD calculations based on OECD Regional Statistics [Database], https://doi.org/10.1787/region-data-en.

## Other factors of regional attractiveness

### Highly accessible health and educational services

**A high accessibility of public services in areas such as maternal healthcare and primary education is an asset for the Ems-Achse in attracting young families.** As illustrated in Figure 1.4, the Ems-Achse outperforms European regions and significantly surpasses German regions in terms of accessibility to maternity and obstetric hospital services, showcasing its commitment to providing accessible and high-quality healthcare services for expectant mothers. Beyond maternal healthcare, each main city in the various districts of the Ems-Achse has hospitals with general specialist departments within a fifteen-minute radius from the city centre. However, the accessibility of doctors is varied, with lower rates moving from the north to the south of the Ems-Achse. Such a mixed landscape is in line with other low-density areas of Lower Saxony and other states (Bundesministerium für Wohnen, 2023[48]). Ems-Achse e.V. places a strong emphasis on maintaining the quality of healthcare services by proactively addressing demographic challenges. They employ various strategies to attract qualified doctors, including organising medical trade fairs with the support of local partners and arranging visits to universities to facilitate the recruitment of skilled medical professionals (Ems-Achse e.V., 2016[49]).

**The Ems-Achse's school system provides good educational offerings for children.** Figure 1.4 shows that access to primary education establishments may be relatively lower compared to other EU regions

but still exceeds the availability relative to other German regions. Balancing childcare availability and the needs of parents is a priority for local businesses, as the implementation of favourable policies for working parents attests. Additionally, the Ems-Achse provides extensive support to young people throughout their growth, with particular focus on the transition from school to the job market, as discussed in Box 2.10.

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**Box 2.10. The Ems-Achse accompanies young people from the cradle to the job market**

**In the Ems-Achse, facilities and services for pre-school-age children are provided by both private and public entities.** By offering services to workers with parental needs, work-life balance and the creation of a sustainable labour market are promoted. Local businesses actively support their employees by offering workplace nurseries and kindergarten facilities. In Weser-Ems, a subregion of Lower Saxony comprising the Ems-Achse, a childcare service during working hours has been implemented, fostering a family-friendly corporate culture. Familienservice Weser-Ems eG, a co-operative, aims to promote work-family arrangements, based on the notion that the economic success of firms, employment and family are mutually reinforcing elements. The range of services provided include individual counselling and tailor-made solutions, offering over twenty large-scale day-care centres for firms and municipalities, private day-care and holiday care programmes.

**The lack of knowledge about occupational profiles and limited awareness of potential career options may lead to a decline in job matches.** To tackle this issue, company-specific specialised tasks are offered, creating an opportunity to identify interested, talented and motivated students who could become potential trainees for the company. Special programmes are designed to provide comprehensive professional orientation and insights into various career fields, ensuring students are well-prepared for their future careers. For example, in 2007 Grafschaft Bentheim initiated the programme *"Junge Ems-Achse mit Zukunftsideen"* (Ems-Achse youth with ideas for the future) to establish co-operation agreements between schools and companies. This allowed students to gain early exposure to a wide range of occupational fields. Between 2011 and 2013, schools and companies successfully established 18 co-operation agreements through this programme.

Source: (Familienservice Weser-Ems eG, 2023[50]); (Wachstumsregion Ems-Achse e.V., 2023[51]).

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### *Limited public transportation*

**Working remotely two to three days a week makes it feasible for people to live further away from their place of work since a daily work commute is no longer necessary.** For instance, if people find a daily commute of a maximum of 30 minutes acceptable, they may find a commute of 60 or 90 minutes acceptable for two or three days per week as well.

**The acceptance of a longer but less frequent commute may allow employers in the Ems-Achse to attract workers from a wider geographic area.** Figure 2.8 illustrates approximate travel times by car from Papenburg. Within a 30-minute radius of Papenburg, the coverage is limited to the immediate surrounding area, mostly falling entirely within the region of the Ems-Achse itself. However, by expanding the travel time to 60 and 90 minutes, the area of coverage can dramatically increase, encompassing other German districts and provinces in the Netherlands. At 90 minutes, practically all of the Ems-Achse is covered, and it extends to include the cities of Oldenburg, Osnabrück and Münster. Furthermore, within a 90-minute travel time, the Dutch cities of Groningen, Assen, Leeuwarden and Zwolle become reachable. Larger German cities, such as Duisburg, Essen, Dortmund and Bremen, still require more than two hours of travel time by car from Papenburg. The choice of Papenburg as an illustration is due to its central location within the Ems-Achse. Other towns further south, like Lingen and Nordhorn, may have better access to

some of the German cities located to the south of the Ems-Achse, such as Duisburg, but this might come at the cost of longer travel times to cities like Bremen, for instance.

### Figure 2.8. Travel times to and from Papenburg

Travel times in minutes by car, not accounting for traffic conditions.
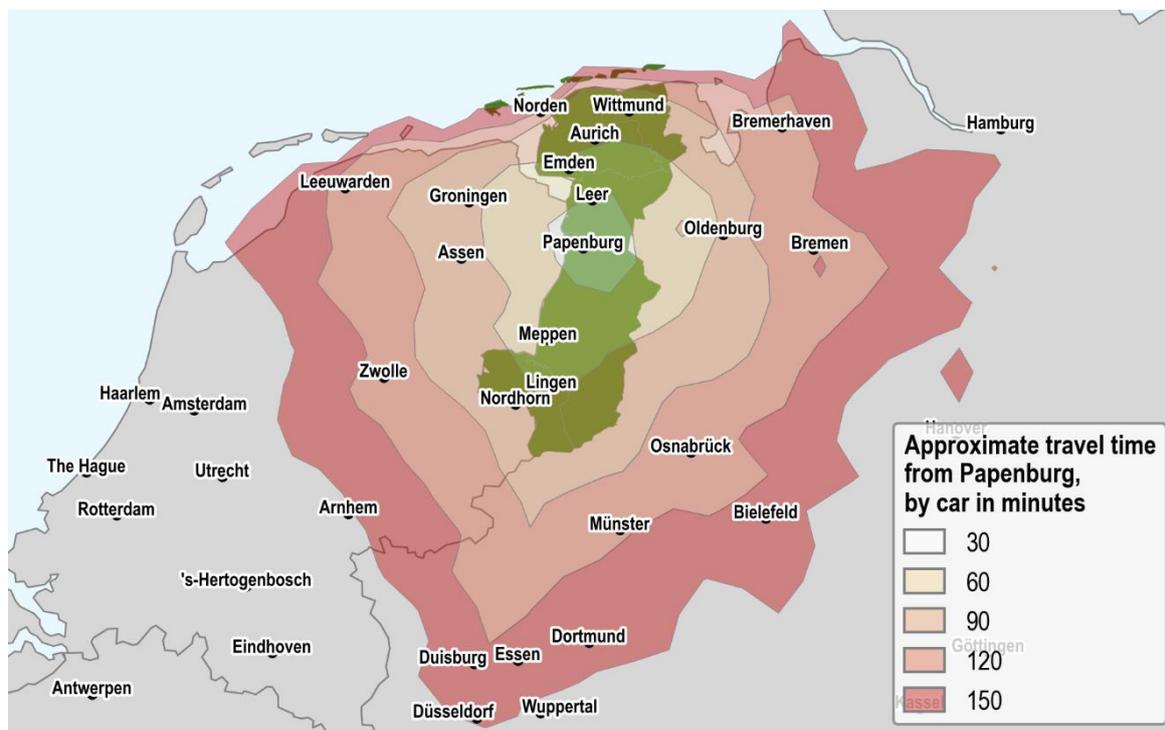


Source: OECD calculations using Open Source Routing Machine (OSRM).

**From the centre of the Ems-Achse, increasing the car commute from 30 to 60 minutes expands the size of the accessible labour market fivefold.** The potential labour force that becomes accessible with increasing distance experiences significant and rapid growth. For example, at a 30-minute travel distance from Papenburg, the labour force comprises approximately 250 000 individuals (Table 2.1). This number increases to 680 000 within Germany and an additional 530 000 in the Netherlands with a 60-minute commute, resulting in a combined labour market of over 1.2 million people, approximately five times the size of the labour market reachable 30 minutes from Papenburg. When the travel time extends to 2.5 hours, the accessible labour force encompasses almost 8 million workers in Germany and an additional 2.7 million workers in the Netherlands. This substantial increase in the labour pool may create new opportunities for both employers and workers in the Ems-Achse region.

**While the Ems-Achse's residents may also be attracted by employers in other areas, overall, the labour market could benefit from allowing workers to find jobs that best match their skills.** The potential for longer but less frequent commutes may also influence the Ems-Achse residents to consider employers in cities further away, such as Bremen and Duisburg. In response to this, employers in the Ems-Achse may need to offer competitive work contracts and create attractive work environments to retain their workforce. At the same time, the potential for workers to match with employers at greater geographical distances can enhance the overall efficiency of the labour market matching process. Increased flexibility and access to a larger talent pool can lead to better job matches and improved productivity for businesses in the region.

**Table 2.1. Drive 30 minutes more and the covered labour market more than doubles**

Aggregate TL3 (Germany) or TL2 (Netherlands) labour force, by country and travel distance, in '000.

| Between | Germany | Netherlands |
|---|---|---|
| 0 - 30 min. | 253 | - |
| 30 - 60 min. | 683 | 534 |
| 60 - 90 min. | 1 609 | 1 131 |
| 90 - 120 min. | 3 508 | 2 516 |
| 120 - 150 min. | 7 932 | 2 742 |

Note: A district (TL3, Germany) or a province (TL2, Netherlands) is added to the aggregate labour force if at least 10% of the regions' territory is covered by the isochrone of the travel distance. Labour force statistics are from 2019.
Source: OECD Calculations based on Open Source Routing Machine (OSRM) and OECD Regional Statistics.

**Lower accessibility of public transportation can hinder the Ems-Achse region's potential to attract commuters from broader geographic areas.** Travel times across the Ems-Achse and its immediate surrounding regions by public transport pose a significant challenge, mainly due to the limited availability of buses in rural areas. There are limited railway links in the region (Figure 1.4). Only one major north-south railway line connects the shores of the North Sea with North-Rhine Westphalia, and one line connecting west-wards towards Osnabrück and Bremen. Rail connections with the Netherlands are also limited, although there are plans to upgrade an existing line. High-speed train mobility is limited, and rail connections to the main metropolitan areas of neighbouring German states and the Netherlands are slow. Consequently, labour market accessibility is limited for people without private transportation. Additionally, from Papenburg, the nearest major airport hubs, such as Amsterdam or Hamburg, are located beyond a 2.5-hour driving distance. This limitation affects the accessibility for local workers seeking travel options and also impacts international telecommuters. Further investment in local public transport may also represent an opportunity to promote decarbonisation in the Ems-Achse, where air quality, measured as the average level in µg/m³ experienced by the population, is good compared to other EU regions but worse than the average German region (Figure 1.4).

# 3 Recommendations for stakeholders in the Ems-Achse

## Rationale and scope of the recommendations

### *Competing for talent in a highly mobile job market*

**The following recommendations primarily aim to unlock the potential of teleworking as a solution to address labour shortages in the Ems-Achse region**. This issue has held a prominent position on the agendas of regional policymakers for several years, calling for innovative approaches. Enhancing the local teleworking environment can yield advantages for both the existing workforce in the region and prospective newcomers considering relocation. These processes are interlinked, as promoting teleworking among current employees could contribute to positioning the region as an appealing destination for teleworkers and communicate this allure to external talent. Certain stakeholders within the Ems-Achse region have expressed concerns on the potential migration of workers to areas offering more favourable opportunities, especially in a context where teleworking is rendering the job market increasingly mobile. For example, skilled and educated workers often anticipate higher wages in urban settings, along with improved access to amenities that are less readily available in rural areas. Furthermore, teleworking rates tend to be higher in urban and intermediary regions compared to the patterns observed within the Ems-Achse. Increasing the adoption of teleworking by companies in the region can help address these concerns, demonstrating that employers in the Ems-Achse also provide competitive working conditions alongside other appealing amenities that make the region an attractive place to live. Implementing a hybrid model that combines office and remote work during the workweek can prevent potential outflows and assist in retaining residents and local talent. Irrespective of the scale of the risk, the region can prepare itself to be more appealing to teleworkers, particularly as other regions are also grappling with workforce shortages and actively striving to improve teleworking conditions. Germany stands to benefit from this increased competitiveness among its regions.

### *Enhancing regional attractiveness from different angles*

**Promoting teleworking can make a substantial contribution to local development goals that extend beyond addressing the workforce shortage.** These benefits encompass several critical aspects:

- **Productivity:** research findings indicate that moderate levels of teleworking can lead to increased productivity among workers. Higher labour productivity, in turn, can have a positive impact on overall economic growth and competitiveness. This is particularly relevant in a context where the Ems-Achse experienced a more significant decline compared to other German regions during the COVID-19 pandemic and Germany's growth outlook for 2023 is projected to stagnate.

- **Well-being:** teleworking offers the potential for an improved work-life balance, a factor that can significantly enhance the well-being and job satisfaction of employees. This improvement in well-being can serve as a compelling incentive for both private and public local employers to retain

existing talent and attract workers from other areas. This adds to the appealing offerings that the Ems-Achse exhibits in terms of attractiveness for residents, such as affordable and abundant housing, and its high-quality public services in health and education.

- **Alleviating urban congestion:** from a national perspective, tackling the mounting issues of urban congestion and soaring housing costs in cities is a matter of concern. Encouraging teleworking in rural areas like the Ems-Achse can play a part in Germany's efforts initiatives aimed at mitigating urban congestion and addressing housing challenges.

- **Environmental sustainability:** implementing policies to promote teleworking can have positive environmental repercussions by reshaping commuting habits, especially in regions like the Ems-Achse where private vehicle use is prevalent. This factor could be considered in other regional policy areas, such as the enhancement of public transportation and the integration of eco-friendly initiatives, aligning with the broader objectives of the green transition.

### *Targeting regional stakeholders*

**The proposed recommendations aim at positioning the Ems-Achse as a teleworker-friendly region and rely on various implementers within Germany's multi-level governance system.** Among local stakeholders, teleworking is broadly acknowledged as a valuable resource with significant potential for improving the competitiveness and appeal of local businesses. However, these recommendations span across various policy areas and necessitate collaboration among different levels of government (see Box 3.1 for an overview of the relevant levels of government). Providing an overview of the different institutions that may influence economic development matters concerning the Ems-Achse region, across various levels of government, will help direct these recommendations to the appropriate stakeholders. Each administration is encouraged to actively participate in implementing these recommendations, aligning with their respective missions and instruments. The private sector can also champion responsible teleworking practices and cooperate with the public sector to bring these proposals to fruition. Ems-Achse e.V., serving as a liaison body, can facilitate an effective public-private partnership, building upon years of successful collaborations.

**Box 3.1. Multilevel governance in the German system and its role in the Ems-Achse**

The German political system operates under a federal structure, with governmental authority divided between the federal government (*Bund*) and sixteen constituent states (*Bundesländer*), including the state government of Lower Saxony and municipalities within the Ems-Achse region. Economic policy matters are subject to a hierarchical order of delegated powers among these entities:

- **Federal government**: the federal government designs and implements national-level economic policies, including fiscal and trade policies, and regulations affecting industries and businesses nationwide. It shares tax revenues with states and municipalities based on a formula that includes indicators such as the population and income shares, to narrow gaps in living conditions throughout the country. The federal equalisation (*Länderfinanzausgleich*) and municipal schemes (*Kommunaler Finanzausgleich*) contribute to attaining this goal.

- **State governments (*Bundesländer*):** the sixteen federal states have broad authority over various policy areas, including education, police and culture. State governments implement federal laws within their jurisdictions and participate in the legislative process through the *Bundesrat* (upper chamber of representatives). Lower Saxony's state government, like others, has jurisdiction over state-level economic policies, economic development strategies and support for businesses and industries within its boundaries.

- **Districts and municipalities:** municipalities are the lowest-level units of local government but are entrusted with essential services such as education and infrastructure. Districts oversee multiple municipalities and coordinate regional services. Urban districts have higher autonomy in local affairs relative to non-urban districts.

- **Office for regional development Weser-Ems:** this intermediate level of government, specific to Lower Saxony and known as *Amt für regionale Landesentwicklung* (ArL), focuses on regional economic development planning. As the Weser-Ems office covers the westernmost part of that state, it includes the entirety of the Ems-Achse. The ArL collaborates with the *Bundesland* and municipalities, identifying regional strengths, weaknesses and development needs. Moreover, it consolidates development strategies and funding initiatives to support the region's well-being.

As previously discussed in this report, while not a public government level and operating as a public-private entity, Ems-Achse e.V. holds significant influence on policy-making across different levels. This influence stems from its membership, which includes municipalities and districts, and its intrinsic public role in economic policy matters, including the implementation of policy recommendations.

Sources: (Henkel, Seidel and Suedekum, 2021[52]).

## Policy recommendations

**The following ten policy recommendations, grouped into three themes, are intended to assist the Ems-Achse in becoming an appealing destination for teleworkers:**

### *Teleworking readiness: infrastructure, management, skills and practices*

Teleworking entails several fundamental requirements, including an infrastructure that enables high-speed Internet access throughout the entire region, companies with management practices that efficiently incorporate remote team members, and a workforce equipped with digital skills. The Ems-Achse can consider the following recommendations to enhance these aspects:

1. **Continue to upgrade the Internet infrastructure:** the gap in fixed and mobile connection speeds experienced in the Ems-Achse relative to other regions across Germany can be reduced through additional investments. Expanding the infrastructure can also foster competition among providers, potentially resulting in improved high-speed broadband subscription offers for consumers and businesses. To achieve this, the region can build upon successful practices implemented in specific districts, involving active participation from municipalities and the private sector. In addition, federal government funding, such as that provided by the Digital Strategy for Germany, can be leveraged to expedite the deployment of high-speed Internet and ensure reliable connectivity, especially in mobile networks.

*International practices:* Box 3.2 illustrates different policy approaches adopted in OECD countries to bridge connectivity divides, with a focus on rural areas.

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**Box 3.2. Bridging connectivity divides in rural areas: learning from OECD practices**

**OECD resources like the Going Digital Toolkit and the "Bridging digital divides in G20 countries" report provide a roadmap to policymakers by identifying policies and regulation to effectively reduce connectivity divides.** Such policies include promoting competition, fostering investment, and removing barriers to broadband deployment, as well as a set of tailored approaches that are particularly relevant to extending connectivity in rural and remote areas. One of such tailored approaches involves the use of Demand Aggregation Models, which consolidate consumer demand to improve the feasibility and efficiency of broadband network expansion, especially in economically challenging rural regions. Coverage Obligations in Spectrum Auctions have been adopted to extend mobile broadband coverage to these underserved areas. Public-Private Partnerships (PPPs) and Open Access Models are gaining prominence, with public funding channelled through PPPs to facilitate national broadband network deployment. Municipal Networks, supported by local authorities, are playing a pivotal role in promoting fibre deployment, fostering competition, and encouraging innovation. Public Rural and Remote Programmes, often integrated into national broadband plans, target specific underserved regions to allocate public funds effectively. These diverse policy approaches collectively aim to narrow the connectivity gap, stimulate economic development, and ensure equitable access to high-quality broadband services in rural areas. The Toolkit provides examples of related policy and regulatory approaches implemented by different OECD countries. Case studies of further community-led initiatives for broadband access are provided in (OECD, 2020[53]).

Source: (Gonzalez-Fanfalone et al., 2021[54]; OECD, 2020[53]; OECD, 2021[55]).

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2. **Promote a modern managerial culture and the development of digital skills:** teleworking may require a distinct managerial approach when compared with a traditional office environment where all employees are physically present during regular working hours. Hybrid working, which entails remote work on various days of the week, demands modern management styles built on trust in the ability of team members to perform effectively both remotely and within the office premises. In addition, ensuring that employees possess adequate digital skills is crucial for working in such a flexible environment. Ems-Achse e.V., IT-Achse and their local partners can expand their training programmes to enhance management and digital skills among the workforce and raise awareness among employers and employees about the potential productivity and well-being gains associated with teleworking.

*International practices:* the Ems-Achse can leverage on various initiatives introduced in recent years to enhance digital skills in EU regions, illustrated in Box 3.3.

> ## Box 3.3. Initiatives to enhance digital skills and bridge the labour market gap in EU regions
>
> **In recent years, several initiatives have been introduced to enhance digital skills in EU regions, aligning education and training with the evolving demands of the labour market.** The National Digital Skills and Jobs Coalitions, established in most EU countries since 2016, foster co-operation between public authorities, businesses, education, and labour market stakeholders to shape and implement policies addressing digital skills demand. The EU4Digital initiative provides guidelines for implementing these coalitions, emphasizing objectives, action plans, management, and promotion. Armenia and Ukraine have successfully implemented similar coalitions. The EU4Digital Competence Framework, developed in 2020, establishes a common language for digital competences, supporting SMEs in bridging the gap between education standards and labour market needs. It includes a methodology for the framework, guidelines for SMEs on its use, and four job role profiles to guide reskilling and upskilling efforts. The Digital Skills Accelerator Online Self-Assessment Tool, co-funded by the EU, allows users to evaluate their digital competences based on the European DigComp framework. It covers areas like information and data literacy, communication and collaboration, digital content creation, safety, and problem-solving. The tool provides a radar chart highlighting strengths and weaknesses and recommends relevant learning pathways.
>
> Source: (OECD, 2023[56]).

3. **Encourage regional or sectoral teleworking agreements:** employers in the region currently leverage on the flexibility offered by existing labour regulations to establish individual teleworking agreements with their employees. While flexibility is generally appreciated by both parties, in the long term it may be advantageous to establish regional or sectoral frameworks for teleworking that harmonise practices across employers and provide similar rights and protections for workers. Such frameworks could outline the conditions under which teleworking is allowed or establish a "right to disconnect" outside agreed-upon working hours. In addition, they could include acknowledgments for employers voluntarily adhering to high standards in teleworker conditions, such as providing a minimum number of teleworking days (e.g. at least two per week).

   *International practices:* Box 1.4 provides insights into the efforts undertaken by the Autonomous Province of Trento, Italy, to promote teleworking agreements, acknowledge the efforts of employers offering favourable conditions for teleworkers, and encourage knowledge sharing on teleworking practices among public and private sector HR managers.

4. **Foster digitalisation and automation:** promoting further digitalisation and the adoption of modern production processes, including automation, is crucial for preserving competitiveness within the regional industrial base. It also expands the scope of teleworkable tasks, extending beyond the tertiary sector and encompassing small firms, thereby contributing to productivity gains. Automation can also help alleviate labour shortages by reducing labour demand. Offering dedicated training and skills development programmes, leveraging knowledge-sharing activities provided by IT-Achse, along with investment incentives, and the establishment of innovation hubs and collaborative networks, can assist in facilitating the adoption of digital technologies.

   *International practices:* Ems-Achse's enterprises, both large and SMEs, may consider joining the OECD Digital for SMEs Global Initiative illustrated in Box 3.4 to tap into global knowledge flows on SME digitalisation practices.

> **Box 3.4. The OECD Digital for SMEs Global Initiative (D4SME)**
>
> The D4SME initiative aims to promote knowledge sharing and learnings on how different types of SMEs can seize the benefits of digitalisation, and on the role of government, regulators, business sectors and other institutions in supporting SME digitalisation. Emphasis is placed on the diverse opportunities and needs of the large "missing middle" of SMEs and entrepreneurs, and on their role for an effective, inclusive and sustainable digital transition. The research outputs and policy dialogue insights under the D4SME initiative, resulting from the co-operation among representatives from OECD governments and private sector, including business associations, entrepreneurs, large and small businesses, provide a complementary perspective on SME digitalisation and on the most effective policies to foster the digital transition of highly diverse SME populations. Multinational companies that play an important role in the digitalisation journey of SMEs have partnered with the OECD in this initiative. In addition, D4SME Conversations with Small Business Owners provides SMEs with a voice to share their personal stories and experience of digital transformation. D4SME network members, from different industries, OECD countries and levels of technology uptake can use this platform to exemplify different pathways to digitalisation, key factors of success as well as persisting challenges. They also have a space to share on the current role of governments and public policies in their journey and on how policy makers could effectively support them and/or create the right conditions for their digital transition.
>
> Source: (OECD, 2023[57])

### *Accommodating teleworkers*

The region stands out for its favourable housing affordability, which has the potential to accommodate a significant remote workforce. This situation may gain momentum as teleworking allows employees to live farther from their workplaces, especially if the frequency of commuting workdays significantly decreases (e.g. to two days per week). The widespread availability of affordable nursery and schooling facilities adds to the Ems-Achse's appeal for families with young children. To enhance the teleworking environment, the following aspects could be prioritised:

5. **Enhance public transportation accessibility:** upgrading the local public transport system is vital to promote sustainable commuting within the Ems-Achse. Given the current limitations in railway infrastructure, it is advisable to explore short-term solutions to improve last-mile accessibility, such as expanding bus coverage. Another viable option is to pilot public-private carpooling and bike-pooling models, offering commuters eco-friendly transportation alternatives while reducing reliance on individual cars. Additionally, efforts to minimise travel times to major international airport hubs in Germany and the Netherlands can enhance the region's appeal to international teleworkers, making their travel arrangements more convenient.

   *International practices:* Box 3.5 illustrates various options available to enhance local mobility and access to public transport in rural areas.

> ### Box 3.5. Strategies for enhancing rural mobility
>
> **Several options are available to enhance local mobility and access to public transport in rural areas.** Shared mobility solutions such as demand-responsive transport (DRT), community transport, ridesharing, car sharing and even autonomous buses can be implemented to cater to the diverse needs of rural communities, offering flexible and efficient transportation. Active mobility strategies involve investing in infrastructure for pedestrians and cyclists, promoting the use of e-bikes and other micro-mobility options, and exploring innovative approaches tailored to rural settings. Additionally, the integration of mobility services through initiatives like mobility hubs and Mobility as a Service (MaaS) platforms can simplify transportation for residents by offering seamless connectivity between various modes of transport, thus contributing to improved rural mobility and reduced reliance on individual vehicles.
>
> Source: (ITF, 2021[58]).

6.  **Fostering community and knowledge sharing in coworking spaces:** the Ems Achse boasts a growing offer of coworking spaces and related facilities catering to teleworkers. Evidence from across the OECD suggest that the effectiveness of such spaces is amplified when they cultivate an active community of users. Conducting a comprehensive survey of existing coworking practices and the profiles of coworking space users in the region could provide insights into the motivations behind teleworking. Establishing mechanisms to facilitate knowledge sharing and the exchange of best practices among coworking spaces in the Ems-Achse could enhance their sustainability and visibility, not only within the region but also on a broader scale.

    *International practices:* case studies on how coworking spaces are being used as a means to create vibrant teleworker communities, attract talent and foster a balanced spatial distribution of workers across geographies are discussed in Box 1.4 (Autonomous Province of Trento, Italy), Box 1.5 (Ireland), Box 1.7 (Basque Country, Spain), and Box 2.4 (Switzerland and the UK).

7.  **Enhance attractiveness for young talent**: in response to the ongoing outmigration of students seeking post-secondary education elsewhere, the Ems-Achse should implement a comprehensive strategy to retain and attract young talent. This strategy may include enhancing higher education opportunities through greater investments in campus facilities, expanding programme offerings and fostering partnerships with educational institutions. Additionally, promoting vocational education and training, apprenticeships and traineeships in collaboration with local industries can align the region with current labour market demands, making it a more enticing destination for education and employment prospects. Simultaneously, the development of youth-centric leisure activities, such as sports facilities, recreational spaces, cultural events and vibrant social scenes, would foster a sense of community and enhance the region's appeal as a place for young people to live and work.

    *International practices:* the Recommendation of the Council on Creating Better Opportunities for Young People, adopted by the OECD Council in 2022,[11] promotes government-wide strategies and sets out a range of policy principles to improve youth measures and outcomes in all relevant areas, including skills and competencies, labour market outcomes, social inclusion and youth well-being. Ems-Achse's governmental stakeholders can refer to it as a comprehensive framework for the policies necessary to support local youth.

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[11] For more information, visit: https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0474

*Targeting specific teleworker groups to address labour shortages*

The preceding recommendations aim to create a productive and appealing work environment for existing employees, offering flexible teleworking solutions to those who prefer a portion of their work hours outside the office. However, like many regions in Germany and across the OECD, the Ems-Achse region faces labour and skills shortages as it recovers from the COVID-19 pandemic. This necessitates a focus on strategies that leverage teleworking to expand the labour supply, including integrating currently inactive individuals into the workforce and attracting workers from other regions.

8. **Integrate inactive individuals through active labour market policies:** highlighting teleworking as an option in new job postings can encourage inactive individuals to enter or re-join the labour market, connecting them with suitable job opportunities. Introducing dedicated active labour market policies can facilitate the matching of job seekers with vacancies that offer this flexible work mode. This approach can be particularly beneficial for individuals facing travel difficulties or those, often women, with care responsibilities that limit their full-time office presence. Local stakeholders involved in local active labour market policies can raise awareness of various work arrangements (e.g. full-remote, hybrid, office-only) offered by local employers to better align labour supply and demand. Additionally, these policies can promote gender equality in caring responsibilities through policies in fields such as equal parental leave, subsidised childcare services, caregiver support networks, and more.

   *International practices:* Box 1.3 provides an overview of several national- and local-level policies adopted in the Netherlands to promote flexible working arrangements, such as the Flexible Working Act.

9. **Expand the geographical reach of the talent pool:** broaden the talent pool's reach by extending local job postings to a wider audience, taking into account the increased flexibility in commuting brought about by teleworking. In the context of Ems-Achse, this may require collaboration with PESs outside Lower Saxony to reach job-seekers within their jurisdictions. This approach allows employers in one jurisdiction to access a more diverse talent pool, potentially resulting in higher-quality job placements with candidates from different regions who are open to remote work. This may lead to two-way labour movement, as workers may accept opportunities in other jurisdictions, potentially redistributing jobs. It is essential to recognise the mutual benefits of this process. For instance, workers may continue residing in their original jurisdiction while working remotely elsewhere, thereby contributing to local tax revenues that support essential services.

   *International practices:* the EU is committed to fostering co-operation among member states' PESs to enhance labour market efficiency, encourage cross-border worker mobility, and better support job seekers and employers across the EU. The European Network of Public Employment Services is pivotal in this effort, benchmarking PES performance, identifying evidence-based best practices, facilitating mutual learning through the PES Repository Knowledge Centre, and promoting the modernisation and reinforcement of PES service delivery, thereby establishing a comprehensive knowledge base for Ems-Achse's PESs.[12]

10. **Promote the region as an attractive destination:** integrate teleworking into tourism promotion efforts to emphasise the Ems-Achse's appeal as a place to visit, work and live. Consider launching an international campaign that showcases the manifold advantages of the Ems-Achse, highlighting abundant and affordable housing options, high-quality public health and educational services, a dynamic and diverse business ecosystem, and a wealth of natural and cultural attractions. Tailor campaigns to specific interest groups, such as young families and skilled individuals from urban areas, to maximise their impact. Although the Ems-Achse is relatively remote, it lies within a few hours' drive from major cities like Duisburg, Düsseldorf, Dortmund, Bremen and Hamburg, making

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[12] For more information, visit: https://ec.europa.eu/social/main.jsp?catId=1100&langId=en

it an appealing alternative residence for those with the ability to telework under limited commuting requirements. While these newcomers may not directly address labour shortages, their presence can yield indirect benefits by mitigating population decline and potentially fostering business network connections.

*International practices:* the Ems-Achse can draw valuable lessons from initiatives and experiences undertaken by other rural regions within the OECD (see Box 3.6).

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## Box 3.6. Regional policies for attracting remote workers: an overview

In recent years, regions and cities worldwide have implemented various initiatives to attract remote workers, employing policy instruments classified as follows:

**Targeting individuals through outreach and marketing campaigns:**

- Identifying target groups, such as individuals already employed in remote jobs or those with existing family or social ties to the community, while highlighting local features that may be attractive (e.g. access to natural amenities, cost of living, quality of life).

- Leveraging professional and social networks for targeted outreach and advertising.

- Developing a dedicated website that informs people of the relocation offer, serves as a central point of information, and facilitates engagement with interested individuals by local administrators or ambassadors.

- Coordinating with other local stakeholders, such as local tourism offices, on shared place-branding campaigns.

**Facilitating a "soft landing":**

- Creating a clearing house for accurate and up-to-date information about local conditions, including the local housing market and the availability of coworking spaces. This can be achieved through well-designed websites and/or a dedicated office in the public administration.

- Assisting individuals in settling into the new community, such as placing children in local schools, providing job search assistance for non-teleworking family members, and granting access to local social and professional networks and events.

**Providing financial incentives to relocating individuals:**

- Developing a strategic approach to offering financial incentives that considers the various forms they can take:
  - One-time cash grants, possibly with conditions that recipients remain in the area for a minimum period (e.g. one year);
  - Financial assistance contingent on renting or buying housing locally;
  - Tax rebates or credits for targeted individuals.

- Discounts on other local services and amenities, such as coworking spaces, housing, social and professional networks, and recreation activities.

- Implementing selection procedures for financial incentives that aim to identify individuals with the greatest potential to contribute to the local economy.

- Tailoring incentives based on specific locations, such as incentivising residency in more deprived areas.

Source: (OECD, 2022[23]).

*Monitoring progress in teleworking conditions, uptake and outcomes*

**Obtaining better information on teleworking practices among workers in the region would provide valuable insights to inform policy design in the area.** While the EU Labour Force Survey, widely used in research on teleworking, including in this report, provides statistics on teleworking levels in European NUTS2 regions, it currently lacks granularity at the NUTS3 district level, necessary for Ems-Achse-specific statistics. To enhance the knowledge base, local firms could actively record remote working practices and share these statistics with Ems Achse e.V. or other relevant entities, creating a comprehensive regional picture. Alternatively, existing regular labour force or business surveys could be expanded to include questions about teleworking practices specifically in the region.

**An OECD framework can support the Ems-Achse in monitoring regional progress in teleworking conditions, uptake, and outcomes.** This framework was initially developed for the Autonomous Province of Trento, Italy, in the context of regional efforts to promote teleworking adoption but is applicable in other contexts where teleworking strategies for local development are being implemented. These strategies view the promotion of teleworking not as an end in itself but rather as a contributing factor to broader objectives, much like how the Ems-Achse regards it as a means to address regional labour shortages. Recognising that teleworking levels must reach a critical mass for these strategies to have a significant impact, the proposed framework includes (OECD, 2022[59]):

1. **Screening of local conditions for teleworking,** encompassing basic technical requirements, as well as complementary factors that can enhance teleworking levels in a given region.

2. **Measurement of teleworking uptake,** to determine whether there is room for expansion or a risk of excessive teleworking levels that could harm productivity or other public interests.

3. **Review of indicators reflecting strategic objectives,** to assess societal changes associated with the increased adoption of teleworking.

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# Annex A.

## Table A.1. An overview of indicators used for outlining Ems-Achse's attractiveness profile

| Short Indicator Name | Long Indicator Name | Latest Year | Source | Calculation Methodology |
|---|---|---|---|---|
| GDP per capita | GDP per capita (in USD, constant PPP) | 2020 | OECD Regional database | Population-weighted average |
| PCT patent applications | PCT patent applications per million inhabitants | 2018 | OECD Regional database (Internal) | Population-weighted average |
| Employment rate (15-64 years old) | Employment rate (in %, 15 and 64) | 2021 | OECD Regional database | Population-weighted average |
| Number of overnight stays in tourist accommodation | Number of overnight stays in tourist accommodation per 1000 inhabitants | 2019 | Eurostat | 2019 DE94 value disaggregated based on 2021 data (due to limited data availability) |
| % of overnight stays by foreign tourists | Share of overnight stays by foreign tourists (hotels; vacation and other short-term accommodation; camping, parks) (%) | 2019 | Eurostat | Population-weighted average |
| % of international students | Share of international students in the student population in higher education (%) | 2019 | OECD calculation based on ETER data | Higher education population-weighted average |
| Access to primary education establishments | Proximity to primary education establishments (km) | 2011 | OECD & EC_JRC (2021) | Population-weighted average |
| Voter turnout in general elections | Voter turnout in general elections (in % of registered voters who voted) | 2021 | OECD Regional database | Population-weighted average |
| Clean air | Air pollution (average level in μg/m³ experienced by the population) | 2020 | OECD Regional database | Population-weighted average |
| Access to maternity and obstetric hospital services | Proximity to maternity and obstetric hospital services (km) | 2011 | OECD & EC_JRC (2021) | Population-weighted average |
| Average download speed | Average download speed from a fixed device (national value=100) | 2021 Q2 | OECD calculation based on Ookla data | Population-weighted average |
| % pop. residing near train station | Population that can be reached by rail (within 90 minutes) per 100 nearby inhabitants (within 120km radius) | 2014 | RCI: European Regional Competitiveness Index (2019) | Population-weighted average |
| % of electricity produced by renewable energy | Share of renewables in electricity generation (%) | 2019 | OECD Regional database | Electricity generation-weighted average |
| Low GHG transport emissions | Greenhouse gas emissions produced by the transport industry (tonnes of $CO_2$ equivalent per capita) | 2018 | OECD Regional database | Population-weighted average |
| Tree cover rate | Tree cover rate (%) | 2019 | OECD Regional database | Land area-weighted average |

Source: (OECD, 2023[6]).