OECD Rural Studies

Shrinking Smartly and Sustainably

Strategies for Action

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Foreword

Close to one fifth of OECD countries (7 out of 38) have lost population since 2001, and a further 7 are expected to do so by 2060. The largest decreases so far have occurred in Eastern and Southern European countries, with Latvia and Lithuania each losing around 20% of their populations between 2001 and 2022. At the same time, most OECD countries have experienced a rapid ageing of their populations. Across OECD countries, Japan has the highest share of old-age population (29%), followed by Italy, Portugal, Finland, and Greece, each with around 23-24%. This trend is expected to persist in the coming decades. By 2060, close to 44% of the population in Korea will be older than 65 years old, followed by Japan (38%), Lithuania and Greece (35%). In this context, policy makers need to manage the consequences of demographic change including in particular its impact on labour markets, service and infrastructure provision, housing, and fiscal sustainability. There is a strong geographic dimension to demographic patterns: while some OECD countries are not expected to see their populations fall over the coming decades for example, many regions in these countries are expected to, particularly remote regions far from cities. Indeed, this is already happening in many regions.

The OECD Regional Development Policy Committee (RDPC) focuses on helping regions and cities address these demographic changes. As part of the workstream “Preparing Regions for Demographic Change”, the project “Shrinking Smartly and Sustainably”, launched in 2023 and financed by the European Commission, focuses on regions experiencing substantial and sustained population decline and ageing. The project re-examines adaptations needed to manage population decline whilst optimising quality of life, service delivery, economic stability, and social cohesion in a way that is also consistent with environmental objectives. The analytical pillar of the project focuses on conducting a demographic diagnosis, analysing demographic trends, including projections, and proposing a new classification of shrinking regions. In parallel, the project’s thematic pillars focus on key policy areas: 1) land use, housing, the environment, and spatial planning; 2) multi-level governance, subnational finance, public service delivery, and infrastructure; and 3) the challenges and opportunities of shrinking small towns and cities.

This report has benefited from inputs of the project’s consultation group and from three peer-to-peer knowledge exchange events: “Adapting governance, finance, services and infrastructure smartly in shrinking regions” (15 December 2023), “Shrinking small and medium-sized cities” (14 June 2024), and “Spatial planning, infrastructure and housing policies to help depopulating regions shrink smartly and sustainably” (12 November 2024). The report develops a policy framework and policy recommendations to address demographic change (Chapter 1). It then provides key statistics on demographic change in OECD countries at different geographical scales while exploring different approaches to define “shrinking” places (Chapter 2). It also addresses spatial planning and housing policy issues as well as the use of service accessibility for infrastructure planning (Chapter 3). Finally, the report looks at multi-level governance institutional frameworks needed to ensure service and infrastructure provision in depopulating places and at the impact of demographic change on subnational finances (Chapter 4).

This report will be complemented by other deliverables, including a paper on demographic diagnosis, a compendium of good practices to address demographic change, a set of guidelines for the multi-level governance of demographic change, and three country case studies – 1) land use planning, built-up growth, and housing, in Korea; 2) multi-level governance and finance – with a focus on service delivery and infrastructure – in Finland; 3) and shrinking small cities and towns, in Portugal.

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The report was co-ordinated by Marc Bournisien de Valmont, and reviewed by Dorothée Allain-Dupré, Head of the Regional Development and Multi-level Governance Division and Rüdiger Ahrend, Head of Economic Analysis, Data and Statistics Division in the CFE.

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Executive summary

Many OECD countries are facing population decline and ageing with significant differences within countries, and these trends are set to continue in the coming decades. Urbanisation, for example, is increasing in most economies as people migrate from shrinking rural areas, yet even in urban areas, about one in five are also shrinking. These complexities pose challenges for policy makers at all levels of government, especially for depopulating places, where labour and skills shortages, declining economies of scale for service provision, and eroding tax bases put increasing pressure on local development. Addressing these challenges requires a multi-level governance approach, looking across a wide range of policy areas, including the public finances, infrastructure, spatial planning, land use, social cohesion and service delivery.

If the consequences of demographic change are not addressed, regions at risk of decline can enter a vicious circle: shrinking populations lead to underused infrastructure, weaker services, and reduced investment, which in turn accelerate depopulation. This can undermine economic resilience, social cohesion and, over time, democratic engagement. When communities feel left behind, trust in public institutions can decrease.

Place-based and forward-looking policies are essential to prevent these dynamics and support more balanced and inclusive territorial development. While there are challenges presented by demographic change, cities and regions – in particular those facing declining and ageing populations – can still seize opportunities and become more inclusive and sustainable. Ageing populations demand age-friendly infrastructure and services, fuelling a silver economy. Developing age-diverse communities and fostering cross-generational interaction can enhance social cohesion and community resilience. Moreover, depopulating cities have opportunities to prioritise quality of life – for example, by rethinking land use, reducing congestion, promoting multigenerational public spaces and facilitating access to more affordable housing. This rebalancing can support more liveable, accessible, and inclusive urban environments, helping cities shift from managing growth to managing well-being. Digitalisation and smart city projects can also advance the well-being of the old-age population through telemedicine and assistive technologies.

Main trends

- Close to one fifth of OECD countries (7 out of 38) have lost population from 2001 to 2022, and a further 7 are expected to do so by 2060. In several of these cases, the expected decline exceeds 20% (e.g. Japan, Latvia, Lithuania, Greece).
- These trends have a strong territorial dimension. In 30 OECD countries, at least 1 small region saw its population fall over the same period.
    - Between 2001 and 2021, nearly 36% of OECD non-metropolitan regions located far from midsize or large Functional Urban Areas (FUAs) experienced population decline. More than half (58%) of the regions where populations declined were far from a midsize or large FUA (see Annex A for more detail on territorial definitions and typologies).

  - An increasing share of the population in OECD countries is living in cities. In 2020, about half (49%) of the OECD population lived in cities, compared to 39% in 2000. Moreover, whilst rural populations in OECD countries grew overall, on average by 6%, they declined in 16 OECD countries.
- Many cities have also seen their populations shrink.
  - While OECD FUAs with over 1 million inhabitants experienced an 18% population rise between 2000 and 2020, with smaller rises in smaller FUAs, over one in 5 FUAs lost population.
  - Smaller cities have been particularly affected. In EU countries, 40% of cities with less than 250 000 inhabitants lost population between 2011 and 2021.
- At the same time, populations in most OECD countries are getting older.
  - By 2050, the population older than 65 in OECD countries will have increased by 49%, while the youth population is forecast to decrease by 5.8%.
  - In most OECD countries (26 countries), rural areas record a higher share of population older than 65 years old than urban areas. On average across countries, this share is more than 4 p.p. higher than in cities. Rural areas have also been ageing more rapidly. Over the past 5 years, the old-age-dependency rate, defined as the ratio between people older than 65 and those aged 15 to 64, has increased on average by 1.9 p.p. in rural areas, compared to 1.2 p.p. in cities.
  - In 2021, there were about 13 working-age people (15-64 years old) for every person older than 80 years in OECD countries, but by 2040 there will be only 7.

Key policy messages

- **Create age-friendly places.** The over 65s contribute significantly to their communities and the local economy. Expanding opportunities for older workers and building multi-generational workforces could raise GDP per capita by 19% over the next three decades. In depopulating regions, age-friendly policies are particularly critical to maintaining quality of life and community vitality. Ensuring accessible services, especially healthcare, inclusive public spaces, and diverse mobility options can help reduce social isolation, support active ageing, and keep communities vibrant and connected.
- **Manage pressures in growing places.** Large and economically productive cities are likely to continue expanding, driven by agglomeration effects that boost growth and innovation. However, these same effects can also create challenges such as rising housing costs and increasing pressure on infrastructure. In growing places, policy makers should prioritise expanding the supply of affordable, sustainable, and high-quality housing, including through the repurposing of underused office buildings where appropriate. At the same time, investments are needed to address congestion and pollution – for example, by promoting active urban mobility and encouraging the use of public transport.
- **Combine adaptation and mitigation strategies**. Adaptation policy responses are needed to help prepare regions and cities for future demographic scenarios, including by adapting public service delivery and infrastructure to demographic decline, and ensuring residents' well-being. When combined with efforts to mitigate demographic decline by improving the attractiveness of places, these strategies can help retain residents and, indeed, attract newcomers, revitalising depopulating places and often relieving pressures on growing places.
- **Align place-based policies with the right territorial scale.** Addressing demographic challenges requires policies tailored to the right territorial scale. Recognising the diverse demographic and socioeconomic contexts, place-based policies should go beyond administrative boundaries and

consider functional areas and the interconnections between areas. This includes, but is not limited to, Functional Urban Areas (FUAs). This approach can improve resource allocation, service delivery, and urban-rural co-operation, ensuring funding and policies effectively respond to demographic shifts. Enhancing the attractiveness of rural areas can generate positive spillovers for cities under pressure – by easing housing demand, diversifying economic opportunities, and contributing to more balanced territorial development.

- **Foster collaboration.** Depopulating and low-density places often face reduced economies of scale, making it harder to sustain cost-effective services and infrastructure. Inter-municipal co-operation allows municipalities to pool resources, share services and align infrastructure planning with real-life residence and mobility patterns. Horizontal co-ordination mechanisms such as inter-municipal partnerships and joint investment projects can be especially effective in fields such as education, healthcare and transport. Moreover, strong vertical co-ordination between levels of government, through inter-governmental fora or planning taskforces, can also contribute to aligning strategies, clarifying responsibilities and avoid duplication. Integrating these collaborative approaches into long-term planning frameworks can help deliver services more efficiently across diverse territorial contexts.
- **"Do more with less".** Fiscal pressure from an ageing population will increasingly constrain subnational budgets, particularly in countries where regional and local governments are responsible for funding key services such as health and social care. To maintain service quality and coverage, subnational governments will need to adopt innovative and cost-effective service delivery models. This includes expanding digital solutions, establishing integrated service centres in accessible locations and promoting compact development by repurposing buildings, allowing for mixed land use and fostering urban regeneration. At the same time, AI-powered tax modelling and data analytics can enhance fiscal planning and extend service capacity by enabling responsive budgeting and supporting healthcare delivery – especially in depopulating regions facing fiscal and workforce pressures.
- **Acknowledge the demographic reality and anticipate**. Demographic trends can be difficult to reverse. Policy makers need to acknowledge this to ensure resources are used most effectively. As demographic change reshapes demand for public services, anticipating these shifts can ensure that public facilities are appropriately sized and aligned with future needs, preventing the construction of "white elephants" that can place a long-term burden on already stretched government finances. Through strategic foresight, regions and cities can better adjust to changing settlement patterns amid demographic decline.

Key policy recommendations

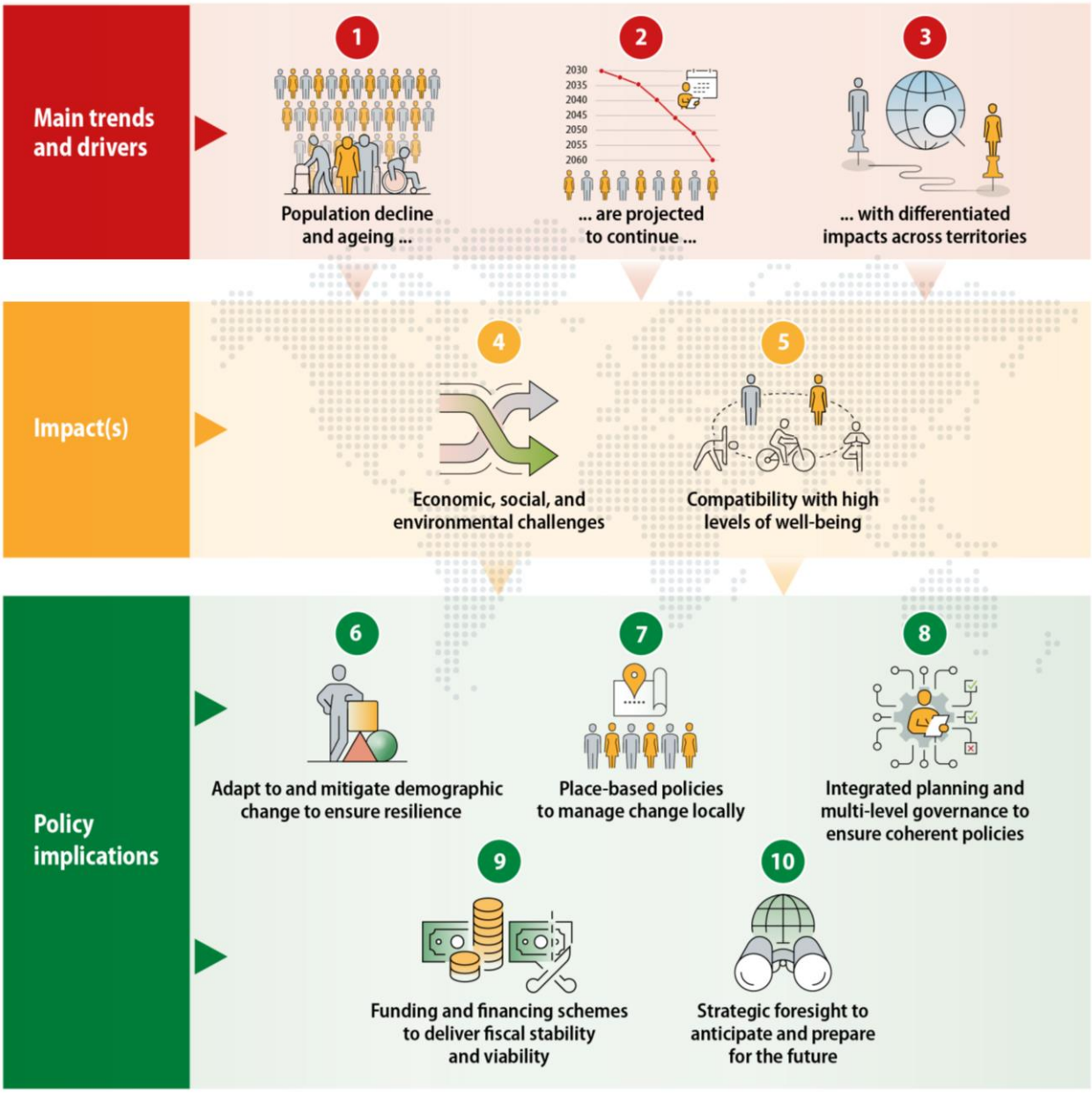
1. **Acknowledge the demographic reality and anticipate change through evidence-based policy responses** by recognising the long-term trends of population decline and ageing across many regions and, by systematically integrating demographic data, population projections, territorial indicators, and foresight methods into strategic planning and public investment decisions.
2. **Tailor adaptation and mitigation strategies to regional demographic realities**, recognising that in some places, structural population decline requires adaptive approaches focused on sustaining well-being and access to services, while in others, targeted mitigation efforts may help strengthen resilience by addressing labour shortages and supporting economic renewal.
3. **Ensure policies are aligned with the right territorial scale**, such as functional areas, to improve planning, resource allocation and urban-rural co-operation in response to demographic challenges. This includes, but is not limited to, place-based policies.

4. **Adapt spatial planning, land use and housing policies** to demographic trends by promoting compact development – through densification in growing cities and more efficient reuse (e.g. infill or brownfield development) and consolidation (i.e. promoting the concentration of people, business and services rather than being spread) in shrinking cities, towns and rural areas – alongside renovation and efficient use of infrastructure and land.
5. **Create age-friendly places** that support healthy ageing, integrate care systems, and foster inter-generational communities through innovation and inclusive services.
6. **Strengthen co-ordination across sectors and levels of government** through integrated planning and vertical and horizontal governance mechanisms, ensuring coherent and efficient responses to demographic challenges.
7. **"Do more with less"** in shrinking areas by optimising existing assets, avoiding inefficient investments, and reforming fiscal frameworks to enhance cost-effectiveness, and alignment with demographic realities.

1 A policy framework and policy recommendations to address demographic change

This chapter develops a policy framework to address demographic change with respect to population decline and ageing – from its main trends and drivers to its impacts and policy implications. It also provides policy recommendations that reflect the key pillars of the policy framework and translate them into actionable guidance. The framework and the policy recommendations are designed to help policy makers in OECD countries, regions, and cities respond to the challenges and opportunities associated with demographic change.

Figure 1.1. Policy framework to address demographic change in the OECD



Main trends and drivers

1. Population decline and ageing are a reality for many OECD regions and cities

Demographic change (i.e. population decline and ageing) is widespread in OECD countries. Seven OECD countries have seen their populations decline in the last two decades, old-age dependency ratios are generally increasing and fertility rates have significantly decreased (Chapter 2).

“Depopulating regions” are characterised by a substantial and sustained decrease in population and fast ageing due to a combination of factors:

1. *Low fertility rates below replacement rates.* Fertility rates have fallen from 2.84 children per woman in 1970 to 1.59 in 2020 on average across OECD countries (OECD, 2023[1]), with almost all countries standing below the replacement fertility rate (2.1). The drop of fertility rates is driven by both socio-economic (e.g. low incomes, lack of opportunities) and cultural factors (e.g. delayed age of young people leaving their parental household and delayed marriages, preference for smaller families, or concerns for the future) (Coulmas, F. and R. Lützeler, 2011[2]) (UNFPA-UNDP, 2020[3]). When fertility rates fall below the replacement rate over substantiated periods (i.e. an increasing share of old-age population in the total population), low or no immigration can lead to population decline (Fluchtmann , J. & Van Veen, V. & Adema, W., 2023[4]). In a vicious cycle, places suffering from out-migration of youth will experience accelerated rates of ageing, high age dependency ratios and a declining share of population in reproduction age, leading to falling birth rates. These factors make it less attractive for the youth population and thus fuel further emigration of youth, lower birth rates and more population decline.
2. *Increasing life expectancy*. In 2021, life expectancy at birth was 80.3 years on average across OECD countries – 10 years higher than it was in 1970 (OECD, 2023[5]). Infant mortality dropped from 27.8 deaths (per 1 000 live births) in 1970, to 8.8 in 1995, and 4.1 in 2020 (OECD, 2021[6]). The direct consequence of high life expectancy paired with low fertility rates is an ageing population.
3. *Negative net migration.* The movement of people out of a region (out-migration) or out of a country (emigration) contributes significantly to population decline in that region/country. People move due to two main interrelated reasons: (1) the search for greater economic and employment opportunities; (2) the search for a better quality of life, including access to quality jobs, services, infrastructure, cultural and leisure opportunities. Relatively qualified, young people are the most likely to emigrate, which leads the regions of origin to have a greater concentration of more vulnerable and older populations. While international migration explains why some countries experience population growth despite having low fertility rates, reversing population decline through migration would, in some cases, require sustained inflows of people of reproductive age. International migrants also tend to concentrate in cities – especially large ones: the share of migrants is twice as high in metropolitan regions compared to other regions. This contributes to diversity in cities but also means international migration has limited power in contributing to stabilising populations in areas that are not attractive to migrants.

2. Population shrinking will spread and accelerate in the coming decades

By 2060, 14 OECD countries are expected to decline in population. And while in some countries the overall population will not decline, some places within these countries will face population shrinkage. The future also holds fundamental changes in age structures across OECD countries: the number of children under 5 years is expected to decline from 63.5 million in 2021 to about 59.2 million in 2040 whilst the number of people over 80 is expected to nearly double, from 66.5 million to 114.7 million (OECD, 2023[7]). These population projections have stark implications for old-age dependency ratios in OECD countries: while in 2021 there were about 13 working-age people (15-64 years old) for every person older than 80 years, in 2040 there will be only 7.

It is likely that regions facing population decline will continue shrinking over the next decades. Almost all OECD countries, with the exception of Israel (3.0), have a fertility rate below the replacement rate of about 2.1 children per woman – the necessary level to sustain the population in the long term in the absence of migration or negative net migration (OECD, 2025[8]). The mean age of women at childbirth in OECD countries has risen from 28.5 years in 2000 to 30.7 years in 2020 (OECD, 2023[9]). Some OECD countries are adopting policies to encourage births and facilitate the well-being of parents, including through financial incentives. However, these policies have had limited impact on reversing declining fertility trends, which

are shaped by a wider set of social, economic, and cultural factors – including changing lifestyles, career choices, and family preferences.

3. Demographic change has a strong territorial dimension and impacts regions and cities differently

Remote regions are most affected by population decline. About 36% of OECD remote regions experienced population decline over 2001-22, compared to 13% of large metropolitan regions (OECD, 2023[7]). Amongst the regions where the population has declined since 2001, 58% were far from a midsize or large Functional Urban Area (FUA). Remote regions – where old-age dependency ratios stood at 31% in 2019 – experienced, on average, the largest increases in old-age dependency between 2003 and 2019 (a 0.9 percentage point increase). In 70% of OECD countries with regions far from a midsize/large FUA (23 out of 33) in 2022, old-age dependency ratios were the highest in regions far from a midsize/large FUA (OECD, 2020[10]). And in 2022, 24% of non-metropolitan regions (382 out of 1526) had an old-age dependency ratio above 40% (OECD, 2023[11]).

While shrinkage is more marked in remote regions, population decline is also happening in urbanised regions. Across OECD countries, 21 % of "metropolitan midsize" TL3 regions and 10% of "metropolitan large" TL3 regions lost population over 2001-21[1] (OECD, 2023, p. 23[7]). Many cities are also affected by population decline, either short or long-term. For instance, during the sudden shock of COVID-19, the share of shrinking cities in Europe reached a rather staggering figure of 63% (Wolff, M. % Mykhnenko, V., 2023[12]). Smaller cities have been more severely affected. In the European Union, 40% of cities with fewer than 250 000 habitants lost population between 2011 and 2021, a trend comparable to towns, 43% of which experienced population decline, while population loss occurred in 28% of cities with 250 000 inhabitants or more (OECD, 2024[13]). In Japan, almost 90% of cities lost population, especially in those with fewer than 500 000 inhabitants (Burgalassi and Matsumoto, 2024[14]).[2]

The impact of demographic change

4. Demographic change brings economic, social, and environmental structural challenges

Changes in the scale and composition of the population – especially when they happen rapidly – can have wide-ranging impacts on:

1. *Economy and the fiscal base.* Population decline is often accompanied by a decline in the labour force and a declining share of the working age-population, which is projected to drop from 64% in 2022 to 60% in 2050 in OECD countries (OECD, 2023[15]). Labour shortages can affect business activity, employment, and hence consumption and economic growth. At the same time, population ageing is reshaping the labour force. Older workers bring valuable experience and stability, but an ageing labour force may, on average, be less geographically mobile and less likely to change jobs, which could affect overall labour market dynamism and the pace of skills renewal – potentially impacting productivity and long-term growth. Population decline also reduces the tax base and revenue from user fees for public services. This challenge is particularly acute in depopulating areas, where declining populations reduce economies of scale and increase the cost of delivering services. For example, annual costs per student in sparse rural areas are 20% higher in primary schools and 11% higher in secondary schools compared to cities. In contrast, larger urban areas are generally better able to absorb these effects. These demographic shifts can strain national and subnational government budgets and fiscal systems. In addition, ageing also leads to higher costs of provision per person, not only because of smaller scale economies, but also due to rising

healthcare needs and long-term public pension expenditures (OECD/EC-JRC, 2021[16]) (OECD, 2024[17]).

2. *Service and infrastructure delivery.* Population decline and ageing create issues of over-supply and over-capacity as demand for housing and certain public services (such as education) decreases, while demand for other public services increases, as is the case for long-term and health care services and infrastructure adapted to the old-age population. This can create mismatches between the infrastructure that is in place and the infrastructure that is needed to satisfy the demands of current and future population. Although the variable operating costs of infrastructure will fall concurrently with population decline, shrinking will lead to higher per-capita fixed operating costs, especially in those areas where densities are lowest (OECD, 2021[18]) (OECD/EC-JRC, 2021[16]).
3. *Land use and spatial planning.* As tax bases decrease and per capita costs of service and infrastructure provision increase with demographic change, the need to develop efficient land use and spatial development plans grows. Spatial planning needs to ensure settlements, infrastructure and public services remain accessible to all age groups, including vulnerable people, such as the elderly, chronically ill, or families with weak education backgrounds who need additional services.
4. *Governance.* As populations dwindle, demographic change can challenge the effectiveness of existing institutional and territorial structures to govern their jurisdictions and provide services and infrastructure. Shrinkage can also reduce the human resource capacity of subnational governments, leading to inefficiencies in resource allocation, policy implementation and decision-making.
5. *Social challenges.* Shrinkage and ageing are coupled with decreasing household sizes, as a result of a combination of factors, including low fertility rates, decreasing marriage rates, rising divorce rates, postponement of family formation, and childlessness (OECD, 2011[19]). The average household size across OECD countries dropped from 2.8 persons in the mid-1980s to 2.5 in 2015. In particular, OECD countries show an increasing number of single-adult households (i.e. households comprising only one adult, living with or without children). A changing household composition is also rising risks of loneliness, with related challenges in terms of mental health (Burgalassi and Matsumoto, 2024[14]).
6. *Civil society.* Out-migration of younger populations as well as the closure of schools, community centres, and other public facilities (e.g. libraries) can impact social cohesion and local community vitality (Beunen, R., Meijer, M., de Vries, J., 2020[20]). Greater sparsity due to population decline can also mean poorer connectivity and typically implies longer journeys to access all types of services. All these factors combined can lead to potential social discontent and reduced levels of trust in governments (Allain-Dupré D., 2022[21]) (Mitsch, 2021[22]).
7. *Environment.* The willingness by policy makers to admit that some regions and cities are shrinking is an important prerequisite to initiate measures and strategies (Pallagst, 2017[23]). Spatial planning policies which do not consider depopulation risk generating unnecessary artificialisation of surfaces and construction. While depopulating regions' contribution to environmental degradation may be modest, such effects would be inconsistent with efforts to avoid negative environmental impacts from the degradation of land, natural space, and biodiversity, as well as from the environmental footprint of construction materials. Sprawled settlement also raises CO_2 emissions from cars, energy demand and related infrastructure needs. Ensuring sufficient zero-emission energy supply is a major challenge to reach climate neutrality. This can make low-density areas more vulnerable. On the other hand, some depopulating regions may have opportunities from contributing to renewable electricity supply provided business models to exploit them share benefits with residents. Some of these regions can also become more vulnerable to rising climate hazards.

All the above-mentioned impacts are closely interrelated, producing compounded and self-reinforcing indirect effects that puts depopulating regions and cities at risk to enter into downward spirals of decline

(Haase et al., 2014[24]). For instance, a reduced local tax base, compounded with increasing building vacancies, can led to a deteriorated urban fabric, business, and job losses, which can dramatically reduce territorial attractiveness and increase social tensions and discontent.

5. With the right policy framework, demographic changes can coexist with high-living standards

Population decline and ageing do not necessarily mean declining well-being. Demographic change can in fact bring new opportunities.

Shrinkage can reduce environmental impacts and offer opportunities by reducing pressures on the environment, and by protecting and restoring ecosystems. This can contribute to meeting global environmental targets on biodiversity, climate change and the degradation of land, while generating local amenities and opportunities.

Efforts to manage demographic change can encourage policy makers to promote social innovation, digitalisation, and new technologies, as well as to experiment with innovative governance and public service delivery mechanisms that both incorporate sustainability goals and aim for increased efficiency of public spending (OECD, 2021[18]).

Demographic change can stimulate innovation and resource-sharing in the provision of public services. For instance, inter-municipal co-operation in FUAs can help provide flexible and demand-responsible services for citizens (e.g. in public transport). In depopulating regions, there is also a need for co-ordinated provision among urban and rural areas (OECD, 2022[25]). Digitalisation and artificial intelligence (AI) not only support smart city solutions but also offer practical responses to service delivery challenges in depopulating regions (OECD, 2023[26]) (Bournisien de Valmont, M., 2024[27]). In health and elderly care, AI can ease labour shortages by automating routine tasks, enabling remote monitoring, and supporting clinical decisions, especially where populations are ageing rapidly and health systems are under strain (OECD, 2024[28]).

Economic opportunities can arise from increasing consumer expenditure by an ageing population as well as from the potential of the silver economy and its capacity to generate new business opportunities. An expanding ageing population can drive increased demand for healthcare, elderly care services, and dedicated infrastructure, which are industries incorporating advanced technology and with a strong potential to generate multiplier effects on business creation and employment (Burgalassi and Matsumoto, 2024[14]).

Finally, demographic change can also favour old-age inclusion, provide pathways for old-age population to continue to contribute to local communities and, therefore, prevent social isolation. For instance, old-age population can be engaged to support families in reconciling work and family duties. In cities, neighbourhoods with diversified housing options and adopting Universal Design approaches (aiming at creating buildings that can be used by all generations and for individuals with different physical or cognitive capabilities) can build accessible communities and promote cross-generational interaction (Burgalassi and Matsumoto, 2024[14]).

With the right approach and with place-based, people-centred, and forward-looking policies (as further developed below), regions facing demographic change can still sustain high levels of well-being.

Policy implications of demographic change

6. Population decline will be challenging to reverse in most places; thus, policies should adapt to demographic realities while considering targeted mitigation where feasible

There are four main "ideal-types" of approaches that policy makers use to respond to population shrinkage (OECD, 2022[29]) (ESPON, 2020[30]):

1. *Trivialising:* policy makers maintain the status quo, do not consider demographic shrinkage projection data, and/or offer no response.
2. *Mitigating or countering:* policy makers acknowledge demographic shrinkage but mainly implement a counter-strategy aimed at mitigating the trend by attracting new residents and firms to stimulate population growth.
3. *Adapting, managing or "coping with decline":* policy makers accept the inevitability of continued shrinking and manage its consequences by adapting public services and infrastructure, ensuring the quality of life of residents that decide to stay.
4. *Utilising:* policy makers see shrinking cities and regions as societal laboratories to test new methods, based on the assumption that a municipality's quality of life does not necessarily depend on population density.

Traditional policy responses to population decline in OECD regions and cities have primarily focused on mitigation strategies, including increasing birth rates, and providing incentives to attract new residents and firms. However, with population decline already underway in 7 OECD countries, it has become clear that mitigation approaches alone will not be successful everywhere. In response, many countries and regions – including Korea, Portugal, Germany, and Japan (e.g. National Grand Design 2050 of Japan) (OECD, 2016[31]), have also started to shift towards the implementation of adaptation strategies. This approach acknowledges demographic decline as an ongoing reality and focuses on adjusting policies and public investment accordingly. However, this does not mean that mitigation should be entirely abandoned. On the contrary, mitigation efforts can complement adaptation strategies by enhancing the attractiveness of regions and cities despite demographic decline.

The adaptation approach, also referred to as "smart shrinking" or "smart adaptation", acknowledges the reality of population shrinkage and seeks ways to adjust to its consequences (see point 4) (OECD, 2022[29]). This approach prioritises well-being and is based on the principle that population decline does not necessarily lead to lower quality of life or lesser potential of a place. It requires accurate information on the cost implications of delivering services in the present and the future (OECD/EC-JRC, 2021[16]) to ensure both cost efficiency and adequate access to services in all territories. The approach must also include innovative solutions and investments in digital technology and the digital skills of public practitioners and citizens to ensure the continued provision of essential services and the sustainable maintenance of vital infrastructures. Policy makers should also aim to create "age-friendly places" by adopting policies to help integrate all age groups into their communities.

Adaptation efforts can be supplemented by mitigation measures, with both approaches working in tandem to enhance well-being and regional resilience. By identifying their unique assets and challenges, regions and cities can implement target policies and investments to boost their attractiveness to people and investments promoting economic development (e.g. through smart specialisation strategies). These efforts can also provide residents with a compelling "reason to stay", contributing to population retention. Key levers for improving regions' capacity to attract and retain people include access to high-speed broadband, affordable housing, and education and training programs that are tailored to the needs of the local labor market (OECD, 2023[32]). Therefore, in some remote rural areas in the Nordic countries adaptation strategies are implemented alongside policies designed to increase regional appeal, including by investing in their comparative advantages, such as close co-operation between employers and education providers,

as well as their natural and cultural capital (OECD, 2023[33]) (Kull et al., 2020[34]). Similarly, policies implemented by different regions across the OECD to attract skilled health professionals such as nurses to ageing communities, demonstrate a combined approach of mitigation and adaptation. Policies that enhance the attractiveness of small and medium-sized cities can contribute to balanced and connected urban systems.

Effective demographic policy requires assessing what is appropriate in each context. In some regions, a focus on adaptation will deliver better outcomes. In others, selective mitigation strategies can support resilience and retention. This approach can help reframe the narrative around population decline – not as an inevitable, linear shrinkage, nor as a crisis to be reversed – but as a manageable challenge that can also open opportunities. This shift can encourage a proactive, forward-thinking approach, making it easier to implement robust mechanisms for dialogue between public authorities and citizens ensuring transparency and inclusivity and increasing trust. It can also facilitate the prioritisation of vulnerable population groups, such as students, women, or the elderly, whose needs may be disproportionately affected by demographic changes.

7. Place-based policies to address demographic challenges should be done at the right territorial scale

The different patterns of shrinkage emerging across OECD territories as well as their different socioeconomic and geographic contexts call for tailor-made place-based interventions. These should be sensitive to how specific regions and localities are affected by population change but also to the tools available for adapting to its consequences. This approach enables policy initiatives to be tailored to current and future demographic realities.

A place-based approach requires targeting an appropriate territorial scale. Taking into account functional areas as a complement of administrative boundaries of subnational governments, not only in urban but also rural contexts, can reflect the potential economic, social and environmental connections across territories. This approach helps devise more coherent policies for rural areas and describe with better accuracy rural places and their diversity.

Using functional areas can also contribute to improve the targeting of funding. In EU countries, for example, many depopulating rural areas encounter difficulties in accessing to Cohesion Policy funding because they lie within NUTS 2 regions that have GDP per capita indicators reflecting the performance of cities and towns (ESPON, 2020[30]). Therefore, adjusting European funding allocation to consider demographic factors at the municipal level, rather than relying solely on NUTS 2 or NUTS3 administrative boundaries, could help ensure that resources are directed towards areas most in need, increasing the overall efficiency of these policies and funds. Functional areas allow all types of interdependence between and within regions. Demographic challenges play out differently across territories in terms of planning. For instance, while rural areas might focus on the risk of school closures due to the declining number of students, urban areas will need to adjust the housing stock, the physical infrastructure, and the digital infrastructure, to ensure public services are accessible to an increasingly large share of the old-age population. Maximising the integration of urban and rural areas and their synergies, through increased co-operation, can help achieving economies of scale in service delivery and contribute to develop new opportunities. Previous OECD research has highlighted the role of urban-rural partnerships in improving access to high-quality education, healthcare and social assistance, which are largely concentrated in cities, while a lack of co-operation within functional areas might conduct to competition among local governments to retain population, with a loss of welfare (OECD, 2022[25]).

Trends of urban shrinkage can start from a specific neighbourhoods and resulting in out-migration, urban decay and in-migration of marginalised households (Haase et al., 2014[24]), leading to spatial segregation at the city-level, with consequent risks for people in falling into social exclusion. Similarly, ageing can affect parts of a city differently, with particular challenges. For instance, within FUAs, ageing is faster in suburban

areas than inner cities (Burgalassi and Matsumoto, 2024[14]; OECD, 2015[35]). Within-city segregation trends call for targeted policies to reduce disparities in well-being and to ensure equal access to public services and urban amenities in all neighbourhoods (OECD, 2019[36]).

Demographic change also calls for spatial planning and land use responses that take into account demographic projections and socioeconomic contexts. For example, strong, lasting depopulation entails risks of increasing vacant housing and higher infrastructure maintenance costs, which may lead to deteriorating built-environment quality over long stretches of time. Partly empty buildings and poorly maintained infrastructure, in turn, may detract from pleasant living environments and contribute to depress house prices. This may disproportionately affect poorer households who remain in depopulating regions, further aggravating socioeconomic disparities.

Policy makers should favour densification and renovation in neighbourhoods that are close to public services and transport to adapt to population decline and improve the living environment. Data on housing vacancies and geospatial analyses of accessibility can assist local authorities in spatial planning, land use, and infrastructure-related decisions. In case of strong, lasting depopulation, demolition projects could aim to reduce vacant housing, improve land use efficiency, and reduce infrastructure delivery costs. Spatial and land use policies also need to integrate local environmental opportunities and challenges, such as the potential for biodiversity protection and carbon sinks, as well as vulnerability to climate hazards.

8. Integrated planning and multi-level governance mechanisms should be at the core of policy responses to address demographic challenges

The effects of shrinkage are multi-sectoral, concern multiple levels of government as well as other stakeholders (see point 4). To overcome the additional difficulties of providing services and infrastructure in depopulating areas, multi-level governance systems and fiscal frameworks should be designed following the five primary components of the SHIFT approach:

1. *Strategically planning for shrinkage*. Strategic planning can promote the design and implementation of coherent policy actions across different sectors and levels of government able to address demographic decline and ageing. At both national and regional levels, strategies should consider local needs and capacities, and identify which sectors and economic activities have the greatest potential to succeed in depopulating places. While it is often difficult to determine specific successful activities in advance, strengthening basic capacities, including improving the business climate and firm-related services, is critical. They need to set out a clear, long-term vision to be integrated into the objectives of all policies in multiple sectors, including public transport, housing, social and health services, land use, and spatial planning.
2. *Harnessing vertical and horizontal co-ordination*. To ensure policy coherence across sectors and levels of government, vertical co-ordination arrangements can help identify and prioritise investment opportunities across levels of government, potentially resulting in an integration of policies and delivering goods and services in the most efficient manner. This can take place through committees, platforms and other communication channels among national ministries and subnational governments. On the other hand, horizontal co-ordination is particularly helpful in depopulating areas to make the most of economies of scale, as inter-regional or inter-municipal co-ordination can lead to the integration of policies through management arrangements that ensures lower costs and swifter service provision.
3. *Innovating governance arrangements and fiscal instruments.* Amidst a shrinking regional population, implementing innovative governance arrangements can help achieve economies of scale and maintain the quality of service and infrastructure provision. This can involve a strategic reallocation of competences to provide goods and services at a higher level of government, often asymmetrically to lift the burden of smaller municipalities. It can also take the shape of co-

operation, be it among regions, municipalities or within a functional area designed for the provision of specific services or infrastructure, in which case a new governance structure may emerge.

4. *Facilitating stakeholder engagement at all stages of policy-making*. It is precisely when population shrinkage occurs that the remaining population should be heard and participate actively in policy-making. Participatory governance mechanisms as well as participatory budgeting can provide important knowledge on local needs to policy makers and can foster a sense of ownership of critical policy solutions to adapt to shrinkage, increasing trust in government. Citizens can also engage in organising and providing certain services collectively.
5. *Training and retaining staff with the needed skills for effective multi-level governance systems*. Public administrations in depopulating regions often face a scarcity of staff with the necessary skills to adapt to shrinkage – as well as the resources, including digital tools, to implement and sustain regional development strategies to adapt to shrinkage. Capacities required range from strategic planning, to budgeting, data management or procurement. It is crucial to offer public servants in depopulating regions the trainings required for skill development, and to retain them post-training by offering monetary and non-monetary incentives related to the nature of the job, career opportunities, and the quality of life offered in the region (OECD, 2023[37]).

9. Funding and financing schemes should aim to deliver fiscal stability and viability in depopulating regions and cities over the long-term

Demographic change can put significant pressure on subnational finances, creating a need to “do more with less”. Fewer people of working age, a higher proportion of older people and of less-educated low-income households, leads to a "scissors effect" in which revenues decrease while expenditures remain stable or increase. Transfers from national to subnational governments, especially in decentralised models, may also decrease, as they are often based on population. All these factors result in a vicious circle in which lower revenue and funding can lead to poorer quality service delivery, under-utilised and abandoned infrastructure, and thus less private investment and economic opportunities, which exacerbates the impact of shrinking. On the expenditure side, higher demand for certain services, such as healthcare, linked to ageing, translates into higher per capita expenditure. Without substantial structural changes, the cost of maintaining and operating many essential infrastructures barely varies because fixed costs are high, which puts great pressure on public finances. These financial challenges can lead to deficits and spending cuts, impacting on the long-term stability of public finances, service delivery and infrastructure maintenance.

Financial incentives have been put in place across several OECD depopulating regions and cities to attract new population and retain existing population. Examples include Japan’s Hometown Return programme, which offered housing subsidies and family support in rural prefectures, and Spain’s Castilla-La Mancha region, where the 2021 Law on Economic, Social, and Tax Measures introduced tax breaks for residents and businesses in depopulated areas. In some cases, these incentives succeeded in attracting population flows from other territories. Although this policy can be regarded as a localised success, it can lead to zero-sum dynamics if all regions implement the same measures. Moreover, in situations of overall shrinking population, attracting population to one region may create challenges in other depopulating regions. Therefore, these financial incentives cannot resolve the issue at the scale of a country. Such efforts should hence be focused to target threshold population size or population density in areas to deliver services that can be more sustainable over the medium and long term. More generally, governments should adapt service provision to different territorial realities based on reliable estimates of costs and access arising from demographic and geographic differences (OECD/EC-JRC, 2021[16]). Adapting to changes in demand following lower fertility rates and ageing implies that certain services will need to become more widely available, while others will have to concentrate more. This requires a consensual decision by policy makers and local stakeholders on whether to relocate certain services and in which settlements it is most promising to invest.

Although aligning funding with regional development policy objectives is acknowledged as desirable, most countries have yet to fully integrate these priorities into their budgetary processes. This is especially true for capital budgeting frameworks, where stronger links to infrastructure investment decisions are still needed to ensure consistency with regional development goals. This can help to meet regional development needs in a cost-effective, co-ordinated, and coherent manner. Policy makers can also enhance complementarity between sources of finance and fiscal instruments (e.g. tax regimes, transfers, equalisation mechanisms, regional development funds) in order to support more proactive and innovative approaches to regional development and to improve the design and planning of public investment.

10. Strategic foresight is paramount to better anticipate and prepare regions and cities for future settlement patterns

Demographic shrinking is a major megatrend affecting all levels of governments across most OECD countries (OECD, 2019[36]). Population changes, including strong and sustained declines, call for governments to bolster their ability to anticipate and prepare for its future impacts. Nevertheless, it is common for policy makers to resort to measures that prioritise immediate benefits when the effects of demographic decline become evident, often at the expense of long-term advantages. While targeted actions to palliate the consequences of demographic decline – such as failures in delivering key public services such as education or healthcare – are valuable, they should not detract from the crucial task of developing a long-term vision and a sustained, forward-looking strategy committed to adapting to shrinkage and acting as the foundation of all related policy initiatives.

To develop such a vision, strategic foresight is a critical tool to explore possible future changes and their implications for decision-making today (OECD, 2023[7]). However, in the demographic field, it requires available solid population projections and long-term demographic data series that cover and help determine a range of plausible scenarios. The OECD has collaborated with national and subnational governments to help them create future scenarios reflecting a wide range of possibilities that the future may hold in terms of demographic changes, extending from a status quo situation where most of the population remains concentrated in metropolitan areas, to a “rebound” of rural areas due to the high cost of living and difficult access to housing and cities, as well as remote teleworking opportunities (OECD, 2021[38]; OECD, 2023[7]). These exercises can encourage policy makers to invest time and resources in foresight practices to assess possible future scenarios and drive their policies strategically in line both with short- and long-term objectives.

Many OECD countries and regions are gradually incorporating foresight exercises as an integral part of dealing with and adapting to demographic shrinking. At the national level, Spain’s Foresight Office, España 2050, seeks to understand social, demographic, economic and environmental challenges, and opportunities that the country will face in the coming decades. The government held an initiative named “Dialogues on the Future” in which EU institutions and 72 other public institutions – including regional and local governments, foundations and universities – took part (Ministerio de la Presidencia, 2021[39]). In Finland, the national government submits to the parliament a “Report on the Future” during each electoral term, identifying issues that will require attention in the future, including demographic change. The Prime Minister’s Office is then responsible for co-ordinating the work to respond to these trends (Committee of the Regions, 2024[40]). At the regional level, the lack of financial or human resources to undertake can sometimes explain the absence of foresight exercises, but there are some successful examples at a subnational level. The region of Hauts-de-France (France) has developed a large, separate unit dedicated to foresight activities almost exclusively. In its documents, demographics features prominently as one of the important factors of change for the region in the long term (Agence Hauts-de-France, 2023[41]).

Policy recommendations

The following recommendations reflect the complexity of demographic challenges, but also the wide array of tools available to address them. They highlight how policy makers can move from reactive responses to proactive ones, tailoring responses that reflect the current and future demographic realities in different regions and cities with a forward-looking place-based approach. With strategic and long-term planning, demographic change can become an opportunity for more inclusive and sustainable development focused on people's well-being.

Recommendation 1. Acknowledge the demographic reality and anticipate change through evidence-based policy responses

Shrinking populations and ageing are a structural reality in many OECD countries. Seven OECD countries have already experienced population decline over the past two decades, and by 2060, this number is expected to rise to 14. Even in countries where national populations are projected to remain stable or grow, demographic change within countries is highly uneven, especially when comparing rural and remote regions with urban areas. This asymmetric reality highlights the need for place-based policies rather than spatially-blind approaches that do not take into account the specific needs and trajectories of different territories. In some contexts, demographic trends intersect with diverse governance arrangements – including Indigenous governance systems – and with specific regional conditions, such as in remote areas where infrastructure gaps, limited access to services, and population mobility pose additional challenges

Given the scale and persistence of these trends, policy makers should move beyond short-term responses and acknowledge that, in many regions, shrinking populations and ageing are likely to continue. This requires a fundamental shift in how policies are designed and investments are prioritised – from a traditional focus on growth and expansion to one centred on resilience, quality of life, and inclusive prosperity. Rather than assuming growth will return, policies should focus on making places attractive, liveable, and efficient under new demographic realities. This means rethinking infrastructure investments, redesigning public services for lower-density places, leveraging digital tools to maintain access and efficiency, and supporting social innovation and community-based solutions. It also requires forward-looking governance: anticipating rather than reacting to demographic change. Strategic foresight – the use of scenario planning, trend analysis, and participatory visioning – can help identify emerging risks and opportunities, guide long-term decision-making, and ensure public services and infrastructure remain fit for purpose over time.

Integrate demographic trends into planning and investment frameworks

- Demographic change should not be treated as a separate agenda, but rather integrated into broader regional development, infrastructure, and public service planning frameworks. Strategies should be based on realistic demographic projections and incorporate strategic foresight to test assumptions and assess future risks.
- Long-term public investment strategies should explicitly integrate demographic analysis during their development. Developing and integrating robust, independently validated demographic trends and projections at the local and regional levels can help to identify how demographic change affects service and infrastructure needs across different territories and designing appropriate responses – from reorganisation and consolidation to repurposing or gradual downscaling – depending on the local context. Investments should support economic resilience and maintain access to essential services in regions experiencing depopulation or rapid ageing, while avoiding resource allocation to projects that risk resulting in underused or obsolete infrastructure.
- In addition to targeted investments, policies should foster innovation, support collaborative networks and promote preventive approaches to mitigate the long-term negative impacts of

demographic change whilst fully leveraging opportunities, for example through the silver economy. Investments should target sectors most affected by demographic trends – such as healthcare and long-term care – and on enabling solutions, such as digital connectivity, which can support service delivery, foster inclusion, and improve quality of life. These investments should be complemented by measures that strengthen local capacity, attract and retain people and adapt systems before pressures become critical. In remote or sparsely populated areas, particular attention should be paid to closing digital infrastructure gaps and improving climate-resilient service delivery models, which are essential for supporting quality of life and economic opportunity.

- To support this, improved demographic and territorial indicators should guide investment decisions, ensuring alignment with actual and projected needs.

Adapt service delivery models to shifting population needs

- Traditional delivery models tend to be based on the assumption of population growth or concentration. Shrinking and ageing regions require flexible, decentralised and often collaborative approaches, such as mobile units, shared services or digital platforms, to ensure access without compromising financial sustainability.
- Governments should systematically estimate the variable cost of service delivery under different demographic scenarios. This enables more informed budgeting decisions and supports the long-term sustainability of public services.

Ensure fiscal predictability and inter-governmental co-ordination

- In many countries, shrinking regions rely heavily on transfers from national or supranational sources (such as the European Union) to fund public services and infrastructure. It is essential to ensure predictable and stable fiscal frameworks to allow local and regional authorities to plan, invest, and deliver essential services over the long term.
- Inter-governmental co-ordination should be strengthened to align national and subnational strategies around demographic objectives, reduce planning uncertainty, and address territorial inequalities.

Promote demographic literacy across policy sectors

- Building awareness and understanding of demographic trends among decision-makers is essential at all levels of government. Governments should ensure that demographic data informs sectoral policies beyond population and planning departments. Strengthening data availability – including the development of forward-looking indicators – is essential for place-based decision-making.
- Governments should institutionalise foresight as a governance tool by embedding scenario planning and participatory visioning into core planning cycles, and by supporting these efforts with dedicated foresight units, training programmes, and technical assistance.

Recommendation 2. Tailor adaptation and mitigation strategies to regional demographic realities

To address demographic change, traditional policy approaches have often focused primarily on mitigation – attempting to reverse or counter demographic decline through incentives to increase fertility or attract new residents. While such strategies can be effective in some cases, in other regions, for example those facing systemic, persistent and structural population decline, policy interventions designed to reverse decline are likely to be expensive and/or fall short. Moreover, in the short and long term that may only serve to accelerate decline in other vulnerable regions.

A growing number of OECD regions are moving towards adaptative approaches that acknowledge the realities of demographic change and seek to manage its impacts on service delivery, infrastructure, and community well-being. These strategies – sometimes called “smart adaptation” or “smart shrinkage” – emphasise the need to provide high-quality public services, maintain quality of life, and sustain regional vitality regardless of population size. In some regions, adaptation strategies will need to incorporate Indigenous governance systems, community-led planning processes, and local knowledge, ensuring that service delivery models reflect cultural relevance and the specific geographic and social conditions of the communities involved.

Yet, adaptation and mitigation are not mutually exclusive. Policies to boost well-being and access to economic opportunities can form a balanced and pragmatic response that can help regions build resilience, retain existing populations, and remain attractive to newcomers. The region of Norbotten in Sweden illustrates this integrated approach. Between 1990 and 2021, the region experienced the steepest population decline in Sweden (-5.6%), with rural areas most affected. In response, the region has innovatively adapted key services – for example, by introducing video healthcare consultations – to serve areas with lower population densities. At the same time, rather than aiming to fully reverse decline, the region has sought to strengthen resilience through a collaborative pilot policy focused on meeting labour demands linked to new investments. This example demonstrates that where conditions permit, selected mitigation efforts can complement adaptation – but that such strategies must be realistic, targeted, and aligned with demographic realities. (OECD, 2023[33]). Such initiatives not only address current demographic pressures but also contribute to a more constructive public narrative around demographic change – not as a crisis to be reversed at all costs, but as a challenge to be managed creatively, inclusively, and sustainably.

Adopt context-specific strategies based on demographic trajectories

- Rather than applying adaptation and mitigation measures indiscriminately, policy makers should choose strategies based on the demographic trajectory, economic potential and institutional capacities of the region. In regions facing long-term structural decline, adaptation will be more viable and cost-effective. In other regions, where labour shortages and new investment are creating demand, targeted mitigation efforts may be appropriate.
- Adaptation efforts should focus on ensuring continued access to essential public services, especially in areas facing persistent population decline. This includes healthcare, education, and transport services, supported by innovative solutions such as digital delivery or mobile service hubs.
- Mitigation strategies should seek to enhance regional appeal by investing in local assets such as natural and cultural capital, affordable housing, and education and training systems.

Implement smart adaptation strategies to maintain well-being

- Adaptation strategies should focus on ensuring quality of life despite population decline, including by right-sizing infrastructure, sustaining access to services, and improving housing quality.
- Digital technology and innovation should be leveraged to support service delivery in sparsely populated areas. Investments in digital infrastructure and digital skills can ensure ongoing access to education, healthcare, and administrative services. AI-driven tools, particularly in healthcare and elderly care, can help extend service capacity by automating administrative tasks, supporting clinical decision-making, and enabling remote care – a critical asset for regions facing fiscal and workforce constraints due to ageing and depopulation.
- Policy makers should also prioritise creating “age-friendly” environments to meet the needs of ageing populations, including accessible transport, housing, and community spaces.

Optimise service delivery networks in rural and shrinking areas

- Policy makers should strengthen regional service centres – strategically located hubs that co-locate essential services such as healthcare, education, and digital access – to improve service accessibility and efficiency in shrinking areas. The location of these centres should be informed by geospatial analysis to ensure cost-effectiveness and proximity to population centres.
- In the education sector, consolidating school networks across and in areas with declining enrolment can balance trade-offs between cost efficiencies, quality and accessibility, including in combination with targeted transport support, and digital learning solutions.
- Stakeholder engagement in the planning and reorganisation of public service delivery should include transparent participatory processes, supported by ex-ante impact assessments, in order to build trust and support inter-municipal co-operation. These approaches should be aligned with the broader inter-municipal governance frameworks described in Recommendation 6.

Use mitigation to support regional resilience

- While recognising that reversing demographic trend decline entirely is in many cases not feasible, targeted mitigation efforts can help strengthen the socio-economic base of shrinking regions, including to address skill gaps.
- Local and regional governments should identify and invest in their comparative advantages through strategic planning tools such as smart specialisation strategies, with a focus on sectors with higher potential for talent retention.
- In areas experiencing persistent population decline and labour shortages, such as in many rural areas, rural immigration programmes can support demographic resilience, especially when combined with community integration strategies and long-term settlement outcomes.
- Efforts to attract and retain key professionals – for example, doctors, nurses, teachers, and care workers – should address common barriers such as housing availability, professional isolation and limited career development opportunities. These efforts should be tailored to local conditions and look to leverage on other factors, or comparative advantages, that can support attractiveness including those that support quality-of-life, such as access to green spaces, cultural amenities and community infrastructure.
- Shrinking regions suffering from labour shortages, in particular, have opportunities to leverage the benefits of emerging technologies such as artificial intelligence (AI) to modernise traditional industries, attract new investments, and drive economic development.

Recommendation 3. Ensure policies are aligned with the right territorial scale

Responding effectively to demographic change requires two interlinked shifts. First, policies must become more place-based, taking into account local demographic, geographic and socio-economic conditions. In shrinking regions, this often implies moving beyond rigid jurisdictional frameworks and planning at functional scales – such as commuting zones or service catchment areas – to better reflect how people live, work and access services. This is especially important in shrinking and ageing regions, where aligning policies with functional realities can help avoid costly duplication of infrastructure, reduce per-capita service costs, and better target scarce resources. Functional approaches can enhance co-ordination in service delivery, infrastructure investment and governance efficiency across regions facing similar demographic pressures. Second, demographic change cuts across multiple sectors – including health, education, housing, labour markets, and transport – and addressing it requires cross-sectoral co-ordination. Many sectoral policies remain place-blind, shaped by national norms that overlook diverse local realities. A whole-of-government approach is essential to align strategies across policy domains and levels of government, ensuring that demographic adaptation efforts are coherent, place-based and responsive to

both the scale and the distribution of change. In contexts of population ageing and decline, cross-sectoral co-ordination is also critical to avoid inefficiencies, service fragmentation, or gaps in provision that disproportionately affect smaller and more vulnerable communities.

Applying territorial and cross-sectoral lenses can help governments design integrated responses that better reflect the realities of demographic change on the ground.

Use functional areas to design and implement policies that respond to local demographic realities

- Policy makers should move beyond administrative boundaries and consider functional areas – such as commuting zones, labour market areas, or service catchment areas – when designing policies to address demographic change.
- Functional areas should be leveraged for more coherent planning for infrastructure, housing, education, and healthcare, as they often reflect the social and economic interdependencies between urban and rural regions better than administrative boundaries. This is particularly relevant in ageing and depopulating places, where functional planning can help sustain service delivery despite shrinking populations, and ensure investment is directed where it will have greatest impact. Sectoral policies (e.g. in education, healthcare, transport, and labour) should be adapted to the characteristics of functional areas using demographic, geographic, and socio-economic data, ensuring service models reflect local capacities and needs.

Address intra-regional demographic disparities through more differentiated policy responses

- Demographic change should be analysed not only at the regional level but also within regions, identifying neighbourhoods or settlements – such as suburban or peripheral areas – that may be ageing more rapidly than city centres or experiencing out-migration and urban deterioration.
- Policy makers should also design and implement targeted interventions that directly address intra-regional disparities. This involves using detailed spatial and socio-economic data to identify disadvantaged areas within regions and guide the allocation of resources. Targeted measures could include expanding rural transport links, deploying mobile service units, or supporting local job creation initiatives. These actions are particularly important in shrinking and ageing regions, where needs can differ significantly over short distances, and where smaller or remote communities may otherwise be left behind. Cross-sectoral co-ordination mechanisms – such as inter-ministerial fora or joint planning taskforces – can help align interventions and ensure that demographic insights shape decisions across relevant policy areas.

Ensure funding and investment mechanisms reflect demographic needs at the right scale

- Funding frameworks, including those at the national and EU levels, should incorporate demographic criteria at a more granular level – such as municipalities or functional areas – rather than relying exclusively on broader administrative regions like TL2.
- Policy makers should target funding more accurately towards communities most affected by demographic decline or ageing to improve the efficiency, equity and impact of public investment. This includes adapting intergovernmental fiscal transfers to reflect demographic realities, such as age dependency ratios, service delivery costs in low-density areas, and the fixed costs of infrastructure maintenance in shrinking municipalities. Introducing conditional elements to incentivise local adaptation efforts could also be considered.

Promote urban-rural co-operation to address shared demographic challenges

- Policy makers should foster co-operation between urban and rural areas within functional regions to facilitate the shared use of services, infrastructure, and expertise, helping both areas adapt to demographic change.
- Governments should support urban-rural partnerships that reduce inefficient competition between municipalities, create economies of scale, and enhance the delivery of key services such as education, healthcare, and social services.

Address disparities within cities and promote inclusive urban development

- Within cities, policy makers should promote collection and analysis of granular neighbourhood-level data on demographic trends and prospects, in order to identity districts particularly affected by demographic decline or ageing (e.g. fast ageing suburban areas), and implement neighborhood-level interventions to revitalise underserved areas (e.g. diversify housing options), prevent spatial segregation and ensure equitable access to public services and infrastructure for all residents.

Recommendation 4. Adapting spatial planning and housing policy to demographic change

Spatial planning, land use, and housing policy can prevent and reverse negative effects of population decline and ageing on well-being and economic sustainability in OECD countries. In many shrinking regions and cities, outdated spatial plans and continued low-density development have contribute to sprawl, vacant housing, underused infrastructure, and increased per capita service delivery costs. These trends can result in deteriorating built environments, declining housing quality, and increasing socio-economic disparities, particularly for vulnerable populations who remain in depopulating areas.

Demographic change also alters housing needs – smaller and older households may require more accessible housing that is located close to services and renovated to meet energy and mobility standards. Shrinking populations challenge the financial viability of infrastructure maintenance and create incentives for more compact and efficient land use.

To ensure resilient and inclusive communities, spatial planning and housing policies must evolve to reflect demographic projections and diverse local contexts – from ageing neighbourhoods in cities to remote rural villages. Flexible and integrated spatial strategies can guide sustainable land use, promote regeneration, and improve infrastructure efficiency. Similarly, responsive housing policies – especially in rural areas – can support affordability, promote renovation, and foster social cohesion. These tools are essential for maintaining liveability, protecting environmental assets, and managing public resources more effectively.

Update spatial and land use planning to reflect demographic trends

- Territorial and local planning frameworks should be revised to integrate up-to-date demographic data and long-term projections, with reference to foresight approaches in Recommendation 1. This includes aligning spatial plans with population trends to prevent inefficient land consumption and promote compact, regenerated settlements.
- Local land use plans should enable flexible zoning that facilitates mixed-use development, densification, and adaptive repurposing of existing properties, especially in well-connected areas with access to services and transport.

Promote efficient land use and strategic redevelopment

- Policy makers should prioritise compact, resource-efficient development in areas with existing infrastructure to reduce service delivery costs and environmental impact. In shrinking or ageing

regions, this approach helps maintain service viability thresholds, reduces the risk of infrastructure abandonment and avoids the dispersion of limited financial resources.

- Land-based financing tools should be leveraged – such as developer obligations, and density (building height) bonuses for affordable housing – by governments and planning authorities in contexts where market conditions allow, particularly in larger urban areas with strong demand and opportunities for private sector engagement. These tools can help regenerate underused areas, ensure developers internalise infrastructure costs, and support the provision of affordable housing in central locations. However, such instruments, like public-private partnerships (PPPs), may be less suitable for smaller or shrinking regions with weaker market dynamics. Land readjustment can also optimise spatial organisation and improve livability where applicable.
- Vacant and underused properties should be addressed strategically, including through vacancy taxes, incentives to convert second homes, and targeted demolition. In shrinking areas, these tools can reduce health and safety risks and promote neighbourhood renewal – which support resident retention. Local governments can use these tools to reduce inefficiencies and enable mixed-use redevelopment.

Strengthen rural housing planning

- Housing strategies in rural areas should reflect demographic realities, promoting renovation, reuse of vacant buildings, and inclusive models like multi-generational or co-operative living. Governments should support these efforts through financial and technical assistance.
- Planning authorities should align housing approvals with labour and population trends, especially in areas affected by urban spillover, to prevent speculative overdevelopment and protect housing access for local residents.
- Municipalities should be supported in managing rural housing stock through partnerships with the private sector and targeted rehabilitation. Compact development approaches should complement revitalisation and help sustain rural populations.

Integrate environmental sustainability and resilience into planning

- Spatial and housing policies should also contribute to environmental goals by promoting land-efficient development, conserving green space, and integrating climate adaptation considerations. In ageing and shrinking communities, adaptation measures should focus on renovating underused or older buildings for energy efficiency and accessibility, rather than constructing new buildings.
- Urban regeneration that prioritises compact development, energy-efficient buildings, and improved shared mobility options can reduce emissions and enhance the quality and accessibility of public spaces. In contexts of population decline, such strategies can also reduce the long-term operating costs of urban infrastructure and improve cost-effectiveness.
- In the context of climate change, spatial planning responses to population change should consider how ageing and depopulation might increase vulnerabilities – for example, older populations may have greater difficulty evacuating from flood-prone areas or may suffer disproportionately during heatwaves. At the same time, spatial planning responses should also consider that some areas may present environmental opportunities for resource management, such as enhancing natural carbon sinks to support climate mitigation efforts.

Recommendation 5. Creating age-friendly places for resilient and inclusive communities

Older adults remain active contributors to their communities and local economies. Expanding opportunities for a growing share of older workers and fostering multi-generational workforces can boost economic

resilience and productivity. In shrinking regions, age-friendly policies are particularly critical to maintaining quality of life and community vitality.

To ensure all places remain livable and inclusive, policies must adapt to ageing populations through integrated planning across healthcare, mobility, housing, education, and the built environment. Investments in accessible services, inclusive public spaces, and diverse mobility options can support active ageing, reduce social isolation, and help older adults remain engaged in their communities – regardless of where they live. These strategies complement broader service delivery reforms outlined in Recommendation 2.

Build capacity and resilience in community-based care

- Health and care systems should attract and retain professionals through salary top-ups, relocation assistance, housing support, and service-obligation scholarships – particularly in underserved and shrinking areas. While these measures entail upfront costs, they can be cost-effective when considering the high economic and social costs of service gaps, preventable hospitalisations, and deteriorating well-being among older adults. Policies can further support mobility, recognition of qualifications, training in geriatrics and family medicine, and the provision of other non-monetary incentives – such as healthcare insurance or childcare benefits – which, while not direct income, still represent real costs to employers and public budgets. To be sustainable, such interventions should be supported by national and regional co-financing frameworks and evaluated against long-term outcomes in access, prevention, and quality of care.
- Training pathways for care professionals should be expanded and adapted to local needs by integrating rural placements, hybrid learning, and partnerships with healthcare providers. Community-based care models – including home support, shared spaces, and day centres – can complement formal systems and ease pressure on institutional care.
- Informal carers should be supported through structured training, financial compensation, and better integration into interdisciplinary teams – including doctors, nurses, social workers, and therapists – to enhance care quality and reduce caregiver strain. While these supports carry costs, they are often more sustainable than the alternative: expanding formal care systems to meet rising needs. Enabling informal carers can delay or reduce demand for institutional care, improve patient outcomes, and ease fiscal pressure on health and long-term care budgets over time.
- Facilitating work-sharing and knowledge transfer across generations, by means of mentorship and other inter-generational programmes, can help recognise the contribution of older adults and help prepare for inter-generational turnover.

Develop skills and foster innovation in ageing-related sectors

- Vocational and higher education institutions should expand training in elderly care, physiotherapy, and assistive technology using modular learning models. Curricula should include digital skills such as telemedicine and remote monitoring, developed in partnership with tech providers.
- Lifelong learning opportunities must be accessible to rural professionals through micro-credentials, remote training options, and flexible upskilling pathways.
- Innovation in the silver economy can be promoted by supporting ageing-focused start-ups and inter-generational mentorship programmes between older professionals and younger entrepreneurs.

Improve accessibility through transport and mobile services

- Local and regional authorities should optimise rural mobility by expanding on-demand transport systems, improving co-ordination with regional transit, and enabling integrated ticketing and seamless transfers.
- In cities, local authorities should invest in age-friendly infrastructure and accessible public transport networks by also enhancing walkability, upgrading transport infrastructure with universal design solutions. Particular attention should be given to underserved neighbourhoods and areas with ageing populations.
- Mobile service delivery models should be scaled up – including pharmacies, groceries, banking, and public services – through public-private-community partnerships, especially in remote or low-density areas.

Create digitally inclusive and age-friendly environments

- In ageing-related sectors, digital tools such as telehealth, AI-supported care, and assistive technology can extend workforce capacity and enhance care delivery. Governments should invest in broadband access and digital inclusion in underserved areas, while supporting community-led digital initiatives and inter-generational mentorship programmes.
- Older adults should have access to free digital skills training delivered via libraries, senior centres, and helplines, while ensuring public services remain accessible both online and in-person.

Adapt housing, public spaces, and urban environments to an ageing society

- Age-friendly housing models – such as co-operative and multi-generational living – should be promoted to encourage independent living and social cohesion. Public-private partnerships can deliver accessible, energy-efficient housing in areas facing affordability pressures.
- Urban planning should address the spatial dynamics of ageing, especially in those areas where population ageing is faster. Public infrastructure, amenities, and green spaces must be safe, barrier-free, and welcoming for older adults.
- In deteriorating neighbourhoods, urban regeneration should prioritise improving mobility and the creation of age-friendly public spaces to reduce isolation and support active ageing among older residents.

Recommendation 6. Strengthen co-ordination across sectors and levels of government

Demographic change is a multi-sectoral challenge that affects all levels of government and policy areas. Shrinking and ageing regions, in particular, face more difficulties in maintaining high-quality, cost-effective services and infrastructure due to reduced economies of scale and limited human and financial resources. These challenges are especially pronounced in low-density areas, where many municipalities are small and fragmented, with constrained capacity and overlapping responsibilities.

Addressing the consequences of demographic change calls for a holistic, cross-sectoral approach. National and subnational governments must move beyond siloed approaches and adopt integrated strategies based on a shared demographic diagnostic, reflecting both the scale and the spatial diversity of demographic trends. This calls for strong cross-sectoral and multi-level co-ordination, not just among ministries and agencies, but also across levels of government.

Multi-level governance mechanisms can play a crucial role in managing this complexity. A range of governance innovations, such as inter-municipal co-operation, rural-urban partnerships and participatory policy making, can contribute to aligning strategies across jurisdictions and sectors, thus ensuring

coherence long-term planning and investment that is responsive to evolving demographic needs across sectors and diverse territorial contexts.

Establish cross-sectoral and integrated governance frameworks for demographic change

- National, regional, and local governments should develop long-term demographic strategies that respond to the specific challenges of shrinking and ageing regions. These strategies should clearly define objectives, responsibilities, and funding at each level of government, and be co-ordinated to ensure alignment and coherence across sectors and territories. They should be based on demographic projections, spatially targeted, and integrated with sectoral policies such as healthcare, education, housing, and transport.
- Where they do not already exist, co-ordinating bodies such as demographic committees or observatories should be established to ensure cross-sectoral coherence and support all levels of government with timely data and tools for the creation of policies sensitive to demographic realities.
- Demographic impact assessments should be systematically conducted across sectors to ensure policies are place-based and responsive to long-term population trends.

Strengthen co-ordination among levels of government

- Policy makers should reinforce vertical co-ordination by establishing dedicated inter-governmental bodies or working groups focused on demographic change, with clearly defined roles for national, regional, and local actors. This could include shared investment frameworks for ageing infrastructure, joint planning for health and education services, and regular policy dialogue to align demographic priorities across levels of government. Stronger co-ordination will help avoid fragmented responses and ensure more consistent implementation of long-term demographic strategies.
- Inter-municipal co-operation should be formalised and expanded, especially in shrinking areas where pooling resources can improve service delivery and enhance strategic planning across administrative boundaries. Both voluntary and incentivised forms of co-operation can be effective, depending on local context. National and regional governments can support this by offering financial incentives, technical assistance, and legal frameworks that make collaboration more attractive and feasible – such as shared service agreements, joint planning instruments, or multi-municipal governance structures. In some cases, mandatory co-operation mechanisms may be needed to ensure basic service provision in areas with limited capacity.
- Rural-urban linkages can be strengthened through dedicated partnerships for joint infrastructure development, integrated mobility systems, and co-ordinated economic strategies that promote territorial cohesion and equitable access to services.
- Voluntary mergers of very small municipalities should be encouraged – where appropriate and based on an ex-ante feasibility study – through targeted financial incentives, technical assistance, and shared service platforms that improve administrative efficiency and long-term sustainability.

Enable inclusive and participatory governance

- Participatory governance mechanisms in shrinking regions should be institutionalised by embedding citizen engagement throughout the entire policy cycle. This includes participatory planning and budgeting processes that involve residents – including youth and older adults –, civil society organisations, local businesses and, where they exist, diaspora communities in identifying service needs, setting investment priorities and co-designing solutions. Such approaches can enhance trust in public institutions, foster innovation in service delivery, and build long-term community ownership – particularly important in shrinking or ageing regions where engagement

can help retain population and strengthen social cohesion. Governments can support this by providing tools, dialogue platforms and capacity-building to support inclusive local engagement.

- Community-led initiatives should be supported as part of a broader inclusive governance approach. Volunteer networks, peer-to-peer services and citizen-managed facilities can help fill service gaps, strengthen social cohesion and retain population in shrinking or ageing regions.

Reinforce capacity in local public administration

- Local governments should be equipped with training and resources in strategic planning, digital tools, budgeting, data analysis, and procurement to meet the demands of demographic change.
- Retention of skilled staff should be promoted through competitive career paths, professional development, and non-financial incentives (e.g. affordable housing, environmental amenities) adapted to shrinking and remote areas.
- National and regional authorities must provide technical assistance and platforms for knowledge exchange to strengthen local institutional resilience and peer learning.

Recommendation 7. Doing more with less: enhancing fiscal resilience in a changing demographic context

Population decline and ageing increase fiscal pressure on governments, especially at the subnational level. Shrinking populations reduce the size of the local tax base and strain the sustainability of revenue sources, while the costs of delivering essential services remain stable or even increase. This dual pressure – often referred to as the "scissors effect" – can undermine fiscal stability and the long-term viability of infrastructure, public services, and territorial cohesion.

In decentralised governance systems, population-based funding formulas and reduced local revenues can compound fiscal challenges. These dynamics risk reinforcing a negative cycle of underinvestment, service deterioration, and further out-migration, particularly in remote and sparsely populated areas. At the same time, growing demand for healthcare and social protection services, alongside high fixed costs for infrastructure maintenance, adds to expenditure burdens.

Addressing these challenges requires a shift toward more efficient, targeted, and innovative public service delivery. Policy makers must optimise existing resources, take preventive measures upstream, integrate service provision across sectors and territories, and align fiscal frameworks with demographic and territorial realities. This includes modernising financial instruments, fostering digital solutions, and strengthening institutional capacities for long-term planning and investment.

Enhance fiscal resilience through revenue diversification and better budget alignment

- All regions should work to optimise property tax collection as a core source of local revenue. In shrinking regions, additional efforts may be needed to diversify and stabilise revenue streams – such as introducing or expanding context-specific fiscal instruments like vacancy taxes, tourism levies or environmental charges – to compensate for the decline in tax bases and to support service provision.
- Policy makers should leverage AI-powered tax modelling and data analytics for more responsive and tailored fiscal planning, improving revenue forecasting, estimating tax potential and aligning budgets with evolving service needs. These AI-enabled tools can increase efficiency and better align spending with demographic realities.
- Inter-governmental transfers and equalisation systems should be reconsidered to account for demographic pressures, especially the higher per capita cost of service provision in ageing and sparsely populated areas.

Make better use of limited financial resources through co-ordinated investment strategies

- National and subnational governments should strengthen the alignment between regional development strategies and budgeting processes by integrating regional priorities into medium- and long-term budget planning, especially for capital investments. This could involve linking investment decisions to regional performance indicators, improving co-ordination between planning and finance departments, and using territorial impact assessments to guide funding allocations. Ensuring that budgetary decisions reflect place-based needs will improve the effectiveness and accountability of regional development policies.
- Financial incentives to attract population should be used carefully. While they may help stabilise certain areas, overreliance on place-based subsidies can create zero-sum dynamics. Incentives should target areas where a minimum threshold of population and service sustainability can still be achieved.
- Promote complementarity between fiscal tools, such as intergovernmental transfers, tax policy, regional funds, to support long-term territorial resilience and enable more proactive, needs-based investment planning.

References

Agence Hauts-de-France (2023), *Foresight strategy in Region Hauts-de-France*, https://cedre.hautsdefrance.fr/share/s/4W6lp2dARxmjQDZAHajQ2g (accessed on 14 April 2024). [41]

Allain-Dupré D., M. (2022), *Regions of discontent: how to repair territorial divides in government trust*, OECD Cogito blog, https://oecdcogito.blog/2022/09/08/regions-of-discontent-how-to-repair-territorial-divides-in-government-trust/. [21]

Beunen, R., Meijer, M., de Vries, J. (2020), "Planning strategies for dealing with population decline: Experiences from the Netherlands", *Land Use Policy*, Vol. 93, https://doi.org/10.1016/J.LANDUSEPOL.2019.104107. [20]

Bournisien de Valmont, M. (2024), *AI: Mirage or miracle for service delivery in shrinking regions?*, OECD Cogito blog, 4 April 2024, https://oecdcogito.blog/2024/04/04/ai-mirage-or-miracle-for-service-delivery-in-shrinking-regions/. [27]

Burgalassi, D. and T. Matsumoto (2024), "Demographic change in cities: Trends, challenges and insights from G7 economies"*, OECD Regional Development Papers*, No. 67, OECD Publishing, Paris, https://doi.org/10.1787/f2aec988-en. [14]

Committee of the Regions (2024), *National and regional examples of foresight in the EU*, https://cor-europa.libguides.com/c.php?g=709419&p=5117710 (accessed on 14 April 2024). [40]

Coulmas, F. and R. Lützeler (2011), *Confronting The Demographic Trilemma Of Low Fertility, Ageing And Depopulation*, Brill, https://brill.com/display/book/9789004194847/Bej.9789004187788.i-545_003.xml. [2]

ESPON (2020), *Shrinking rural regions in Europe: Towards smart and innovative approaches to regional development challenges in depopulating rural regions*, ESPON EGTC, Luxembourg, https://www.espon.eu/sites/default/files/attachments/ESPON%20Policy%20Brief%20on%20Shrinking%20Rural%20Regions.pdf (accessed on 25 September 2023). [30]

Fluchtmann , J. & Van Veen, V. & Adema, W. (2023), "Fertility, employment and family policy: A cross-country panel analysis"*, OECD Social, Employment and Migration Working Papers*, No. 299, OECD Publishing, Paris, https://doi.org/10.1787/326844f0-en. [4]

Haase, A. et al. (2014), "Conceptualizing Urban Shrinkage", *Environment and Planning A: Economy and Space*, Vol. 46/7, pp. 1519-1534, https://doi.org/10.1068/a46269. [24]

Kull, M. et al. (2020), *Attractive Rural Municipalities in the Nordic countries: Jobs, People and Reasons for Success from 14 Case Studies*, Nordregio, Stockholm, https://doi.org/10.6027/R2020:1.1403-2503. [34]

Ministerio de la Presidencia (2021), *España 2050: Fundamentos y propuestas para una estrategia nacional de largo plazo*, https://www.lamoncloa.gob.es/presidente/actividades/Documents/2021/200521-Estrategia_Espana_2050.pdf. [39]

Mitsch, F. (2021), *Faith no more? The divergence of political trust between urban and rural Europe*, Political Geography, 89. ISSN 0962-6298, https://doi.org/10.1016/j.polgeo.2021.102426. [22]

OECD (2025), *Fertility rates* (indicator), https://doi.org/10.1787/8272fb01-en (accessed on 3 March 2025). [8]

OECD (2024), *Fiscal challenges and inclusive growth in ageing societies*, Ageing and demographic change, http://www.oecd.org/economy/ageing-inclusive-growth/. [17]

OECD (2024), *Getting to Services in Towns and Villages: Preparing Regions for Demographic Change*, OECD Rural Studies, OECD Publishing, Paris, https://doi.org/10.1787/df1e9b88-en. [13]

OECD (2024), *Job Creation and Local Economic Development 2024: The Geography of Generative AI*, OECD Publishing, Paris, https://doi.org/10.1787/83325127-en. [28]

OECD (2023), *Health at a Glance 2023: OECD Indicators*, OECD Publishing, Paris, https://doi.org/10.1787/7a7afb35-en. [5]

OECD (2023), *OECD Family Dabasase*, https://www.oecd.org/els/family/database.htm. [9]

OECD (2023), "OECD Regional Database", *OECD*, https://stats.oecd.org/Index.aspx?DataSetCode=REGION_DEMOGR. [11]

OECD (2023), *OECD Regional Outlook 2023: The Longstanding Geography of Inequalities*, OECD Publishing, Paris, https://doi.org/10.1787/92cd40a0-en. [7]

OECD (2023), *Pensions at a Glance 2023: OECD and G20 Indicators*, OECD Publishing, Paris, https://doi.org/10.1787/678055dd-en. [1]

OECD (2023), *Retaining Talent at All Ages*, Ageing and Employment Policies, OECD Publishing, Paris, https://doi.org/10.1787/00dbdd06-en. [15]

OECD (2023), *Rethinking Regional Attractiveness in the New Global Environment*, OECD Regional Development Studies, OECD Publishing, Paris, https://doi.org/10.1787/a9448db4-en. [32]

OECD (2023), *Rethinking regional attractiveness in the Norrbotten County of Sweden*, OECD Publishing, Paris, https://doi.org/10.1787/92c2d524-en. [33]

OECD (2023), *Smart City Data Governance: Challenges and the Way Forward*, OECD Urban Studies, OECD Publishing, Paris, https://doi.org/10.1787/e57ce301-en. [26]

OECD (2023), "Strengthening the attractiveness of the public service in France: Towards a territorial approach", *OECD Public Governance Policy Papers*, No. 28, OECD Publishing, Paris, https://doi.org/10.1787/ab9ebe85-en. [37]

OECD (2022), *Shrinking Smartly in Estonia: Preparing Regions for Demographic Change*, OECD Rural Studies, OECD Publishing, Paris, https://doi.org/10.1787/77cfe25e-en. [29]

OECD (2022), *Urban-Rural Linkages in Poland*, OECD Regional Development Studies, OECD Publishing, Paris, https://doi.org/10.1787/94b5c782-en. [25]

OECD (2021), *Delivering Quality Education and Health Care to All: Preparing Regions for Demographic Change*, OECD Rural Studies, OECD Publishing, Paris, https://doi.org/10.1787/83025c02-en. [18]

OECD (2021), *Health at a Glance 2021: OECD Indicators*, OECD Publishing, Paris, https://doi.org/10.1787/ae3016b9-en. [6]

OECD (2021), *Implications of Remote Working Adoption on Place Based Policies: A Focus on G7 Countries*, OECD Regional Development Studies, OECD Publishing, Paris, https://doi.org/10.1787/b12f6b85-en. [38]

OECD (2020), *Rural Well-being : Geography of Opportunities*, OECD Rural Studies, OECD Publishing, Paris, https://doi.org/10.1787/d25cef80-en. [10]

OECD (2019), *OECD Regional Outlook 2019: Leveraging Megatrends for Cities and Rural Areas*, OECD Publishing, Paris, https://doi.org/10.1787/9789264312838-en. [36]

OECD (2016), *OECD Territorial Reviews: Japan 2016*, OECD Territorial Reviews, OECD Publishing, Paris, https://doi.org/10.1787/9789264250543-en. [31]

OECD (2015), *Ageing in Cities*, OECD Publishing, Paris, https://doi.org/10.1787/9789264231160-en. [35]

OECD (2011), *Doing Better for Families*, OECD Publishing, Paris, https://doi.org/10.1787/9789264098732-en. [19]

OECD/EC-JRC (2021), *Access and Cost of Education and Health Services: Preparing Regions for Demographic Change*, OECD Rural Studies, OECD Publishing, Paris, https://doi.org/10.1787/4ab69cf3-en. [16]

Pallagst, K. (2017), *Greening the Shrinking City–New Sustainable Planning Approaches in the USA*, Landscape research; special issue on Shrinking cities - expanding landscapes, Vol. 82-6, 1-12, https://doi.org/10.1080/01426397.2017.1372398. [23]

UNFPA-UNDP (2020), *Depopulation as a Policy Challenge in the Context of Global Demographic Trends*, UNDP Serbia, https://eeca.unfpa.org/sites/default/files/pub-pdf/depopulation20as20a20policy20challenge.pdf. [3]

Wolff, M. % Mykhnenko, V. (2023), *COVID-19 as a game-changer? The impact of the pandemic on urban trajectories*, Volume 134, 104162, ISSN 0264-2751, https://doi.org/10.1016/j.cities.2022.104162. [12]

Notes

[1] Metropolitan midsized regions are those TL3 regions where more than half of the population live in a FUA of at 250 000 to 1.5 million inhabitants. Metropolitan large regions are those TL3 regions where more than half of the population live in a FUA of at least 1.5 million inhabitants (OECD, 2023[7]).

[2] In Japan, 94% of metropolitan areas below 500 000 inhabitants lost population between 2009 and 2018, while the share of shrinking cities above 500 000 inhabitants was 75%.

2 Demographic trends in OECD countries: towards a definition of depopulating places

This chapter provides key statistics on demographic change – referring to population decline and ageing – in OECD countries at different geographical scales. It analyses the drivers of demographic change by distinguishing between natural change and net migration. It also explores different classifications or demographic change and approaches to define shrinking places.

Defining *depopulation* is not a trivial task, as it refers to a gradual and substantial population decrease over a significant period. Thus, it will be warranted to identify a threshold of average annual population decline over a timeframe sufficiently long to account for a persistent decline. It is also crucial to note that a threshold on annual population change for municipalities and local areas may not translate well to a broader geographical level such as TL3 regions, where population changes tend to be smoother than at a more localised level. While efforts have been made to define these various thresholds (European Commission, 2021[1]), this paper does not aim at defining them explicitly. These considerations will be addressed in a forthcoming technical paper.

"Shrinking smartly" refers to the strategic approach local governments take to adapt to and manage population decline in a way that ensures quality of life, service delivery, economic stability, and social cohesion. It involves resizing infrastructures, adapting services and housing to meet the population needs in a cost-effective manner. Bozhidar (2022[2]) developed a benchmarking strategy providing a hands-on methodology that integrates demographic shifts and sustainability within various planning contexts, offering a practical framework for effective urban planning.

"Shrinking sustainably" consists of addressing population decline while ensuring environmental sustainability. The environmental impacts of depopulation can be both positive and negative. On the positive side, depopulation implies reduced building energy consumption, lower demand on resources, lower levels of waste production, leading to lower greenhouse gas emissions and environmental pressures in these sectors. However, negative impacts may include the neglect of infrastructure and buildings, which could lead to pollution. Additionally, depopulation can lead to underutilised public transport systems and increase the reliance on personal vehicles leading to higher greenhouse gas emissions in the transport sector. Shrinking sustainably consequently aims for long-term resilience by reducing environmental impacts.

The analysis in this chapter examines demographic trends at the level of small regions (TL3), municipalities or local areas, and Functional Urban Areas (FUAs). This analysis also leverages different territorial typologies:

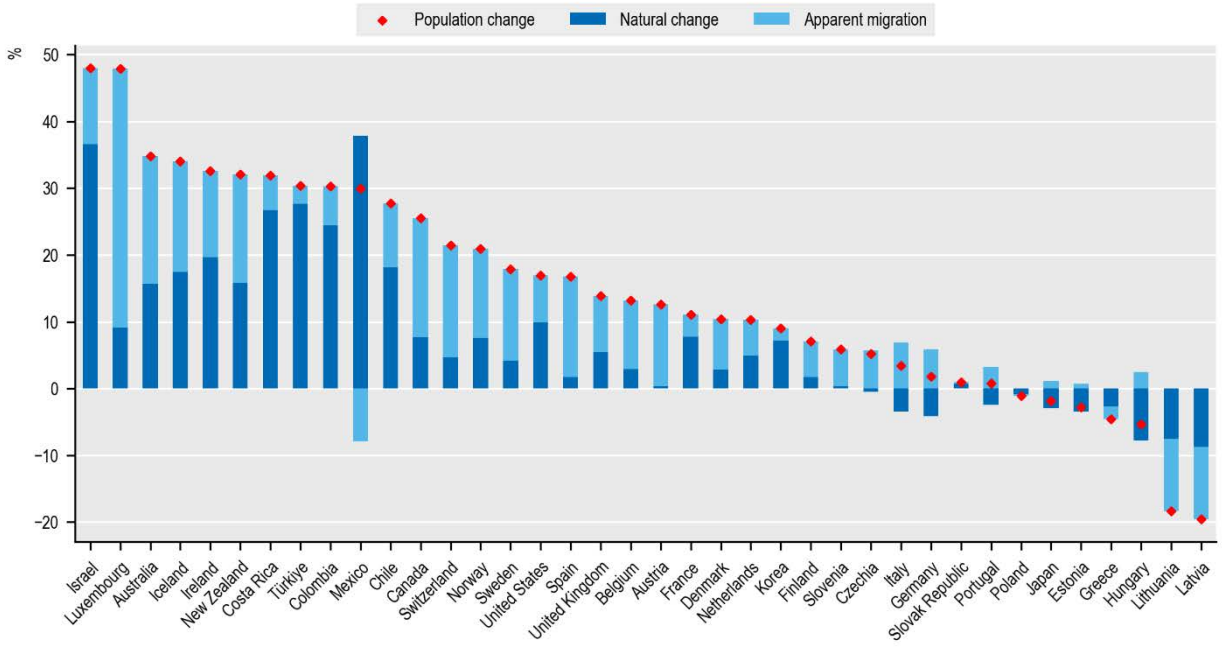
- The TL3 regional typology, which classifies TL3 regions based on their accessibility to cities (large metropolitan regions, midsize metropolitan regions, regions near a midsize/large FUA, regions near a small FUA, and remote regions) (Fadic et al., 2019[3]).
- The degree of urbanisation (DEGURBA), which classifies municipalities and local areas as cities, towns and suburbs or rural areas based on a combination of geographical contiguity and population density (UN-Habitat, 2021[4]).

Population decline and ageing occur amidst urban concentration

Many OECD countries are now experiencing population stagnation or decline, alongside ageing. In broad lines, the population in OECD countries grew in the last 20 years to reach 1.4 billion people in 2022 – up by 15% since 2000. However, since 2001, seven OECD countries have seen their populations decline. Lithuania and Latvia experienced the most significant drops, each losing around one-fifth (20%) of their populations. Hungary, Estonia, Greece, Japan, and Poland, also saw decreases (Figure 2.1). In Latvia and Lithuania, this decline resulted from both a negative natural change, with more deaths than births, and a negative net migration, where more people left than arrived. Conversely, Luxembourg and Israel saw the largest population increases, growing up to 50% from 2001 to 2022, due mostly to substantial positive net migration in the case of Luxembourg and natural change in the case of Israel.

Figure 2.1. Population has declined by almost 20% in Latvia and Lithuania from 2001 to 2022

Population change and components of change (natural change and apparent migration) in OECD countries, 2001-22

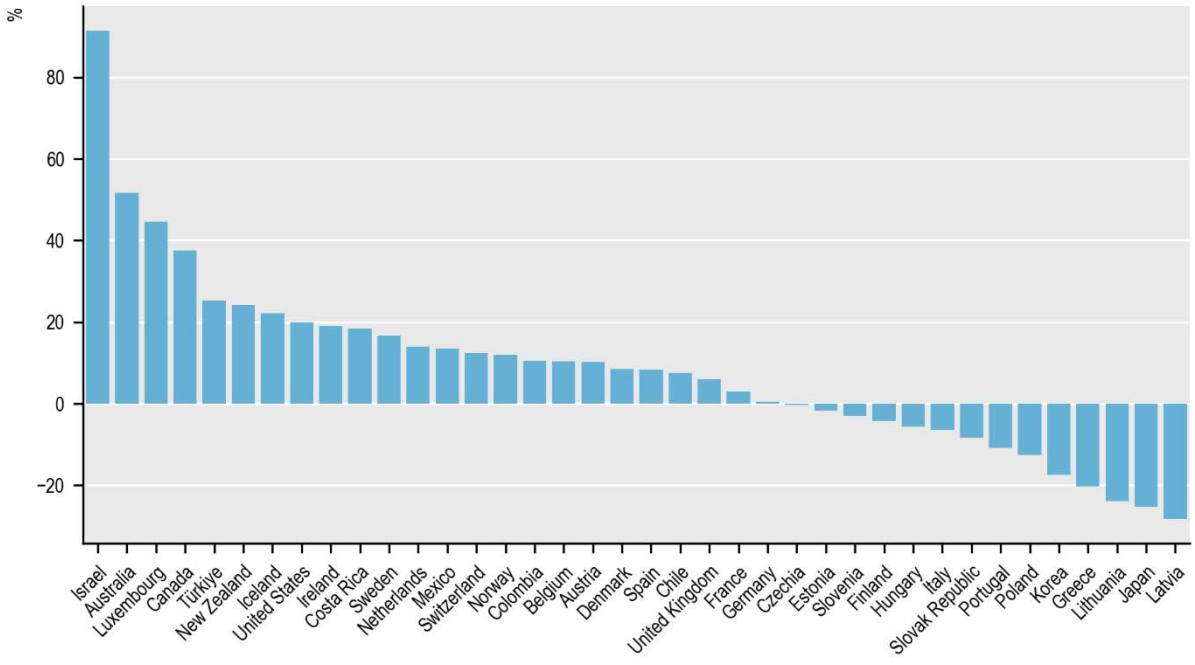


Note: Apparent migration is defined as the difference between population change and natural change. It approximates the difference between the number of people entering a country and the number of persons leaving it. Natural change refers to the difference between the number of births and the number of deaths.
Source: OECD Regional Database (OECD, 2023[5]).

By 2060, the population is expected to further decline in 14 OECD countries. Greece, Japan, Latvia and Lithuania are expected to lose more than one-fifth of their population between 2022 and 2060 (Figure 2.2). Other countries, including Czechia, Finland, Hungary, Italy, Korea, Poland, Portugal, Slovak Republic, Estonia, and Slovenia will also experience population decline, although at lower rates.

Figure 2.2. Population is expected to further decline by more than 20% in Greece, Japan, Latvia and Lithuania in the coming decades

Projected population change in OECD countries, 2022 to 2060



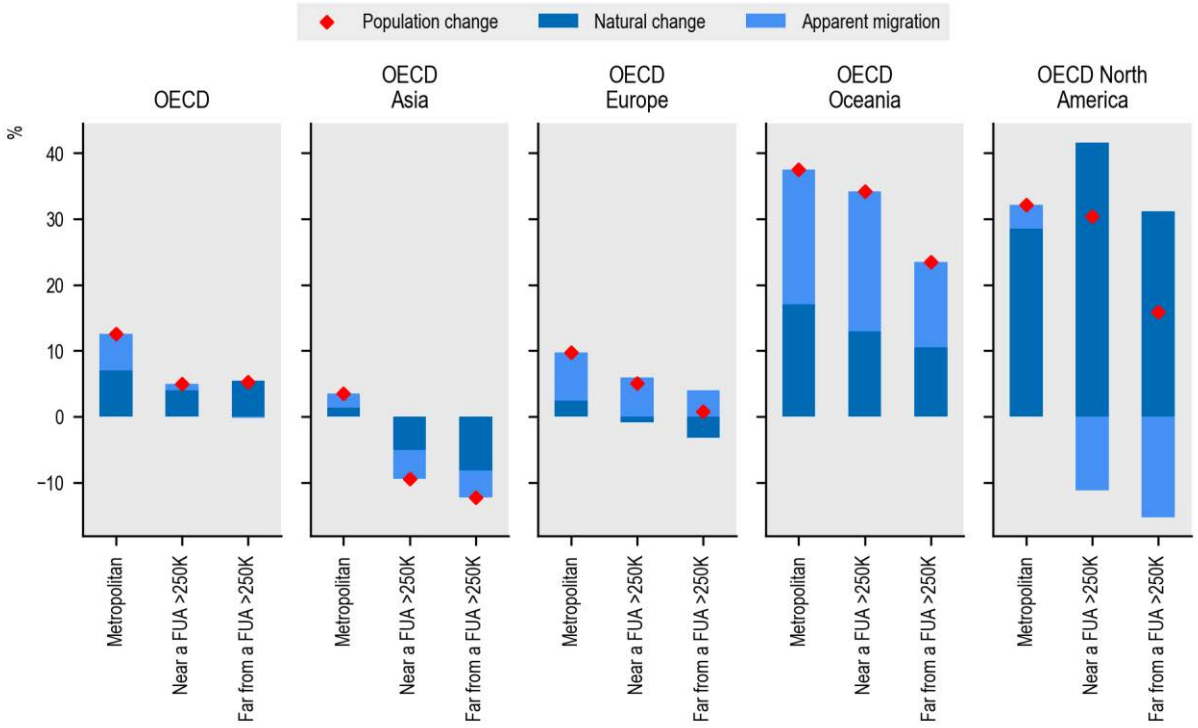
Source: OECD Population Projection Statistics.

While metropolitan regions experienced the strongest population increase over the last two decades (+13%), other regions experienced either smaller increases or lost population (+5%). One third (29%) OECD small regions (TL3) saw their population decline and more than half (57%) of these regions were regions far from a midsize or large FUA.

Population trends reveal stark disparities across diverse OECD country groups and types of regions (Figure 2.3). Both regions far from and regions near a midsize or large FUA in Korea and Japan have been particularly impacted by population decline, losing 12% and 9% of their population, respectively. This decline can be explained by both a negative natural change and a negative net migration.

Figure 2.3. Population has increased the most in metropolitan regions, driven by both positive natural change and positive migration

Population change and components of change in OECD small regions by access to city typology and by macro-regions, 1st January 2001 to 31st December 2020.

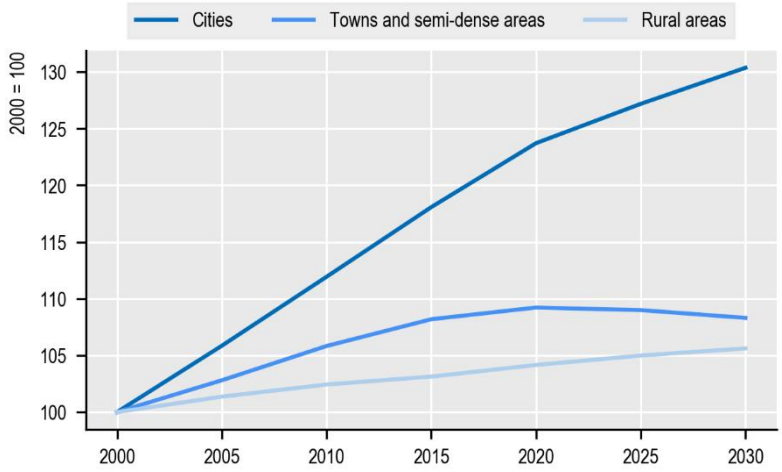


Note: Apparent migration is defined as the difference between population change and natural change. Due to data availability for number of births and deaths, 9 OECD countries are not covered in this chart: Ireland, Denmark, Türkiye, Slovenia, Chile, Colombia, Costa Rica, Israel, and the United States.
Source: OECD Regional Database (OECD, 2023[5]).

In the last twenty years, an increasing share of the OECD population has moved to cities (OECD, 2020[6]), (OECD, 2023[7]), (OECD, 2022[8]). In 2020, about half (49%) of the OECD population lived in cities, while three out of ten (28%) lived in in towns and semi-dense areas and two out of ten (23%) in rural areas (see Annex A for territorial classification). Over 2000-20, the population in cities rose by 24%, while it increased by 8% in towns and semi-dense areas, and by 6% in rural areas (Figure 2.4). In many OECD countries, the population living in rural areas and towns and semi-dense areas had already started to stagnate or even to decline during this period. For example, in 16 OECD countries, the population living in rural areas decreased between 2000 and 2020 (Figure 2.5). This trend is likely to continue over the next decade. Projections show a 5% increase in the urban population by 2030 compared to 2020. Conversely, the population in towns and semi-dense areas is expected to decrease slightly by 1%, and in rural areas, it is projected to grow by 1%.

Figure 2.4. The OECD population has increased significantly faster in cities than in other types of settlements

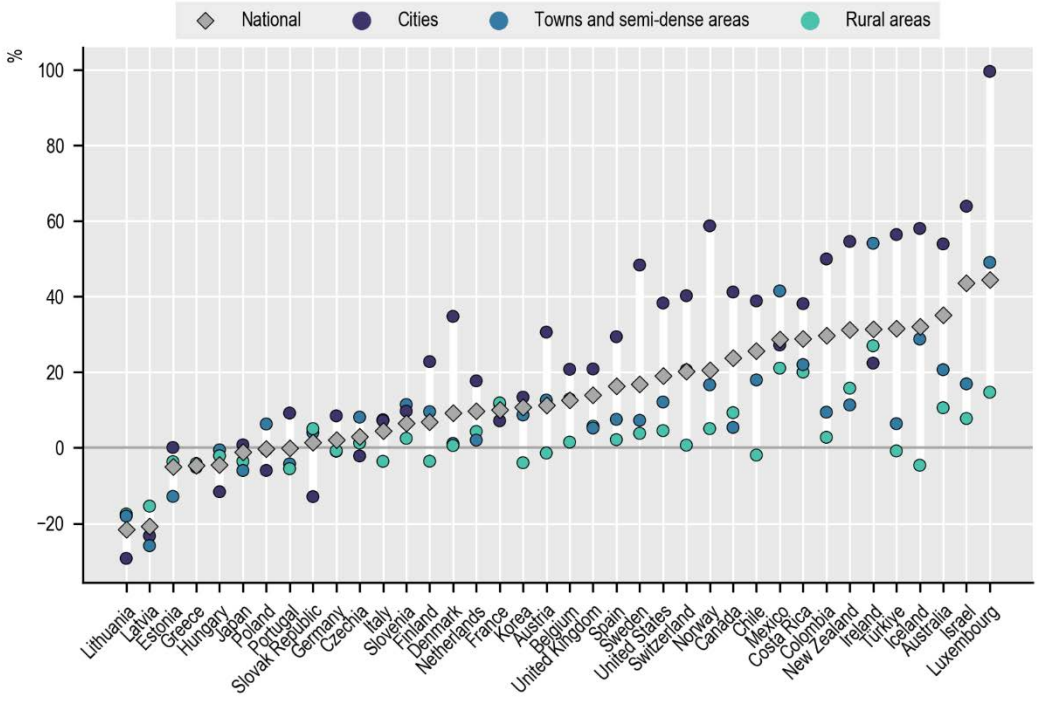
Population trend from 2000 to 2030, OECD by degree of urbanisation.



Source: Global Human Settlement Population layer GHS-POP R2023A (Schiavina et al., 2023[9])

Figure 2.5. In 16 OECD countries, the population living in rural areas has decreased

Population change over 2000-20 by degree of urbanisation in OECD countries.

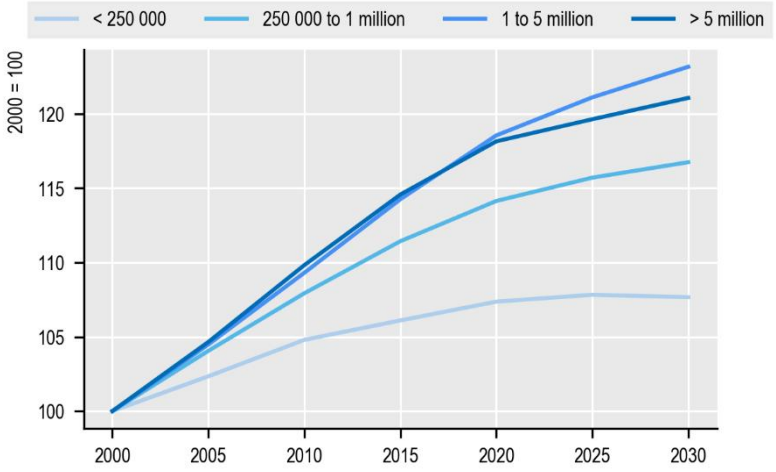


Source: Global Human Settlement Population layer GHS-POP R2023A (Schiavina et al., 2023[9])

On average, the population in OECD FUAs grew by 15% over the period 2001-21, outpacing the growth rate in the rest of their respective countries (6%). However, not all types of cities have witnessed the same population growth rate in recent years. More than one in five metropolitan areas across OECD countries even experienced population decline. The OECD has seen its most significant population increases in larger metropolitan areas. Over 2000-20, FUAs with over 1 million inhabitants experienced an 18% population rise. In comparison, smaller FUAs with fewer than 250 000 inhabitants and those with 250 000 to 1 million inhabitants saw more modest growth rates of 7% and 14%, respectively. This trend is expected to continue, though at a slower rate, over the next decade. The population in FUAs with 1 to 5 million inhabitants is projected to grow by 4%. Meanwhile, in areas with less than 250 000 inhabitants, the population is expected to peak in 2025 and then start to decline (Figure 2.6).

Figure 2.6. An increasing share of OECD population is projected to move into metropolitan areas of more than 1 million inhabitants

Population trend from 2000 to 2030, OECD FUAs by size



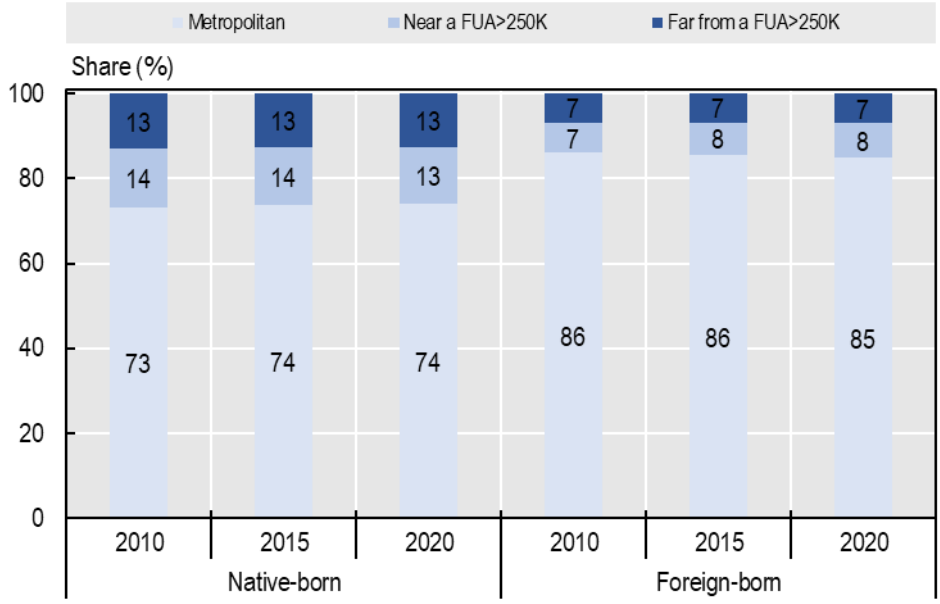
Source: Global Human Settlement Population layer GHS-POP R2023A (Schiavina et al., 2023[9])

International migrants concentrate in cities and certain regions

While migrants represent an important and growing share of the OECD population, they tend to concentrate in cities and regions that are economically thriving. In 2022, migrants constituted 14% of the population in OECD countries, with figures ranging from 48% in Luxembourg to less than 3% in Japan, Mexico, or Poland. However, they settle unevenly within countries. Migrants often choose to live in cities or regions with higher wages and better job opportunities (OECD, 2022[10]). For instance, eight out of ten migrants reside in metropolitan regions, compared to seven out of ten native-born individuals. In contrast, only 15% of migrants live in non-metropolitan regions, while nearly 26% of the native-born population does (Figure 2.7). This pattern indicates that migrants tend to move to economically thriving areas, suggesting that it is unlikely that international migration can help reverse population decline in less populated areas. However, some policy makers have leveraged immigration, including refugee resettlement, as a strategy to mitigate demographic challenges. For example, the small German city of Altena welcomed refugees to stabilise its population and help fill labour shortages (OECD, 2018[11]). Similarly, Canada's Atlantic Immigration Program, which is unique to the Atlantic region, provides a pathway to permanent residence for skilled foreign workers to support economic growth and demographic sustainability in ageing and declining territories (OECD, 2022[12]).

Figure 2.7. Foreign-born are less likely to settle in non-metropolitan regions

Concentration of native (left)- and foreign-born (right) by local access to functional urban areas regional typology, 2010, 2015, and 2020



Note: Concentration of native- (left) and foreign-born (right) by local access to functional urban areas regional typology over the native or foreign population. Data refer to 2010, 2015, and 2022. Only countries with available data in all three years are considered (Austria, Belgium, Denmark, Finland, Germany, Italy, Japan, Netherlands, Norway, Portugal, South Korea, Spain, Sweden, Switzerland, the United Kingdom, and the United States). For Italy, Korea, and Spain, the data refer to the foreign population rather than the foreign-born population.

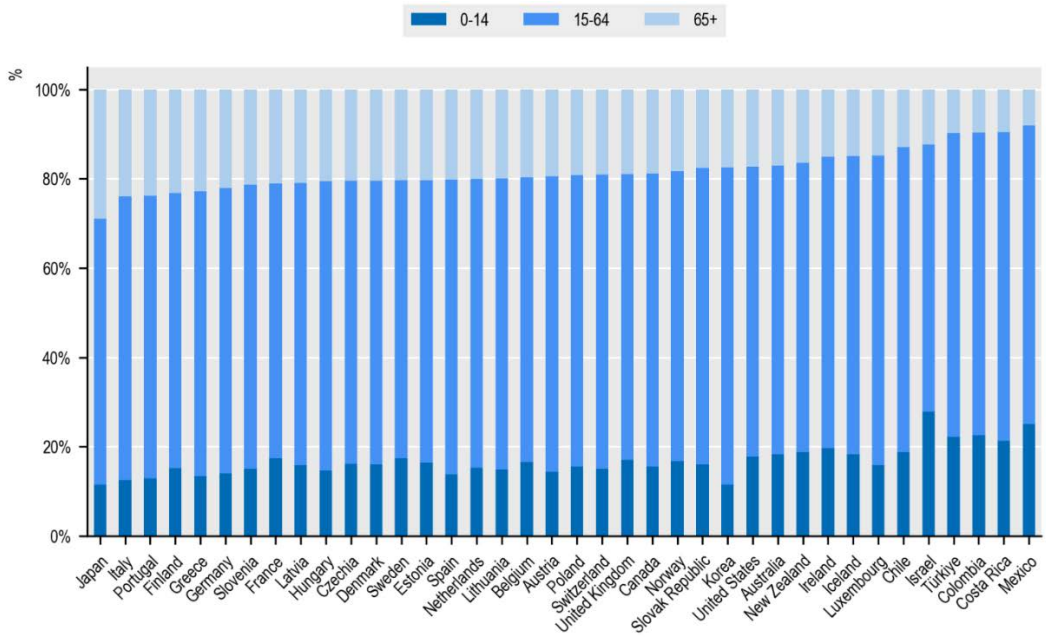
Ageing reflects longer lives but poses challenges to many OECD countries

Over the past decades, many OECD countries have experienced a rapid ageing of their populations, posing substantial challenges to their economic structures and their fiscal systems. Ageing is a direct consequence of a high life expectancy combined with a low fertility rate. Life expectancy has increased in most countries over the past decades, but the COVID-19 pandemic reversed this trend (OECD, 2023[13]). Across OECD countries, Japan has the highest proportion of elderly people, where one in three (29%) persons is aged 65 and over. Italy, Portugal, Finland, and Greece follow, each with around 23-24% (Figure 2.8). This trend is expected to persist in the coming decades. By 2060, close to 44% of the population in Korea will be older than 65 years old, followed by Japan (38%), Lithuania (35%) and Greece (35%) (Figure 2.9). Moreover, Korea, Japan, Italy, and Portugal face the challenge of a shrinking young population, essential for balancing the pressures of an ageing demographic. In 2022, less than 13% of the population in these four countries was under 14 years old.

Ageing will also impact labour markets and pension systems, as a smaller working age population will have to support an increasingly larger elderly population. In 2022, Japan had the highest old-age to working-age population ratio at 49%, followed closely by Italy, Finland, and Portugal, each with a ratio of 37%. By 2060, this ratio is projected to soar to 90% in Korea, 74% in Japan and 66% in Greece and Lithuania posing important challenges for the sustainability of the pension systems. However, not all OECD members currently face these challenges. For example, Mexico has the smallest elderly population in the OECD at 8%, and one of the highest percentages of young people at 25%, second only to Israel (Figure 2.8).

Figure 2.8. Japan records the highest share of population aged 65 and above

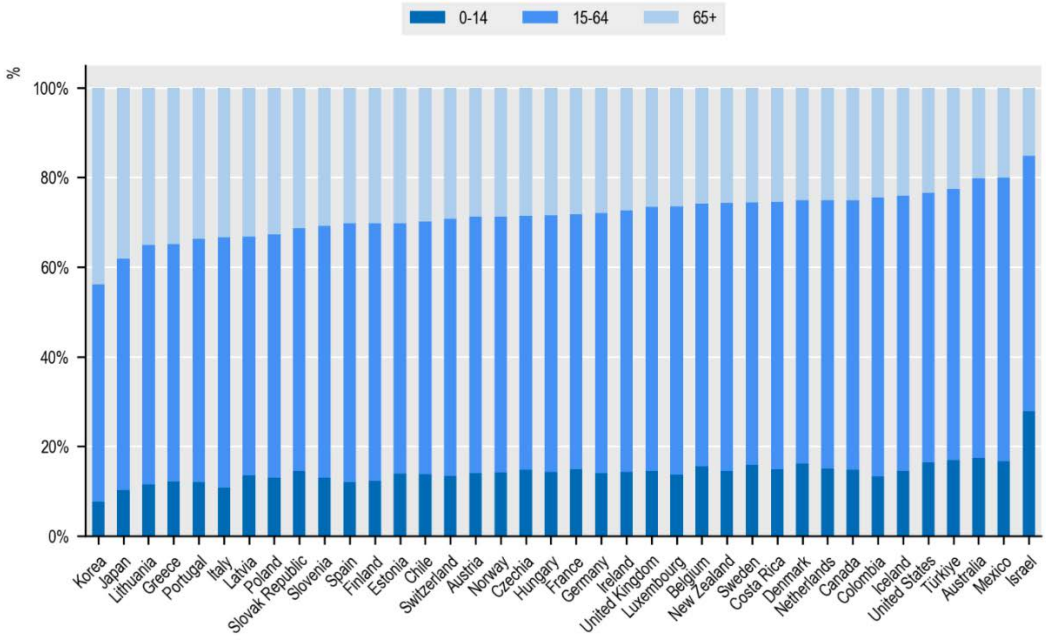
Share of population by age group (0-14, 15-64 and 65+ years old) ordered by the share of population older than 65, OECD countries, 2022.



Source: OECD Population Statistics.

Figure 2.9. By 2060, more than 35% of people living in Korea, Japan, Lithuania, and Greece will be more than 65 years old

Projected share of population by age group (0-14, 15-64 and 65+ years old) ordered by the share of population older than 65, OECD countries, 2060.

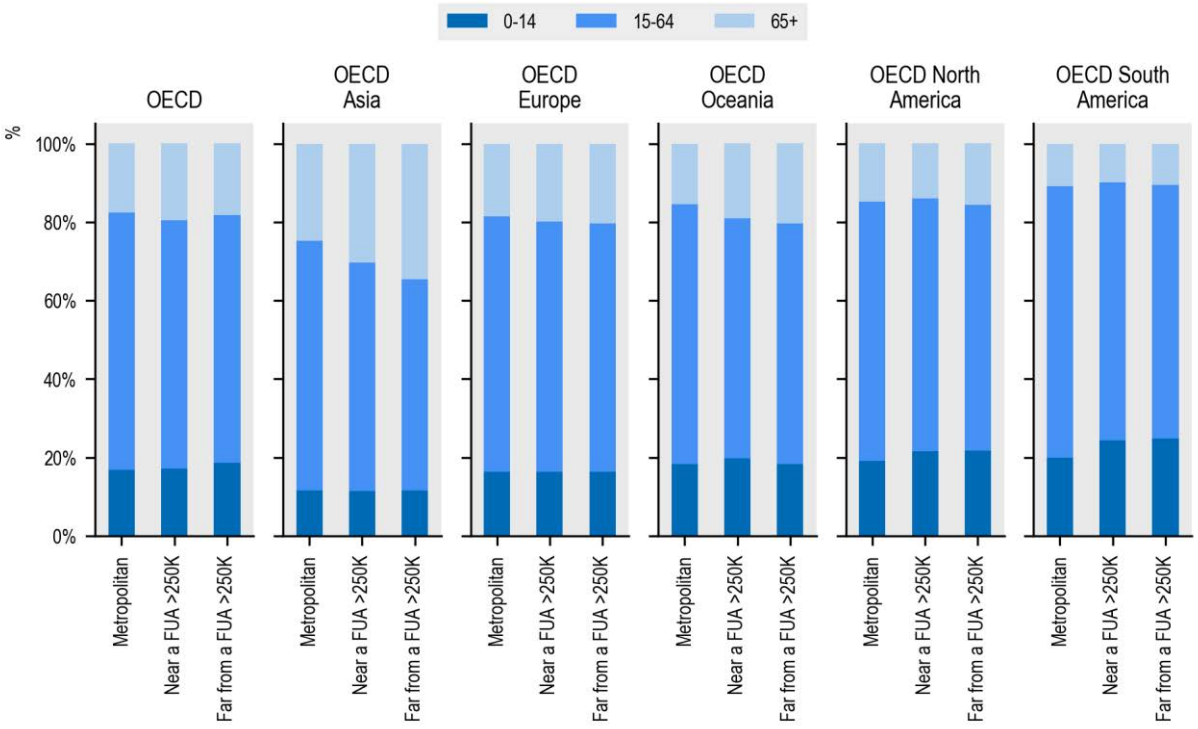


Source: OECD Population Projection Statistics

In 2022, OECD metropolitan regions had a slightly lower share of elderly population (18%) than other types of regions. Yet, this figure masks notable differences among country groups. For instance, in Japan and Korea, regions far from a midsize or large FUA had a significantly higher elderly population, at 35%. This is ten percentage points higher than in metropolitan regions. On the contrary, in OECD North and South America, regions far from a midsize or large FUA showed a higher percentage of young people compared to other regions (Figure 2.10).

Figure 2.10. Regions far from a midsize/large FUA in OECD Asia record the highest share of elderly population

Share of population by age group (0-14, 15-64 and 65+ years old), OECD small regions by access to city typology and by macro-regions, 2022.



Note: Costa Rica and Israel are not covered in this chart. The figures refer to 2022 for all countries, except for the United Kingdom (2021) and the United States (2021).
Source: OECD Regional Database (OECD, 2023[5]).

Ageing and population decline are compounding in shrinking cities, creating multi-dimensional challenges

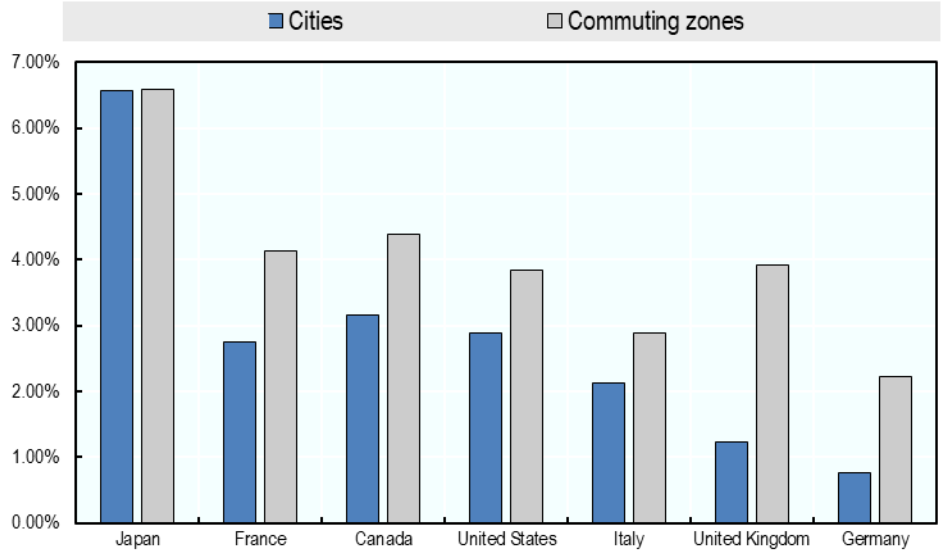
Almost all OECD FUAs have seen the share of people aged 65 years and more increase over 2006-18. In 2006, the median metropolitan area within OECD countries had 14.5 older adults for every 100 inhabitants, compared to 17.6 in 2018. On average, across OECD countries, FUAs that lost population over 2008-18 experienced an increase of 4% in the share of population aged 65 years and over, compared to an increase of 2.7% in metropolitan areas with a growing population. Across G7 countries, the share of older adults increased by 4.2% in metropolitan areas that lost population, compared to 2.9% in metropolitan areas with a growing population. The combination of population decline and ageing gives rise to compounding and multidimensional challenges for shrinking cities, which face the risk of entering a downward spiral in which

demographic change undermines both agglomeration benefits and quality of life. For instance, population decline weakens the local tax base and reduces revenues for public administrations, making it more difficult to maintain essential infrastructure and public services. At the same time, population ageing further intensifies these challenges by increasing demand for healthcare, social services, and public transport, contributing to a growing mismatch between service needs and available resources. Lower revenues also hinder the maintenance of public spaces and green areas, reducing overall quality of life and further diminishing the attractiveness of depopulating cities (Burgalassi and Matsumoto, 2024[14]).

Demographic change brings also differentiated challenges within cities, and can exacerbate several forms of spatial clustering of different groups of people based on certain demographic or social characteristics (e.g. age, income, ethnic background) in neighbourhoods. While spatial clustering might provide benefits for social and demographic groups with shared needs and preferences, it might also amplify inequalities within cities (OECD, 2018[15]). A dynamic of population decline can begin in specific neighbourhoods following economic or social shocks such as the closure of a relevant employer. This could result in out-migration from the neighbourhood and subsequent urban decay, and a potential in-migration of less affluent or more marginalised households (Haase et al., 2014[16]). Similarly, ageing can affect differently parts of a city, with different challenges. For instance, within FUAs, ageing tends to be faster in suburban areas than inner cities (Burgalassi and Matsumoto, 2024[14]). Between 2008 and 2018, on average, the share of people aged 65 years or more over total population increased faster in commuting zones than in inner cities in all G7 countries (Figure 2.11).

Figure 2.11. The share of elderly population increased faster in commuting zones than in inner cities

Growth in the share of people aged 65 years or more over the total population in cities and commuting zones, G7 countries, 2008-2018, in percentage points



Note: Share of people aged 65 years and more. Average values (unweighted averages).
Source: OECD (2023), OECD City Statistics (database), OECD Publishing, Paris, http://dx.doi.org/10.1787/region-data-en

Spatial segregation isolates social groups, curtailing interaction and heightening the risk of "social exclusion" – the inability to engage in economic, social, and cultural life (Duffy, 1995[17]), it undermines community development, and weakens social cohesion. It can also entrench prejudice and discrimination, leading to stigma that exacerbates neighbourhood decline, reduces social cohesion and impede

community-building (European Commission, 2019[18]). Affecting settlement trends of households, spatial segregation amplifies housing quality disparities: affluent areas boast well-maintained homes, whereas shrinking neighbourhoods can face prevalent dilapidation. This disparity skews affordability, inflating prices in wealthier areas and entrenching a cycle that deepens community divides. Particularly for minorities, like migrants, it poses a significant barrier to integration. Furthermore, the challenges related to spatial segregation are beyond housing since it amplifies disparities in access to services and urban activities.

Age segregation can challenge cities, too, since it reduces opportunities for cross-generational interaction and can lead to social isolation of groups, especially for aged people, with increasing risks of loneliness and challenges for mental health (Burgalassi and Matsumoto, 2024[14]). This is challenging for both young and aged populations: for young people, higher isolation risks severe long-term consequences, such as dropping out of school (OECD, 2021[19]), while for aged populations, social isolation is compounded with deteriorating physical health, the shift from employment to retirement, and disruptive events like losing family and friends. In the European Union, it is estimated that half of the population aged 60 and older is at risk of depression (OECD/European Union, 2022[20]). The challenge is particularly present in the suburban areas of large metropolitan areas in OECD countries. In many countries, “new towns” were constructed during the 1960s and 1970s in suburban areas accommodated a massive influx of population into metropolitan areas. The people who moved to these new town settlements during their working years are now 65 years and older and constitute the majority of residents in many of these new towns (OECD, 2015[21]). While suburban areas are ageing fast (see Figure 2.11 above), they are likely not to be designed to be “age-friendly”, in particular with reference to housing, infrastructure, and public spaces to support the independent living of older adults, or “ageing-in-place”, as well as to promote social cohesion and fight social isolation (Burgalassi and Matsumoto, 2024[14]). This calls for actions embracing both urban design and community-building initiatives targeted at elderly populations to foster a sense of belonging and community engagement.

Measuring demographic change and defining “depopulation”

Creating a classification of small regions, municipalities and local areas based on their population trend and characteristics helps to better understand the geography of demographic change. This approach also makes it easier to plan and provide services and infrastructures more efficiently and to create policies that meet the specific needs of people living in those areas.

However, creating such a classification is a complex task, as it must account for various local factors influencing demographic change. These include:

1. *Population change.* “Depopulating regions” are characterised by a sustained decrease in population, which can result from a combination of factors: a lower birth rate, a higher mortality, and a negative net migration. To measure a sustained decrease in population, it is therefore necessary to look at the average annual population change over an extended period. This paper does not define explicitly how many years and which average population decline threshold are necessary to define this sustained decline in population. These considerations will be explored in detail in the forthcoming technical paper. The direction and intensity of population change, as well as the sequence of annual population change serve as crucial indicators to characterise demographic shifts.
2. *Natural change.* Places with a lower birth rate and a high mortality related to an ageing population are prone to population decline. Understanding these drivers by analysing the number of births and number of deaths is central to characterise demographic change.
3. *Migration:* Places with a consistent negative net migration, i.e. where more people are leaving than arriving, are also prone to depopulation, especially when coupled with a negative natural change. This trend is in general indicative of economic challenges, lack of opportunities and other adverse

conditions. Net migration can be measured by both internal mobility, which involves people moving between regions within the same country, as well as international migration, which corresponds to people moving between a region and another country.

Some methodological considerations are important:

- *Temporal resolution.* Demographic change should be analysed over an extended period to differentiate between short-term fluctuations and sustained population change. This demographic change can be characterised based on either historical data or modelled projections. This analysis only considers historical data.
- *Spatial resolution.* Changes in population differ widely from one place to another. When looking at population change at the country or large region levels, important differences across areas may be hidden. This requires digging deeper into small regions, municipalities, or local areas to better understand these changes.

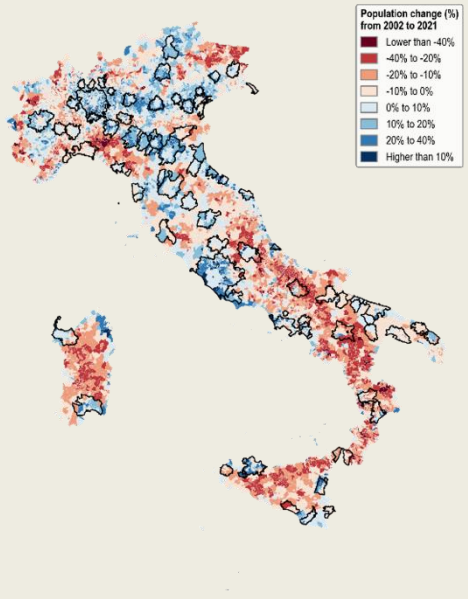
Studies such as (González-Leonardo, Newsham and Rowe, 2023[22]) and (Newsham and Rowe, 2023[23]) propose to classify respectively Spanish municipalities and European small regions based on their sequence of average annual population change using clustering methods. Looking at the average annual population change offers a more nuanced understanding of demographic trends compared to overall population change, as it allows to identify sustained demographic shifts, such as continuous population decline. However, this classification doesn't differentiate whether the decline is due to higher mortality or net migration losses. Population change, natural change and net migration may indeed show very different patterns across places, as highlighted for the case of Italian municipalities in Box 2.1.

Box 2.1. Population change and components of change in Italian municipalities

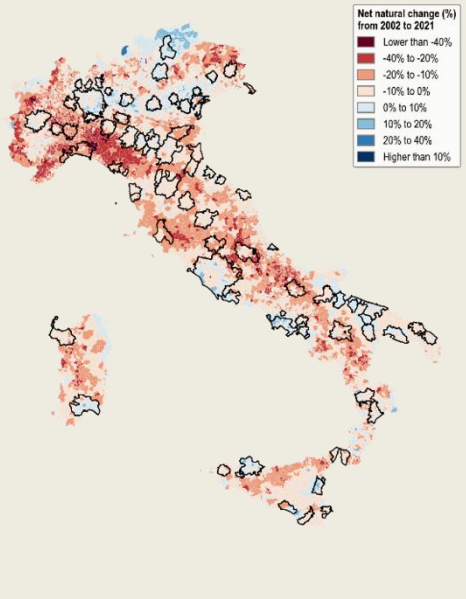
Figure 2.12 Panel A, Figure 2.12 Panel B, and Figure 2.13 Panel A show respectively the population growth rate, natural change rate and net migration rate over the last two decades (from 1 January 2002 to 31st December 2021) in Italian municipalities. During this period, 55% of municipalities experienced population decline. Most municipalities (77%) witnessed a negative natural change, while 29% had a negative net migration rate. Migration patterns reveal a North-South gradient, indicating a movement of people from the South to the North of Italy, with a concentration of inflow in metropolitan areas. Figure 2.13 Panel B shows the direction of change (growth and decline) and the main component of change (positive or negative natural change or net migration). A quarter of Italian municipalities, mostly located in the South, experienced both negative natural change and negative net migration, signalling a robust declining pattern. In 19% of municipalities, both the natural change and net migration were positive, with these municipalities predominantly located in the North and on the outskirts of metropolitan areas such as Rome or Milan. Most municipalities (56%) showed opposing directions for natural change and net migration. A demographic classification of Italian municipalities would need to reflect these different trends.

Figure 2.12. Population and natural change

Panel A: Population growth rate in Italian municipalities from 1st January 2002 to 31st December 2021



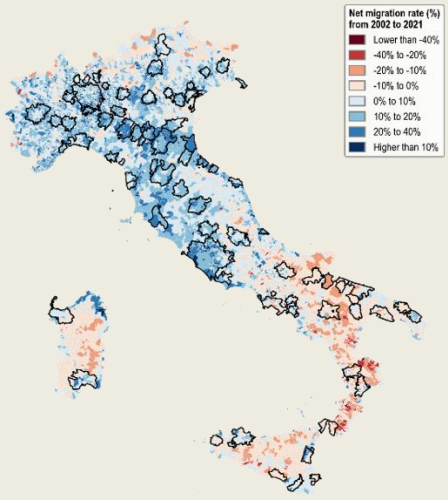
Panel B: Net natural change rate ((births – deaths) / initial population) in Italian municipalities from 1st January 2002 to 31st December 2021



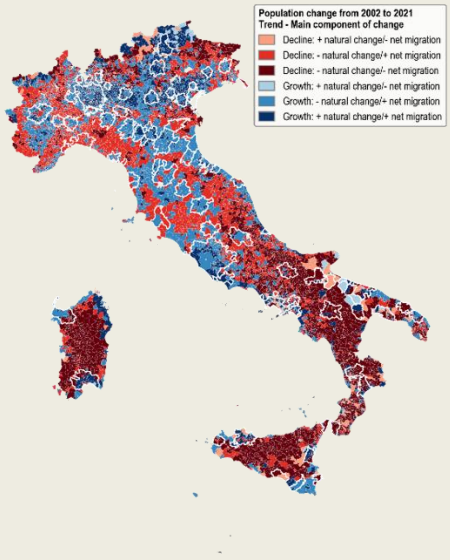
Source: OECD Municipal and Local Area Database

Figure 2.13. Net migration and components of change

Panel A: Net migration rate ((immigrants – emigrants) / initial population) in Italian municipalities from 1st January 2002 to 31st December 2021



Panel B: Directions of population change and components of change in Italian municipalities from 1st January 2002 to 31st December 2021



Source: OECD Municipal and Local Area Database

References

Bozhidar, I. (2022), *Shrinking Smart: Identifying policy and planning alternatives for addressing urban shrinkage and population decline through cross-national comparative research on approaches from Spain, Germany and the Netherlands*, Technische Universität Kaiserslautern, https://doi.org/10.26204/KLUEDO/6897. [2]

Burgalassi, D. and T. Matsumoto (2024), "Demographic change in cities: Trends, challenges and insights from G7 economies", *OECD Regional Development Papers*, No. 67, OECD Publishing, Paris, https://doi.org/10.1787/f2aec988-en. [14]

Duffy, K. (1995), *Social Exclusion and Human Dignity in Europe*, Counci of Europe. [17]

European Commission (2021), "A long-term Vision for the EU's Rural Areas - Towards stronger, connected, resilient and prosperous rural areas by 2040", *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions*, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021SC0166. [1]

European Commission (2019), *Social segregation*, https://publications.jrc.ec.europa.eu/repository/handle/JRC116711. [18]

Fadic, M. et al. (2019), "Classifying small (TL3) regions based on metropolitan population, low density and remoteness", *OECD Regional Development Working Papers*, No. 2019/06, OECD Publishing, Paris, https://doi.org/10.1787/b902cc00-en. [3]

González-Leonardo, M., N. Newsham and F. Rowe (2023), "Understanding Population Decline Trajectories in Spain using Sequence Analysis", *Geographical Analysis*, Vol. 55/4, pp. 495-516, https://doi.org/10.1111/gean.12357. [22]

Haase, A. et al. (2014), "Conceptualizing Urban Shrinkage", *Environment and Planning A: Economy and Space*, Vol. 46/7, pp. 1519-1534, https://doi.org/10.1068/a46269. [16]

Newsham, N. and F. Rowe (2023), "Understanding trajectories of population decline across rural and urban Europe: A sequence analysis", *Population, Space and Place*, Vol. 29/3, p. e2630, https://doi.org/10.1002/psp.2630. [23]

OECD (2023), *Health at a Glance 2023: OECD Indicators*, OECD Publishing, Paris, https://doi.org/10.1787/7a7afb35-en. [13]

OECD (2023), "OECD Regional Database", *OECD*, https://stats.oecd.org/Index.aspx?DataSetCode=REGION_DEMOGR. [5]

OECD (2023), *OECD Regional Outlook 2023: The Longstanding Geography of Inequalities*, OECD Publishing, Paris, https://doi.org/10.1787/92cd40a0-en. [7]

OECD (2022), *Addressing territorial disparities in future infrastructure needs in the wake of the COVID-19 crisis : A G20 perspective*, OECD Publishing, Paris, https://doi.org/10.1787/e246f50f-en. [8]

OECD (2022), "Multi-level governance for migrant integration: Policy instruments from Austria, Canada, France, Germany and Italy", *OECD Regional Development Papers*, No. 24, OECD Publishing, Paris, https://doi.org/10.1787/efeeda9d-en. [12]

OECD (2022), *The Contribution of Migration to Regional Development*, OECD Regional Development Studies, OECD Publishing, Paris, https://doi.org/10.1787/57046df4-en. [10]

OECD (2021), *Mental health and young people*, https://www.oecd.org/coronavirus/en/data-insights/mental-health-and-young-people. [19]

OECD (2020), *Rural Well-being : Geography of Opportunities*, OECD Rural Studies, OECD Publishing, Paris, https://doi.org/10.1787/d25cef80-en. [6]

OECD (2018), *Divided Cities: Understanding Intra-urban Inequalities*, OECD Publishing, Paris, https://doi.org/10.1787/9789264300385-en. [15]

OECD (2018), *Working Together for Local Integration of Migrants and Refugees in Altena*, OECD Regional Development Studies, OECD Publishing, Paris, https://doi.org/10.1787/9789264299320-en. [11]

OECD (2015), *Ageing in Cities*, OECD Publishing, Paris, https://doi.org/10.1787/9789264231160-en. [21]

OECD/European Union (2022), *Health at a Glance: Europe 2022: State of Health in the EU Cycle*, OECD Publishing, Paris, https://doi.org/10.1787/507433b0-en. [20]

Schiavina, M. et al. (2023), *GHS-POP R2023A - GHS population grid multitemporal (1975-2030)*. [9]

UN-Habitat (2021), *Applying the Degree of Urbanisation — A methodological manual to define cities, towns and rural areas for international comparisons*, UN-Habitat | European Union | FAO | OECD | The World Bank, https://unhabitat.org/applying-the-degree-of-urbanisation-a-methodological-manual-to-define-cities-towns-and-rural-areas. [4]

3 Adapting spatial planning, housing and infrastructure to demographic change

This chapter will discuss key policy issues regional policy makers need to consider when adapting to demographic change through spatial planning, development of infrastructure and housing policies. A key guiding principle is to promote efficient land use and service provision by fostering density in well-connected areas, ensuring long-term regional sustainability and resilience.

Granular information on population, population and built-up area trends, infrastructure networks and accessibility can inform government decisions on public service provision, infrastructure investment, and densification. For example, it can help identify local centres for service provision. The policy responses to demographic shrinkage should take into account the opportunities arising from digitalisation as well as the need to address environmental challenges and opportunities, for example, by limiting artificial surface cover, car dependency. They should also consider impacts on housing and on exposure and vulnerability to future extreme climate evens. The Annex provides relevant geospatial data sources.

Spatial planning needs to respond to severe and lasting depopulation

Severe depopulation leads to changes in population density and vacant buildings while raising challenges concerning infrastructure, its costs, and the access to services it provides. These considerations must therefore be integrated into land use and spatial planning plans. Spatial planning is defined as a set of governance practices for developing and implementing strategies for territorial development and the future distribution of activities and built-up areas in space. While spatial planning establishes a framework for the alignment of broad strategic spatial goals and balanced territorial development, land use refers to the specific processes by which land can be used, with common instruments including permitted uses, floor-area ratios for buildings, and designated settlement zones (OECD, 2022[1]).

Long-term and severe population decline results in fixed assets like roads, water supply, and wastewater being shared by a decreasing number of users (Hollander, 2018[2]) (Luescher and Shetty, 2013[3]) (Johnson, Hollander and Hallulli, 2014[4]) (Németh and Hollander, 2016[5]) (Sousa and Pinho, 2015[6]). Many networks are characterised by fixed operating and maintenance costs that do not depend much on network use. Consequently, low-density land use results in higher costs per capita (Hortas-Rico and Solé-Ollé, 2010[7]) (OECD, 2018[8]). Operating and maintenance costs per capita increase with the severity of depopulation. Housing is at risk of abandonment, leading to the creation of vacant developed land. The presence of abandoned or partly-abandoned housing and inadequately maintained infrastructure diminishes the overall quality of built environments, detracting from well-being and regional attractiveness. Well-designed spatial plans in the context of depopulation enable the alignment of infrastructure and settlement plans with population projections and enhance overall land use efficiency.

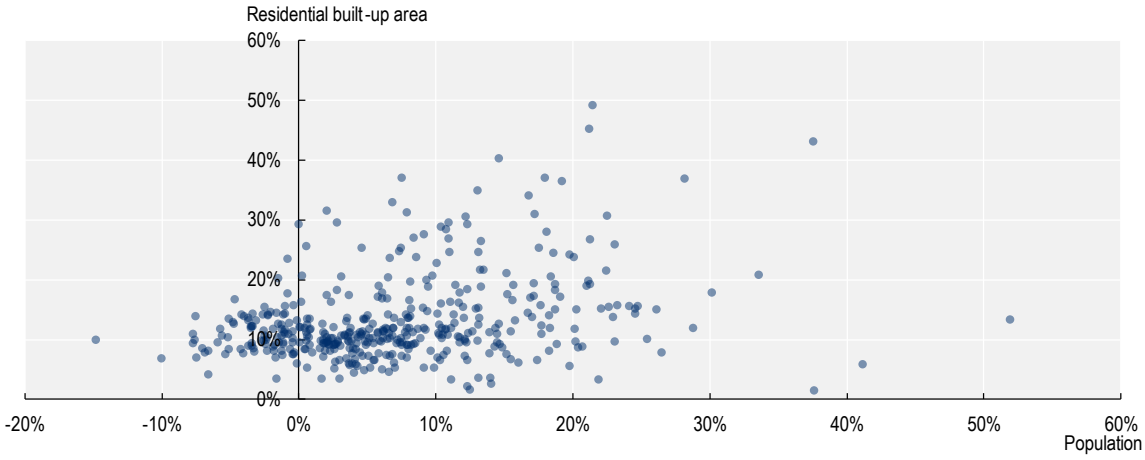
Failing to integrate depopulation into spatial and land use planning also reinforces land use patterns that are inconsistent with environmental policy priorities. For example, low-density development contributes to biodiversity loss (OECD, 2022[1]).

Spatial and land use planning must also adapt to an older and socio-economically more vulnerable population with specific needs. Regions with severe depopulation often have small populations of young individuals, active or in education. Good living conditions for the young and economically active population are also important, as they can meet employment and skills needs in the regional economy, including for public service provision. Spatial planning and land use decisions can help improve their physical, economic and digital access to employment, cultural, educational and social opportunities.

Some places experiencing strong population decline initially attempt to reverse the trend through a “growth” policy and continue investing in road infrastructure and attracting new commercial and residential developments by offering low tax rates (EPSON, 2017[9]) (Creutzig, 2023[10]). Residential built-up areas are expanding in many regions where population is decreasing, and in some they are expanding even more quickly than in regions with positive population growth (Figure 3.1). Persistently investing in new infrastructure with the hope of attracting new residents can have long-term costs if not aligned with demographic and economic realities. For example, some Swedish municipalities are still repaying loans that were granted for the construction of buildings demolished a long time ago (Syssner, 2023[11]).

Figure 3.1. Residential built-up areas are increasing despite population decline in 89 regions across the OECD

Change in residential built-up area and population across TL2 regions in the OECD (2010-20)



Note: Built-up statistics are calculated using (Pesaresi and Politis, 2023[12]).
Source: (Pesaresi and Politis, 2023[12]), (OECD[13]), (OECD[14]).

Spatial data on population, demographic projections and built-up areas need to be developed at the national, regional, and local scale to identify areas affected by severe depopulation and estimate local demand for land and housing. Failing to include demographic projections can lead to planning decisions based on unrealistic assumptions. Where population projections are provided at a higher level of aggregation, low level plans need to be co-ordinated to achieve consistency. Regions or municipalities undergoing depopulation frequently encounter challenges in planning capacity, thus requiring support at higher levels of government. In such instances, the central government should provide open data, information systems, and administrative assistance to municipalities.

Densification is key for sustainable development in regions and cities

Limiting land consumption and densification in central areas can offer a solution to alleviate the costs associated with severe depopulation while keeping regions attractive.

In Japan, the National Spatial Strategy is grounded on the concept of “compact and networked” settlements, aimed at fostering agglomeration economies, acknowledging some areas will face inevitable depopulation, but aiming for a broad, national settlement distribution. This involves managing the contraction of settlements, including cities. Japan’s strategy emphasises economic benefits from enhancing links between cities (OECD, 2016[15]).

Similarly, in Korea, the “1st Comprehensive Plan for Local Era” applies the “compact and networked” approach, which emphasises developing a sustainable economic growth base within the urban areas of regions, and enhancing living conditions by concentrating services (e.g. education, culture, healthcare) and high-quality housing in dense, accessible settlements that effectively serve surrounding areas. The plan aims at the expansion of transport infrastructure and digitalisation. Through this multifaceted approach, the plan seeks to make every part of Korea an attractive place to live, fostering inclusive and sustainable development.

To encourage densification, commonly used tools include urban growth boundaries and urban service boundaries, which aid in discouraging extensive development. These tools need to remain flexible and align with housing demand. In declining areas, the boundaries might become overly expansive with the

decreasing population. Additionally, clearly defining the roles of central, regional and local government in addressing cross-boundary issues is crucial, reinforcing the necessity for co-operation.

Flexible zoning regulations can help accommodate population shrinkage. It enables the repurposing of underused buildings or areas, helping to avoid unnecessary, sprawling new development elsewhere. Mixed-use zoning regulations can set maximum nuisance levels, allowing for diverse uses within defined limits. Density regulations can allow gradual densification of central neighbourhoods, particularly in rural areas, coupled with well-functioning public transport networks to reduce infrastructure costs. This approach is key for rural areas and small towns facing strong population decline to reduce land consumption and increase land use efficiency.

The redeployment of underused or unused but already developed land offers diverse opportunities for leisure space, urban agriculture, or commercial use, considering soil quality, previous land use and infrastructure connection (Johnson, Hollander and Hallulli, 2014[4]). Brownfield sites could be repurposed for renewable electricity generation for example, while uncontaminated sites may be suitable for cultural facilities, reforestation or agriculture. Geospatial data on the technical renewables potential of regions can assist such decisions. Vacant houses could accommodate small businesses. Local participation in decision making and in profits can help develop these opportunities. Moreover, a noteworthy option to consider is "land banking," a practice involving the acquisition of undeveloped or abandoned land for future development or sale (OECD, 2023[16]). The land bank plays a role in revitalising vacant or abandoned land, promoting economic activity through commercial and industrial endeavours, and establishing new green and open spaces.

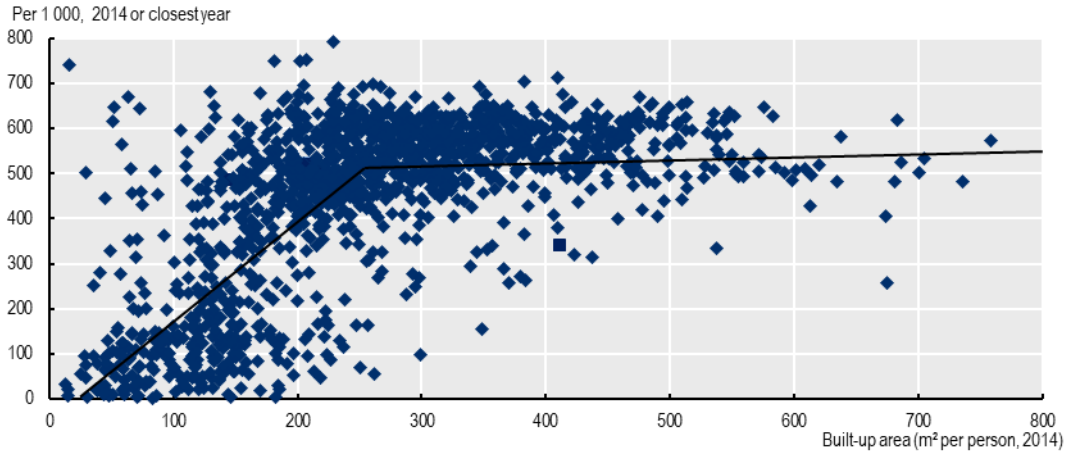
Transit-oriented development could enhance efficiency and cost reduction

Low-density development increases travel distances, boosting the demand for transportation and road infrastructure. These sparsely populated areas are often underserved by public transport, increasing car dependency, energy use and transport-related carbon emissions (OECD, 2021[17]). Figure 3.2 illustrates the significant positive correlation between the built-up area per inhabitant and the quantity of private vehicles up to approximately 250 m² of built-up area per person. As private vehicle ownership increases, road infrastructure costs as well as the expenditure on road maintenance and upkeep also go up (OECD, 2022[1]).

Spatial and land use plans should prioritise well-functioning public transport networks, incorporating demand-responsive transport (DRT) services, which are well-suited to low-density areas. For instance, the municipality of Niepołomice in Poland has successfully enhanced public transport efficiency with the Tele-Bus system, an on-demand service that has increased users from 300 to over 3 500 per month since its launch in 2007, catering to commuting workers, students, and old-age individuals, despite initial opposition. These land use patterns not only result in better service, but also lead to reduced costs (OECD, 2022[1]).

Figure 3.2. Greater built-up area per capita entails more car ownership

Private vehicles per 1 000 inhabitants, OECD TL3 regions



Source: (OECD, 2022[1])

Ensuring access to infrastructure and key services

Service provision constitutes a significant portion of local government budgets as discussed below. Strongly declining population density can result in higher cost, ill-maintenance and poorer access to facilities providing key public services (OECD/EC-JRC, 2021[18]). Commercial services may also decline. Ensuring accessibility to basic commercial services, such as grocery stores, petrol and charging stations, pharmacies, postal services, and banking services, is also critical for maintaining quality of life in rural and remote areas facing demographic decline. The optimal location of these service facilities is a constant debate, especially in remote, rural, and sparsely populated municipalities (Syssner, 2023[11]). Assessment of physical accessibility to facilities such as schools, hospitals or shops can help discover where services are inadequate or at risk of becoming so and should inform spatial planning decisions as well as decisions to locate facilities to avoid such risks.

Accessibility is the ability of land use and transport systems to enable individuals' reach destinations through various modes of transport (Dalvi and Martin, 1976[19]). Geospatial accessibility analysis can help assess which policy interventions can safeguard or improve access to key services and ensure their sustainable provision. These policies can relate to decisions about where to locate the infrastructure providing these services (hospitals, schools), provision of transport infrastructure to reach services (rail or road), as well as to the development and maintenance of housing in locations where access to infrastructure and services can be provided at low cost.

Identifying conditions of access to key facilities may be particularly important for socio-economically vulnerable groups, whose share may rise in regions facing strong population decline. These include, for example, old-age populations in need of social care, families with low income, residents with weak education backgrounds or young and old people who do not drive. Challenges may also include reduced mobility, inadequately designed public transport, safety concerns, and perceived security issues. For instance, in the Seoul Metropolitan Area in Korea, the actual accessibility to services and amenities is spatially unequal, particularly impacting older population (ITF, 2023[20]). Granular population data allows to identify vulnerable populations to then carry out a tailored accessibility assessment.

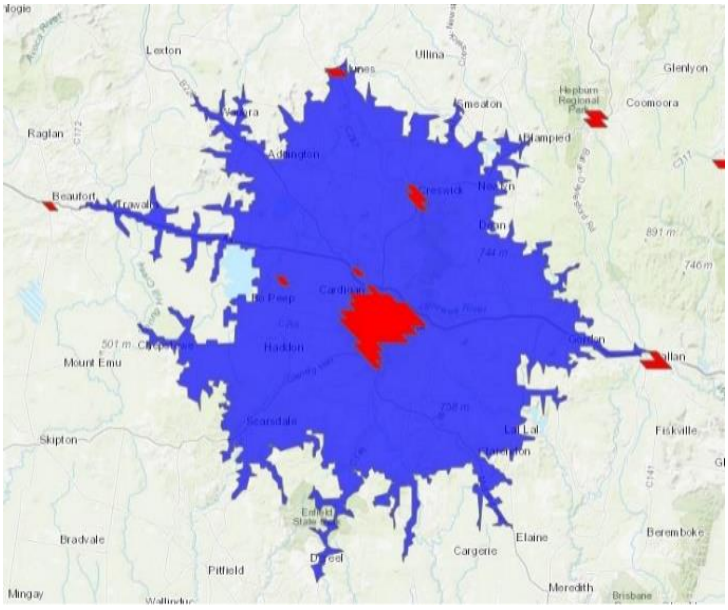
Accessibility analysis can support infrastructure planning in regions facing depopulation. There are several metrics. One option is the total number of facilities reachable from a settlement within a designated travel time for particular modes of transportation. This settlement-to-facility approach can help identify settlements which risk lacking access to key services such as emergency care and pharmacies. It has been used to assess transport performance and improve transport system design. In Toronto (Canada), the accessibility index was used to support transport investment by demonstrating spatial gaps in access to jobs and educational opportunities (Farber and Allen, 2019[21]).

Alternatively, accessibility can also be calculated from a facility point to surrounding settlements to capture how many residents can reach the location of a facility. It can allow policy makers to assess infrastructure and service facilities that have limited or overlapping coverage of potential users. Based on this information, policy makers may consider relocation or consolidation of facilities depending on the type of services provided.

In addition, policy makers can measure settlement-to-settlement accessibility to detect potential regional service centres that can offer multiple services to surrounding settlements and plan infrastructure accordingly. A regional centre can be defined as the largest settlement in terms of population within a certain driving time, for example 30 minutes (Figure 3.3) (Dolle et al., forthcoming[22]). On account of their relative position with respect to other settlements, they may be robust service providers even in the context of demographic decline.

Figure 3.3. Ballarat can serve as a regional centre for several neighbouring settlements

Settlements that can be reached with 30-minutes drive from Ballarat (Victoria, Australia)



Note: Calculated using Mapbox Isochrone API (https://docs.mapbox.com/api/navigation/isochrone/).
Source: Dolle, C. et al. (forthcoming), "The role of service provision for regional development".

It is also possible to combine the spatial supply of and demand for a service facility using a single metric. This measure assesses the supply of facilities that can be reached within a time limit as well as the demand from potential users within the area. This allows to assess the needed scale of facilities where it matters to meet demand (Higgins et al., 2022[23]).

Combining accessibility indicators with population projection data helps infrastructure planning by predicting future service demand. For instance, a study in Surrey (Canada) investigated how projected population changes affect accessibility to healthcare facilities and schools, taking into account supply and demand. Focusing on two vulnerable age groups, the research assessed equity in accessibility and guided the allocation of new services (Mayaud et al., 2019[24]). Similar analyses can be done in depopulating regions to balance accessibility across a region by reallocating service facilities.

Digital access to public services can complement efforts to support physical accessibility, such as for administrative services, medical services or for education and training. Heavily depopulating regions may be in bigger need but may suffer from the relatively weak provision of infrastructure. Geospatial data on internet broadband access and internet speed can provide information on digital infrastructure gaps (Annex B, Table B.2).

Addressing housing challenges in regions facing marked population decline

Strong, lasting depopulation entails risks of increasing vacant housing and higher housing maintenance costs, which may lead to deteriorating housing quality over long stretches of time. Partly empty, poorly maintained buildings, in turn may detract from pleasant living environments and are less energy efficient. They result in higher costs for utilities such as heating and gas and the infrastructure they require. They also reduce regions' attractiveness.

Oversupply and poor-quality living environments depress house prices. Lower house prices reduce wealth and make it more difficult to secure mortgages or loans as house values may not act as collateral. This may exclude depopulating regions from real estate and renovation investment, but also from attracting workers to fill skill gaps, leading to a vicious circle. They may also reduce mobility to regions where house prices are higher. This in turn widens regional disparities in the housing market and makes it harder for workers to move to other regions where house prices may not be falling (OECD, 2022[1]). These negative consequences may particularly affect regions facing strong population decline. Regions facing only slow population decline may benefit from less congestion and more affordable housing.

Declining housing quality, higher costs and falling house prices may disproportionately affect poorer households, further aggravating socio-economic disparities. Lower house prices could also result in lower municipal tax revenues (OECD, 2022[1]).

Housing policies should be based on limiting land consumption and densification of central areas

Steps to reduce land consumption and densify central areas can lead to improvements to the built environment, better connections to services and a functioning real estate market. Two main policy avenues can help achieve these goals.

First, housing development should integrate population projections. Land use instruments such as developer obligations can encourage compact development. Developer obligations (called impact fees in some countries) require developers to bear the cost of additional public infrastructure and services that private development requires, for example new roads or sewage systems (OECD/Lincoln Institute of Land Policy, PKU-Lincoln Institute Center, 2022[25]). Developer obligations can internalise the additional costs related to public infrastructure and service delivery.

Second, in regions facing strong population decline, demolition could reduce vacant housing. This may be particularly useful where settlements cannot be offered access to key services at a reasonable cost, where building quality is poor, or where the environmental costs of keeping them are high. The central government

should help municipalities by establishing and providing data on vacant houses and buildings (OECD, 2022[1]).

Renovation projects should seek to improve housing quality and the built environment in central areas or in regional service centres to increase their attractiveness. They can also work as a meeting point for surrounding local populations. Renovation projects should favour neighbourhoods that are close to public services and transport. Box 3.1 provides two examples of demolition and renovation programmes in Germany and France.

Demolition and renovation require co-operation between government levels within the spatial planning framework. Spatial and land use plans should outline which areas need demolition and renovation, based on demographic projections and spatial development trajectories (OECD, 2022[1]). Legislation for expropriation may need to be revised to allow for easier demolition of vacant buildings.

Land readjustment can complement demolition and renovation projects. With land readjustment, residents are provided with an alternative residence close to their current plot but more valuable due to better public infrastructure and services quality, access as well as built environment improvements (OECD/Lincoln Institute of Land Policy, PKU-Lincoln Institute Center, 2022[25]). Municipalities could use this strategy to promote a more efficient use of land.

Strategies such as demolition and renovation, expropriation and land readjustment should be implemented in a participatory manner, involving residents and landowners. Eliciting public understanding, support and participation is key. Taking the example of land readjustment, resistance by property owners is one of the major obstacles to successful implementation. Land readjustment is used more successfully when communication channels with landowners and stakeholders exist and the benefits from a proposed readjustment project are clearly laid out. In Japan, for example, where land readjustment is successfully used in urban growth contexts, communication procedures are laid out in legislation (OECD/Lincoln Institute of Land Policy, PKU-Lincoln Institute Center, 2022[25]).

Central and regional governments should prepare a financing mechanism for demolition and renovation projects giving priority to regions where depopulation and vacant housing issues are prominent (OECD, 2022[1]).The central government should also support municipalities in improving administrative capacity to use these instruments, for example through capacity-building workshops.

Box 3.1. Addressing housing challenges in regions facing strong population decline: Lessons from Germany and France

Urban regeneration in Saint-Étienne, France

The city of Saint-Étienne declined in population with the closures of mining enterprises and major industrial firms in the 1970s and 1980s. Affected central city areas became unattractive. Sub-urbanisation followed, with new economic activity and middle- to upper-class residents moving to the outskirts in lower-density development. This left residents who were unable to relocate behind, reducing social diversity. Moreover, the city's proximity to Lyon, the third largest and growing city in France, prevented Saint-Étienne from developing as a regional economic centre.

Saint-Étienne's initial approach to stabilise employment and attract investment for development by providing loans and financial aid to the private sector had only a limited impact on population recovery and deteriorated the city government's finances. Subsequently the city government-initiated housing regeneration and cultural projects, financed by the national government. The National Urban Renovation Agency (ANRU) funded rehabilitation including demolishing 14 000 deteriorated houses and renovating 4 700. Cultural initiatives, including a new a fine arts school and the Design Biennale, also contributed to urban regeneration. Industrial brownfield sites were repurposed into a "village",

hosting cultural institutions and a research centre. The project provided residents with access to high-quality housing and a pleasant living environment within the city, reducing suburban sprawl.

This regeneration effort transformed the city's physical landscape with the construction of high-quality dwellings. Despite attempts to maintain social housing, critics pointed to the perceived focus on attracting new residents instead of preserving the local population.

Demolition and renovation in Eastern Germany

Between 1989 and 2002, following Germany's reunification, nearly 2.8 million people moved from Eastern to Western Germany in search of job opportunities and a better life. The rate of vacant housing in Eastern Germany was more than double that of Western Germany, reaching 14% by 2000. As a response, the federal government introduced the programme "Urban Redevelopment East" (*Stadtumbau Ost*) in 2002. Around a fifth of Eastern German municipalities have taken part in the programme, encompassing around 60% of the Eastern German population.

The programme aimed at upgrading dwellings in inner-city districts and reducing housing stock in peripheral areas. However, the programme did not manage to totally renovate inner-city dwellings. While the federal and regional governments fully funded demolitions (each contributing 50%), upgrading projects required a one-third contribution from local authorities. Upgrading was less attractive due to the financial difficulties faced by depopulating municipalities. With demolitions fully publicly funded, decisions may have been excessively determined by short-term financial interests of the businesses owning them.

On the other hand, around 334 000 apartment buildings were demolished by 2018. Approximately 70-80% of residents were relocated within the same neighbourhood. Perceived quality of life increased in some places. For example, in the city of Leipzig, 74% of residents in the largest prefabricated housing estate (Leipzig-Grünau) expressed satisfaction with their residence in 2009, compared to 35% in 1992. However, the demolitions are partly responsible for housing shortages and affordability issues in some Eastern German cities whose populations have been bouncing back in recent years, such as Leipzig and Dresden. Therefore, demolitions should be undertaken carefully, in line with long-term strategic planning. Repurposing and renovation can be more flexible alternatives to address changing housing needs and improve citizen well-being. Given the emotional bond there can be to housing, demolition and redevelopment programmes should also involve affected residents.

Sources: (Cunningham Sabot and Roth, 2013[26]), (Provan, 2016[27]), (OECD, 2022[1]), (Sievers, 2019[28]), (Rink, 2022[29]).

Integrated policies to promote dense and inclusive neighbourhoods in cities

Cities have their own particular social challenges linked to demographic change, including strong and lasting depopulation, marked ageing, social isolation, loneliness and mental health and densification. These challenges can be tackled through urban policies aimed at designing neighbourhoods around the "X-minute city" concepts, such as the 15-minute city proposed in Paris (France), or the "10-minute city" model of Utrecht (the Netherlands) and of Brussels (Belgium). These models are based on strong connections between housing, transport, and services – to provide access to all essential services and daily needs within a short distance and guarantee accessibility for all demographic and social groups. "X-minute" cities can help fixing spatial segregation, if coupled with policies targeting housing affordability located in areas with good access to economic opportunities.

To adapt neighbourhoods to ageing, housing options should be diversified to accommodate different preferences corresponding to different life stages. This involves incorporating a mix of inter-generational residences, and senior living facilities. This design encourages interactions among different age groups.

For instance, Alicante (Spain), provided 244 social housing units for older residents and young professionals willing to participate in social and care activities as part of their stay contract (Burgalassi and Matsumoto, 2024[30]).

Local governments can take advantage of opportunities to repurpose empty buildings to address the housing needs of single-person households, particularly young adults and older residents. This can also help older residents move from isolated, deteriorating homes to more supportive living environments, which are better connected to people and services. In Fuenlabrada (Spain), the SHARE project introduces a *Solidarity Housing System*, where elderly homeowners offer low-cost rentals to young tenants, and an *Early Protection of Autonomy* programme, which provides supportive housing for seniors in a repurposed former school building. The initiative has doubled youth rental options, revitalised the neighbourhood, and strengthened intergenerational connections (EU Urban Initiative, n.d.[31]).

Catering to the diverse needs of people of different ages and backgrounds increases opportunities for social interaction. This includes the creation of child-friendly spaces (OECD, 2021[32]). For instance, the city of Barranquilla (Colombia) engaged local residents in a co-design process of parks with a specific focus on the needs of children, older adults, and people with reduced mobility. The "Austrian Spatial Planning Concept" focuses on improving the social infrastructure for children, too.

Policies to address strong depopulation need to integrate environmental challenges

Policies to address regional depopulation require a long-term planning perspective. Making these policies economically sustainable therefore requires integrating environmental issues in spatial planning, housing, and infrastructure decisions. These environmental issues include the local actions needed to address the three global challenges threatening the foundations of human wellbeing, namely climate change, biodiversity loss and the degradation of land. This strengthens the case for an adaptive approach to shrinkage with sparing use of newly built-up area. Regions which do not follow an adaptive approach are likely to face higher costs also from rising environmental policy priorities in the future. Integrating environmental aspects can also provide opportunities to gain wellbeing or avoid costs.

Spatial planning to minimise artificial land cover and encourage dense settlements well-connected to public transport helps reduce energy use, construction and material use and harnesses the potential of soils to provide carbon sinks and biodiversity (Creutzig, 2023[10]). Regions differ in their potential to contribute to these essential ecosystem services, for example through wetlands or forest protection and restoration.

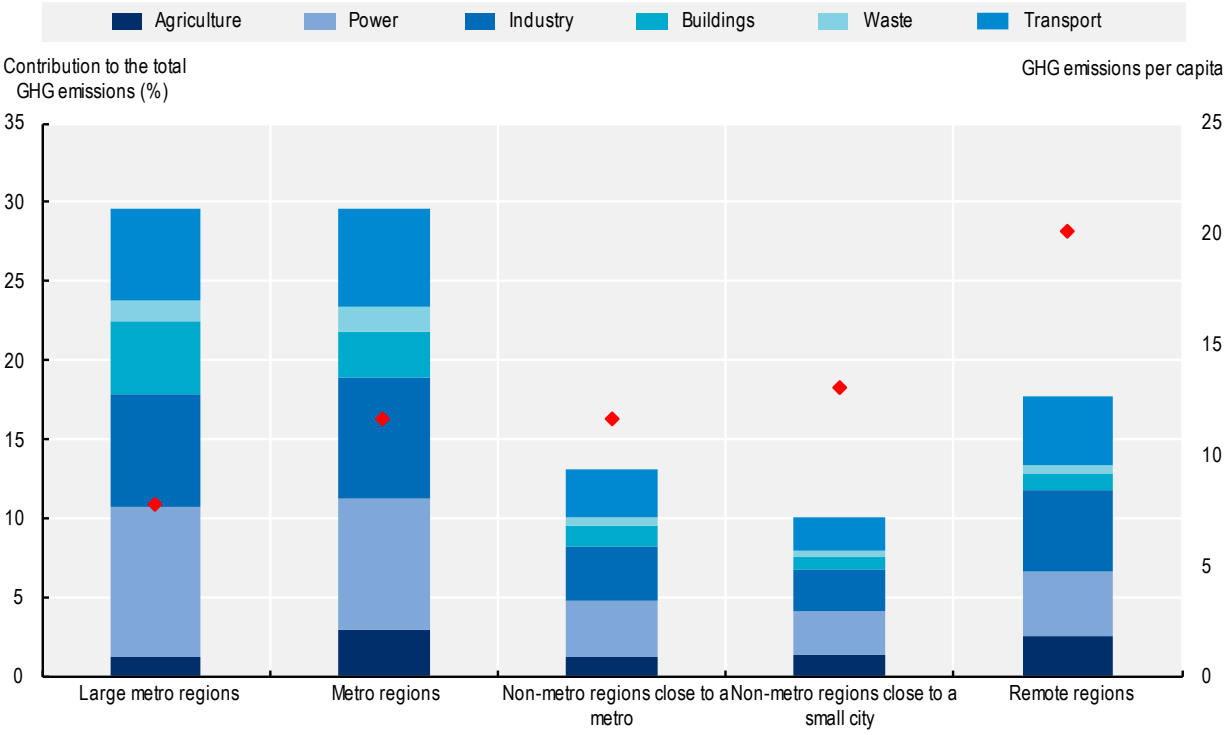
Geospatial data identify environmental “hotspot” regions where the value of such ecosystem services is particularly large, as well as the specific local nature of these potentials (Annex B). They can be contrasted with actual land cover data and data on land use regulation. Restoration and protection of natural habitats can make depopulating regions more attractive, improve water and air quality, and provide employment opportunities, as well as a sense of purpose to local populations. For example, ecosystem payments can encourage communities to harness these potentials and provide additional income (OECD, 2021[17]).

Per capita production-based GHG emissions tend to be highest in sparsely populated, remote regions (Figure 3.4). These are often the most affected by population decline. High per capita emissions suggest that the population may be particularly vulnerable to economic transformations towards climate neutrality. For example, they are economically less diversified and are likely to dispose of fewer resources for investment in skills and technology. Indeed, regions hosting high-emission industrial activities that are particularly difficult to make climate-neutral tend to face out-migration and low GDP per capita. They may require specific support to deploy climate-neutral infrastructure, zero-emission transport as well as skills (OECD, 2023[33]). Regional estimates of emissions and their sectoral origin can help identify specific challenges these regions face (Annex B).

Strong depopulation may result in small settlements being abandoned, while other settlements may become regional centres for service provision. Such decisions need to be informed by expected climate hazards. For example, maritime flooding, risks of river flooding or storms, extreme heat and their potential impacts on infrastructure may reinforce decisions to abandon depopulating settlements or, instead, require adaptation measures, for example in infrastructure or in access to health care. Strong population decline may aggravate vulnerability to climate change, for example because of degraded natural of physical infrastructure. For example, abandoned forest management may increase fire hazards.

Figure 3.4. Greenhouse gas emissions per capita are high in remote regions

Contribution to GHG emissions (bars) and GHG emissions per capita (line) by type of region, 2018



Note: OECD countries, Bulgaria and Romania. Each stacked bar indicates the contribution of each region type to the total of GHG emissions in these countries. Excluding emissions from land use and land use change.
Source: Author's elaboration on EDGAR 8.0

References

Burgalassi, D. and T. Matsumoto (2024), "Demographic change in cities: Trends, challenges and insights from G7 economies", *OECD Regional Development Papers*, No. 67, OECD Publishing, Paris, https://doi.org/10.1787/f2aec988-en. [30]

Creutzig, F. (2023), "Global Environmental Goods, Local Public Bads? Place-Based Transitions as a Key Contribution to Global Stewardship". [10]

Dalvi, M. and K. Martin (1976), "The measurement of accessibility: Some preliminary results", *Transportation*, Vol. 5/1, pp. 17-42, https://doi.org/10.1007/bf00165245. [19]

Dolle, C. et al. (forthcoming), *The Role of Service Provision for Regional Development*. [22]

EPSON (2017), *Shrinking rural regions in Europe: Towards smart and innovative approaches to regional development challenges in depopulating rural regions Inspire Policy Making with Territorial Evidence*. [9]

EU Urban Initiative (n.d.), *SHARE - Fuenlabrada*, https://www.urban-initiative.eu/ia-cities/fuenlabrada/about-projects# (accessed on 18 March 2025). [31]

Farber, S. and J. Allen (2019), *Planning for Transit Equity in the GTHA: Quantifying the Accessibility-Activity Participation Relationship for Low-Income Households*, https://uttri.utoronto.ca/files/2019/06/Planning-for-Transit-Equity-in-the-GTHA-Report-May-29-2019.pdf. [21]

Higgins, C. et al. (2022), "Calculating place-based transit accessibility: Methods, tools and algorithmic dependence", *Journal of Transport and Land Use*, Vol. 15/1, https://doi.org/10.5198/jtlu.2022.2012. [23]

Hollander, J. (2018), *A Research Agenda for Shrinking Cities*. [2]

Hortas-Rico, M. and A. Solé-Ollé (2010), "Does urban sprawl increase the costs of providing local public services? Evidence from Spanish municipalities", *Urban Studies*, Vol. 47/7, pp. 1513-1540, https://doi.org/10.1177/0042098009353620. [7]

ITF (2023), *Accessibility in the Seoul Metropolitan Area: does transport serve all equally?*, OECD PUblishing, Paris, https://www.itf-oecd.org/accessibility-seoul. [20]

Johnson, M., J. Hollander and A. Hallulli (2014), "Maintain, demolish, re-purpose: Policy design for vacant land management using decision models", *Cities*, Vol. 40, pp. 151-162, https://doi.org/10.1016/j.cities.2013.05.005. [4]

Luescher, A. and S. Shetty (2013), *An introductory review to the special issue: Shrinking cities and towns: Challenge and responses*, https://doi.org/10.1057/udi.2012.36. [3]

Mayaud, J. et al. (2019), "Future access to essential services in a growing smart city: The case of Surrey, British Columbia", *Computers, Environment and Urban Systems*, Vol. 73, pp. 1-15, https://doi.org/10.1016/j.compenvurbsys.2018.07.005. [24]

Németh, J. and J. Hollander (2016), *Right-sizing shrinking cities: a landscape and design strategy for abandoned properties*. [5]

OECD (2024), *OECD Territorial Reviews: Brussels-Capital Region, Belgium*, OECD Territorial Reviews, OECD Publishing, Paris, https://doi.org/10.1787/0552847b-en. [13]

OECD (2023), *Financing Cities of Tomorrow: G20/OECD Report for the G20 Infrastructure Working Group under the Indian Presidency*, OECD Publishing, Paris, https://doi.org/10.1787/51bd124a-en. [16]

OECD (2023), *Regional Industrial Transitions to Climate Neutrality*, OECD Regional Development Studies, OECD Publishing, Paris, https://doi.org/10.1787/35247cc7-en. [33]

OECD (2022), *Shrinking Smartly in Estonia: Preparing Regions for Demographic Change*, OECD Rural Studies, OECD Publishing, Paris, https://doi.org/10.1787/77cfe25e-en. [1]

OECD (2021), *Measuring What Matters for Child Well-being and Policies*, https://www.oecd-ilibrary.org/docserver/e82fded1-en.pdf?expires=1697731013&id=id&accname=ocid84004878&checksum=8DC50E4D4534CE8CDF604959B98E11E6. [32]

OECD (2021), *OECD Regional Outlook 2021: Addressing COVID-19 and Moving to Net Zero Greenhouse Gas Emissions*, OECD Publishing, Paris, https://doi.org/10.1787/17017efe-en. [17]

OECD (2018), *Rethinking Urban Sprawl: Moving Towards Sustainable Cities*, OECD Publishing, Paris, https://doi.org/10.1787/9789264189881-en. [8]

OECD (2016), *OECD Territorial Reviews: Japan 2016*, OECD Territorial Reviews, OECD Publishing, Paris, https://doi.org/10.1787/9789264250543-en. [15]

OECD (n.d.), *Population by broad age groups - Regions*, https://data-explorer.oecd.org/vis?lc=en&tm=population%20TL2&pg=0&hc[Measure]=Population&hc[Territorial%20level]=TL2&snb=34&vw=ov&df[ds]=dsDisseminateFinalDMZ&df[id]=DSD_REG_DEMO%40DF_POP_BROAD&df[ag]=OECD.CFE.EDS&df[vs]=1.0&pd=2010%2C2010&dq=A.CTRY%2BTL2 (accessed on 6 February 2024). [14]

OECD/EC-JRC (2021), *Access and Cost of Education and Health Services: Preparing Regions for Demographic Change*, OECD Rural Studies, OECD Publishing, Paris, https://doi.org/10.1787/4ab69cf3-en. [18]

OECD/Lincoln Institute of Land Policy, PKU-Lincoln Institute Center (2022), *Global Compendium of Land Value Capture Policies*, OECD Regional Development Studies, OECD Publishing, Paris, https://doi.org/10.1787/4f9559ee-en. [25]

Pallagst, K., T. Wiechmann and C. Martinez-Fernandez (eds.) (2013), *Growth Paradigm against Urban Shrinkage: A Standardized Fight? The Cases of Glasgow (UK) and Saint-Etienne (France)*, Routledge, https://doi.org/10.4324/9780203597255. [26]

Pesaresi, M. and P. Politis (2023), *GHS-BUILT-S R2023A - GHS built-up surface grid, derived from Sentinel2 composite and Landsat, multitemporal (1975-2030). European Commission, Joint Research Centre (JRC)*, https://doi.org/10.2905/9F06F36F-4B11-47EC-ABB0-4F8B7B1D72EA (accessed on 6 February 2024). [12]

Provan, B. (2016), "Saint-Étienne city story", *CASE reports*, http://eprints.lse.ac.uk/id/eprint/67848. [27]

Rink, D. (2022), “Urban development, housing market and housing policy in Leipzig”, *UFZ Discussion Papers*, https://www.ufz.de/export/data/global/260743_DP_2022_1_Rink.pdf. [29]

Sievers, K. (2019), *Stadtumbau Ost – Lösung einer Wohnungsfrage?*, https://www.bpb.de/themen/deutschlandarchiv/286642/stadtumbau-ost-loesung-einer-wohnungsfrage/. [28]

Sousa, S. and P. Pinho (2015), “Planning for Shrinkage: Paradox or Paradigm”, *European Planning Studies*, Vol. 23/1, pp. 12-32, https://doi.org/10.1080/09654313.2013.820082. [6]

Syssner, J. (2023), *Place-based policy objectives and the provision of public goods in depopulating areas: equality, adaptation, and economic sustainability*, https://www.oecd.org/regional/place-based-policy-objectives-and-the-provision-of-public-goods-in-depopulating-areas-equality-adaptation-and-economic-sustainability.pdf. [11]

4 Adapting multi-level governance, finance, service and infrastructure provision to demographic change

This chapter examines how demographic change affects multi-level governance frameworks, subnational finance systems, and service and infrastructure provision. It also introduces the SHIFT approach, outlining five elements to help subnational governments adapt to demographic shrinking, and discusses three common strategies for maintaining essential services and infrastructure for remaining residents in depopulating regions.

The effects of demographic shrinking on multi-level governance, subnational finance and the provision of services and infrastructure

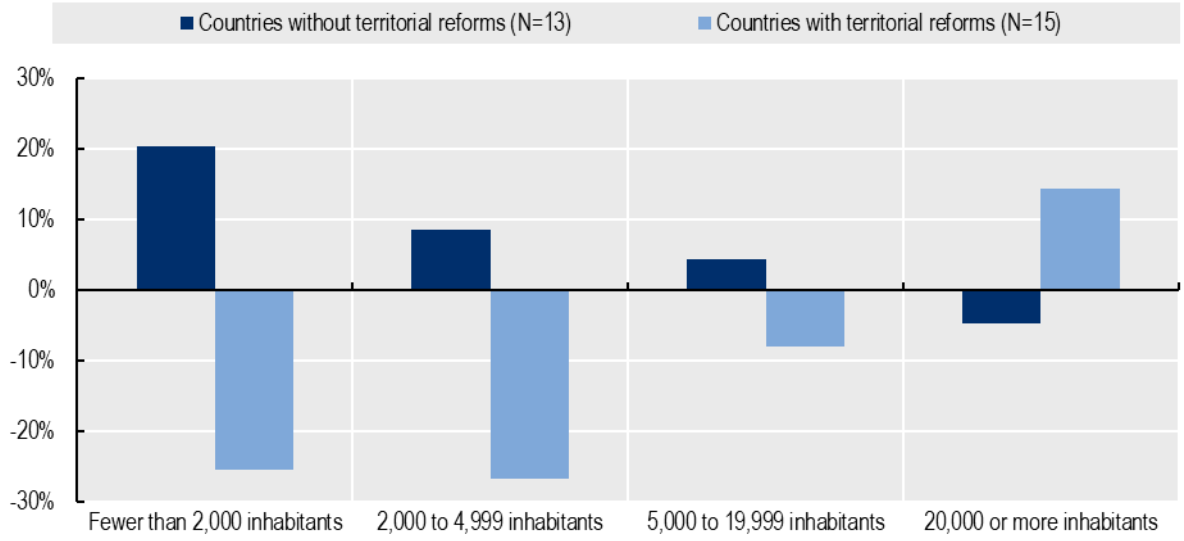
This section reviews the main effects of strong and sustained demographic decline on multi-level governance frameworks and subnational finance systems, which in turn affect the ways and the extent to which services and infrastructure are provided.

Multi-level governance arrangements and territorial structures may become obsolete in depopulating regions and municipalities

Demographic change, and in particular shrinkage, can affect the effectiveness and representativeness of multi-level governance systems in a profound and multi-faceted way. As populations dwindle, there can be a notable reduction in the number of elected representatives and public staff at both the regional and local levels, leading to a loss in local governance and leadership. Civil society organisations, citizens, and local businesses may also lose steam, eroding the participatory nature of local governance structures as well as local democracy. In addition, demographic change may render existing institutional and territorial structures obsolete. In depopulating regions, these structures may no longer align with the demographic realities on the ground.

Figure 4.1 shows that countries that have not undertaken any territorial reforms have in general seen an increase in the number of smaller municipalities in terms of population size. With data from 13 OECD and EU countries, the number of municipalities with fewer than 2 000 inhabitants has grown on an unweighted average by 20% in a decade, with Poland, Bulgaria and Croatia registering the highest percentage increases (90%, 50% and 30%, respectively). The number of municipalities with 2 000 to 4 999 inhabitants has also risen by 9% on unweighted average, while the number of number of municipalities with 5 000 to 19 999 inhabitants has done so only moderately, at 4% on average. By contrast, the number of municipalities with more than 20 000 inhabitants has fallen on unweighted average by 5% over a decade, with the most significant decreases in Croatia and Lithuania, both by 14%. This indicates that demographic shrinking does indeed reduce the size of municipalities and increases the number of small local units, which may lead to inefficiencies in resource allocation, policy implementation, and decision-making.

Figure 4.1. Average percentage change in the number of municipalities by size of population over ten years

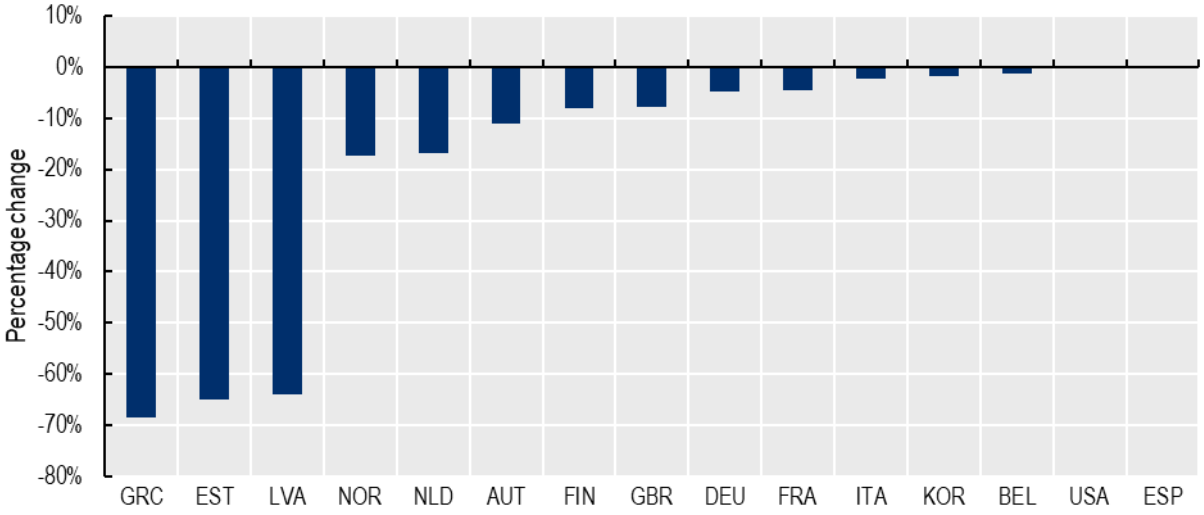


Note: Countries without municipal mergers include 13 countries: Bulgaria (2012-2022), Croatia (2011-2021), Czechia (2013-2023), Denmark (2013-2023), Hungary (2011-2022), Japan (2010-2020), Lithuania (2011-2021), Poland (2010-2020), Portugal (2011-2021), Romania (2011-2021), Slovenia (2013-2023), Slovak Republic (2012-2022) and Sweden (2012-2022). Countries with municipal mergers over a decade include the following 15 ones: Austria (2011-2021), Belgium (2011-2021), Estonia (2011-2021), Finland (2012-2022), France (2011-2021), Germany (2011-2022), Greece (2001-2021)*, Italy (2011-2021), Korea (2010-2020), Latvia (2011-2021), Netherlands (2012-2022), Norway (2011-2021), Spain (2012-2022), United Kingdom (2011-2021) and United States (2010-2020).
*The dataset for Greece incorporates census data from the years 2001 and 2021, specifically selected to account for the extensive territorial reform implemented in 2010. Comparing data from 2021 with that from 2011—both years employing the updated territorial classification for municipalities—would mask the effects on municipal size of the comprehensive territorial reform.
Source: (OECD, forthcoming[1]; OECD, forthcoming[2])

On the other hand, countries in which territorial mergers have taken place among municipalities display the opposite trends, with the number of smaller municipalities having decreased over a decade (Figure 4.1). Territorial mergers may thus lie behind the 26% drop on unweighted average in the number of municipalities with fewer than 2 000 inhabitants or the 27% fall in the number of those with between 2 000 and 4 999. By contrast, the number of municipalities with over 20 000 inhabitants has increased by 14% on unweighted average over a decade.

Not all countries having undergone territorial reforms have done so to the same extent (Figure 4.2). Greece, Estonia, and Latvia have reduced the total number of municipalities by more than 60% over a decade, countries that have also witnessed a remarkable increase in the number of municipalities with over 20 000 inhabitants. In contrast, countries such as the Republic of Korea, Belgium or the United States have witnessed gradual but minor territorial mergers, with Spain standing out as the only country wherein there has been an increase in the number of municipalities. The data suggest that territorial mergers are effective in enlarging the population size of municipalities, even though these reforms may lead to varying rates of efficiency (Tavares, 2018[3]; OECD/UCLG, 2022[4]). However, territorial mergers can face opposition due to fear of losing access to services, the dilution of local identity as well as the reduction in local political power. This can result in an uneven adoption of voluntary territorial reforms within countries, with mergers not occurring where the national government may deem that they are most needed, as has been the case in Norway (Ruud, 2023[5]).

Figure 4.2. Percentage change in the number of municipalities per country with territorial reforms over a decade



Note: The data comprises the total number of municipalities per country based on the same years mentioned in the note under Figure 4.1.
Source: (OECD, forthcoming[1]; OECD, forthcoming[2])

Demographic shrinking can put significant pressure on subnational finances and constrain public investment

Effective fiscal frameworks must provide the necessary conditions for the responsibilities of all levels of government to be properly funded and fulfilled. However, if a region's population decline is strong and sustained over time, its public finances may be placed under stress and, unless the system is sufficiently flexible for adjustments, depopulating regions may fail to provide the necessary services and infrastructure for the well-being of their inhabitants.

Table 4.1 provides a stylised snapshot of the different fiscal effects expected on revenue, expenditure and debt indicators in regions that experience population decline in different intensities. In regions with mild population decline, revenue, expenditure and debt indicators are only marginally affected. Regarding revenue, while tax revenues as well as user fees may diminish slightly, equalisation transfers as well as the drop in variable costs of current expenditure may sufficiently cover for the marginal revenue losses. Regarding expenditure, regions depopulating only mildly may choose to start prioritising capital expenditure differently, undertaking upgrades to existing infrastructure before committing to new infrastructure investment, some of which may remain. As for debt, the capacity to service debt in the short to medium term is likely to remain relatively stable, with debt-to-GDP ratios not rising markedly.

Moderately depopulating regions start facing considerable fiscal challenges. On the revenue side, lower property values, consumer spending and smaller working-age population translates into a substantial drop in tax and non-tax revenue. For service fees such as public transportations, this may put at risk the recovery of service provision costs. Equalisation transfers become larger in order to bridge the gap left by lower revenues and lower formula-based transfers linked to population size. On the expenditure side, whereas costs variable with population size may be diminished, fixed per-capita costs continue to increase. Capital expenditure may largely be devoted to upgrading existing infrastructure or for new infrastructure investment seeking to spatially concentrate services in a specific place where services are most accessible to residents, thereby gaining scale. In terms of debt, the combination of rising operational expenditures and constrained revenue collection may jeopardise positive primary balances (i.e. total revenues minus non-interest expenditures). This may lead to an increase in the debt-to-GDP ratio, driven by diminishing

economic outputs. Furthermore, it may also pressure debt service ratios closer to or below one, signalling fiscal distress in servicing debt, particularly over the long term.

Table 4.1. Effects of population decline on subnational public finances by level of intensity

Intensity of population decline	Mild	Moderate	Significant (i.e., shrinking)
Revenue	• **Slight decrease in tax revenues** such as property tax, sales tax or personal income tax (where applicable) and user fees • **Marginal decrease of formula-based transfers** based on population, easily compensated by **equalisation transfers**.	• **More considerable drops in tax and non-tax revenue** due to lower property values, consumer spending (fewer consumption taxes) as well as a narrowing workforce and businesses (and therefore fewer personal and corporate income taxes). • **Reduced user fee revenue given lower demand**, hampering the sustainability of cost recovery models for service provision. • **Equalisation transfers to bridge a larger funding gap** left by formula-based transfers based on population.	• **Drastic declines in tax and non-tax revenue**: ○ Property values and high vacancy rates bring **property tax** revenues down. ○ Lower consumption and the closure of local business reduces **sales tax revenue** as well as **user fees**. ○ **Income tax revenue** drops, particularly where the young workforce out-migrates. • **Equalisation transfers** become crucial to maintain the provision of essential services and infrastructure.
Expenditure	• **Little variations of current expenditure**, with fixed costs staying stable and variable costs decreasing only slightly • **Capital expenditure may be specialised differently**, giving precedence to upgrades of existing infrastructure, not new one	• **Increased savings from variable costs** of current expenditure while **fixed costs keep growing** in per-capita terms. • **Capital expenditure** may consist of upgrades of existing infrastructure, as well as investment necessary to allow for concentrating services in a specific location to gain scale	• **Savings from variable costs** are insufficient to compensate for **higher fixed per-capita costs**, which pose a significant burden. • **Capital expenditure priorities may shift dramatically**, focusing on downsizing, decommissioning or repurposing infrastructure.
Public balance and debt	• With government revenues decreasing mildly, the **ability to service debt may remain broadly unchanged** in the short and medium term. • The impact on debt-to-GDP ratio may not be severe if **fiscal strategic planning** is in place to avoid future escalations.	• Maintaining **positive primary balances may become more challenging** and structural spending reforms may be needed. • **Debt-to-GDP ratios are likely to rise** due to lower economic output. • **The ability to service debt may diminish**, pushing debt service coverage ratios closer to or below one.	• A **scissors effect emerges** from higher expenditure and lower revenue per capita. A **vicious circle** appears, with insufficient revenue leading to service cuts, in turn encouraging further demographic decline. • **The ability to repay debt may be seriously compromised**, with negative primary balances and decreasing debt service coverage ratios. • **The debt-to-GDP ratio may significantly increase**, signalling severe fiscal challenges. • **Credit ratings may deteriorate**, leading to a lower access to financing for infrastructure.

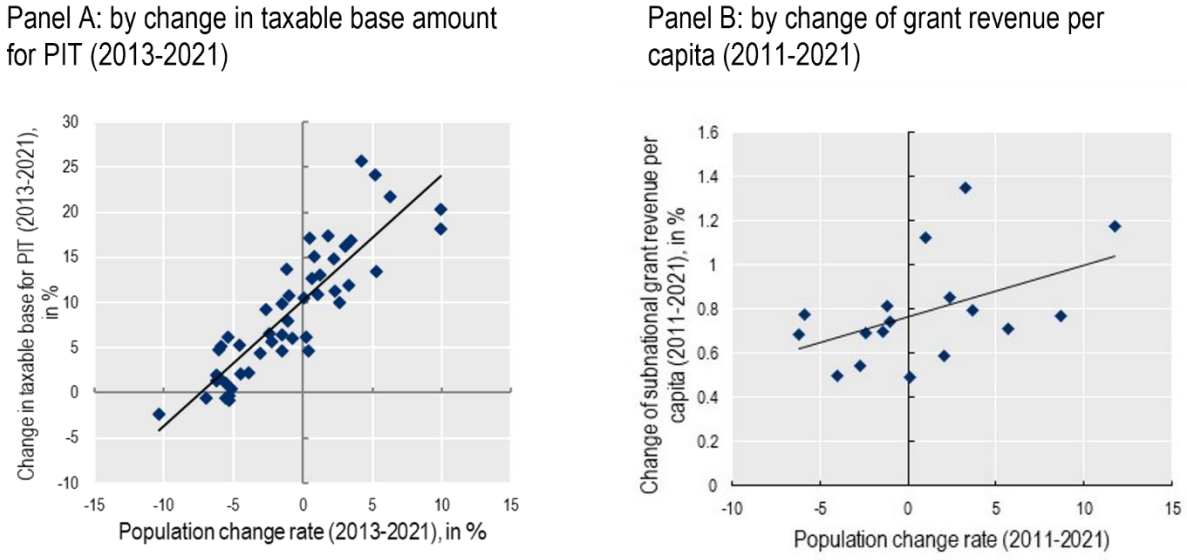
Note: For the purposes of this table, "mild" population decline refers to regions experiencing a population decline rate of less than 0.5% per year over a five-year period, whereas "moderate" population decline refers to a population decline rate of between 0.5% and 1%, and "significant" population decline (also known as shrinking) refers to a population decline rate of 1% or more per year.
Source: Authors' elaboration.

Finally, regions experiencing significant demographic decline can be expected to experience a more drastic fiscal impact. With higher vacancy rates, a substantial drop in consumer spending and the closure

of local businesses, drops in tax and non-tax revenues are highly significant due to a smaller taxable base and a diminishing working-age cohorts relative to non-working-age people (Woodland, 2016[6]; European Commission, 2023[7]). Revenues from taxes such as personal income tax (PIT) as well as taxes on sales, motor vehicles or excises, and user charges on public services and other fees (e.g. construction licenses, administrative fines) will fall in depopulating regions. This may be particularly the case in decentralised countries whose subnational governments typically rely more heavily on tax. In addition, user charges revenue will be more exposed to falling income relative to regions in centralised countries where transfers play a larger role, especially if the latter are not fundamentally based on population. This is why equalisation transfers may become a basic pillar of fiscal health to ensure an adequate minimum standard of service provision.

Some countries experiencing shrinking in the OECD are already showing the signs of diminishing revenues. For example, Figure 4.3 Panel A shows that Spain's provinces experiencing stronger population decline tend to show slower growth – or even decreases – in their PIT taxable base between 2013 and 2021. According to these data, for every 1% decrease in the population change rate between 2013 and 2021, there is an estimated 0.55% relative reduction in PIT base growth, compared to the baseline growth of 10% observed in provinces with no population change. Importantly, even provinces with stable population levels (i.e. zero population change) saw, on average, an 8.9% increase in their PIT base over the period. This suggests that demographic decline is associated with a lower growth in tax revenues, which does not necessarily result in a decline in absolute terms.

Figure 4.3. Population change rate at TL3 level in Spain

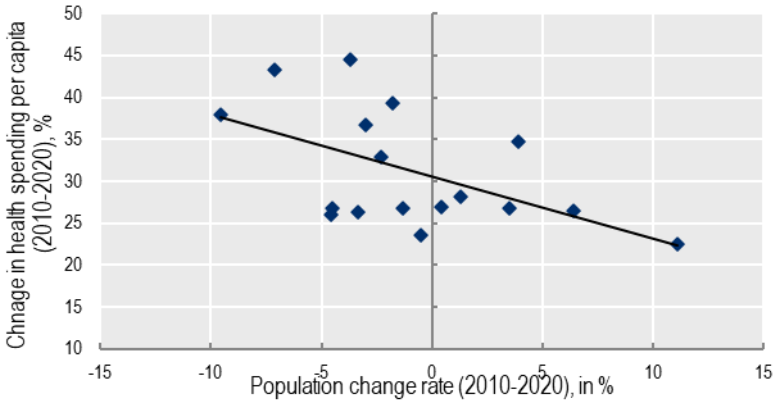


Note: Navarre and the provinces within the Basque Country are not included in the dataset since they operate under the foral fiscal regime instead of the ordinary one.
Source: (Agencia Tributaria, 2023[8]) and (OECD, 2024[9])

As for grants, Figure 4.3 Panel B shows that, rather than compensating for population decline, Spanish provinces experiencing population growth tended to receive greater increases in grants per capita. This may reflect demand-driven pressures in growing areas rather than a deliberate equalisation strategy in favour of depopulating ones. It does not appear, at least in this period, that national grants systematically offset the fiscal pressures associated with population decline.

As regards expenditure, fixed per-capita costs are significantly high and cannot be compensated merely with drops in variable costs. In part, this can be due to the fact that depopulating regions, whose remaining population tends to be ageing, require healthcare services that are particularly costly. For instance, Finnish municipalities, in charge of healthcare provision, spend more in per capita terms when they operate within a region that has witnessed population decline for at least a decade (Figure 4.4). It can also be due to the fact that the demanded skills are become scarcer and, therefore, more expensive (Hortas-Rico and Solé-Ollé, 2010[10]).

Figure 4.4. Population change rate at TL3 level in Finland by change in operating net expenditure of municipal healthcare per capita by region (2010-20)



Source: (Sotkanet, 2021[11])

As a result of these fiscal pressures, depopulating regions suffer from a scissors effect – dwindling revenues at a time of increasing expenditures, thereby constraining their fiscal space. This usually entails limiting the amount of public investment into new infrastructure projects to focus on covering the costs of service provision as well as the costs of operating and maintaining existing infrastructure. When revenues are scarce, short-term infrastructure maintenance budgets are often one of the first items cut, which can lead to large maintenance backlogs and declining infrastructure quality that reduces the well-being of citizens and can put a drag on regional development efforts. Additionally, the under-utilisation, wear, and abandonment of existing infrastructure can pose safety hazards and further escalate maintenance costs. This is why governments may seek to downsize, decommission, or repurpose infrastructure in an attempt to lower operational fixed costs.

Table 4.2 provides a typology of the most typical infrastructure costs. New infrastructure has significant one-time investment costs related to the design and preparation, construction, replacement, or major upgrading, with sometimes incurring in decommissioning costs when a previous infrastructure must be demolished. In turn, all existing infrastructure face costs to ensure its correct operation, including costs for rent, personnel, training, ordinary and repair maintenance activities, utilities and support services, other consumables, user support, and IT and data management costs (depending on the infrastructure type).

Table 4.2. A typology of infrastructure costs

Infrastructure stage	Type of costs	Sub-costs	Description
New infrastructure*	Investment costs	Planning, design and preparation	In-kind and cash expenditures for the necessary documentation (e.g., feasibility study, conceptual design)
		Acquisition	All costs included in acquiring an asset by purchase/lease or construction procurement route, excluding costs during the occupation and use or end-of-life phases of the life cycle.
		Construction • Physical • Non-physical • Personnel • Start-up • Consumables	Set up and launch costs including physical assets (e.g., land acquisition, building, civil works), non-physical assets (e.g., IT platforms, patents, licenses), personnel involved in the construction phase, consumables (e.g., energy use, waste disposal), and start-up costs (e.g., training).
		Replacement	Costs to replace assets at the end of their lifetime when foreseen since the start (e.g., machinery and other equipment)
		Major upgrading	Costs related to the modernisation or expansion of a facility
		End-of-life	Costs resulting from decommissioning, deconstruction and demolition of a building, site decontamination/remediation, recycling, recovery, and disposal of components and materials; and transport and regulatory costs.
Existing infrastructure	Operating costs	Rent	Rental of buildings or sheds and machinery
		Personnel	Staff costs including salaries and social security contributions
		Training	Capacity-building expenses to develop the skills of relevant staff for the sustainability of the asset
		Ordinary and repair maintenance	Total of necessarily incurred labour, material and other related costs incurred to retain a building or its parts in a state in which it can perform its required functions
		Utilities and support services	Fuel, electricity, gas, water and recycled waste, and any other utilities
		Consumables	Raw materials, base metals, packaging materials, containers, etc.
		User support	Cost-per-user related to the assistance to the users when accessing the facility (e.g., costs related to the use of services such as canteens or guesthouses)
		IT and data management	Maintenance of data repositories, disk space, computing power, networks, and specialised IT personnel
	Financing costs	Interest repayments	Repayment of finance used to build the fixed asset

Note: (*) New infrastructure refers to all investment costs except for end-of-life sub-costs when these relate to the demolition of infrastructure without re-building a renovated one.
Source: Authors' elaboration, based on (ESFRI, 2019[12]; ISO, 2017[13]).

To correctly operate existing infrastructure, operating costs, which have both fixed and variable components, will need to be covered. With population growth, fixed costs may stay the same (e.g. rent, IT and data management) or may become variable (e.g. personnel, utilities, and support services). However, with population decline, a certain level of operating costs will always remain, thereby increasing per-capita costs of infrastructure in depopulating regions. For example, the rent costs for materials are unlikely to diminish with population decline. Ordinary and repair maintenance costs may become marginally smaller due to lower usage, but they will never decrease to the same extent as population decline. Therefore, adapting to shrinking involves making adjustments to ensure that operating costs of existing infrastructure remain cost-effective and do not put an overly large burden on subnational public finances.

The increasing intensity of the scissors effect in depopulating regions can reinforce a vicious circle: insufficient revenue leads to inadequate service provision or to expenditure cuts, which can jeopardise service quality and well-being and further promote out-migration and demographic decline. A persistent scissors effect can significantly impair the ability of depopulating regions to repay debt, heightening the risk for potential investors. This situation, characterised by notably higher debt-to-GDP ratios and debt service coverage ratios falling below one, may lead to deteriorating credit ratings as these are partly composed of Environmental, Social and Governance factors, which include demographic pressures (Collette, 2023[14]). As a result, depopulating regions are likely to find it increasingly difficult to secure financing for high-quality infrastructure (Carbonaro et al., 2018[15]).

Strengthening multi-level governance: five key strategies for adapting to demographic shrinkage

To respond to demographic shrinkage and the resulting smaller units of governance, multi-level governance frameworks must adapt to incorporate or strengthen the following five areas: (1) strategically plan for demographic change, (2) harness horizontal and vertical co-ordination across and among levels of government, (3) innovate governance structures at new functional scales, (4) facilitate stakeholder engagement at all stages of policy-making, and (5) train and retain staff with the needed skills (Figure 4.5).

Figure 4.5. The SHIFT framework

Source: Author's elaboration.

Strategically planning for population shrinkage

Responding to population shrinkage, particularly at the subnational level, is often challenging for three main reasons. First, the effects of demographic trends are asymmetric since they tend to affect subnational governments to different degrees within national boundaries. Second, population shrinking often affects multiple sectors and is thus addressed through multiple policies that should not have competing objectives.

Finally, population shrinkage responses need to be aligned with and include the perspectives and actions of other stakeholders, such as the civil society, business, or academia.

Strategic planning (the process through which national and subnational governments set long-term territorial objectives and priorities, define the actions needed to progress and determine how success will be monitored and evaluated (OECD, 2023[16])) can be particularly beneficial for depopulating regions, helping to promote the design and implementation of coherent policy actions across different sectors and levels of government (OECD, 2022[17]). Conducting strategic planning can serve to co-develop with all relevant stakeholders a consensus-based, long-term strategy that sets out a clear vision to be integrated into the objectives of all policies in multiple sectors. This can give direction to local governments, and it can help subnational governments anticipate, adapt, and respond to demographic changes in a more coherent and efficient way (OECD, 2021[18]). With sufficient and appropriate resources to undertake it, strategic planning can also help to allocate budgetary resources strategically, prioritising actions that contribute to achieving a long-term vision and aware that demographic trends may reduce the fiscal space over time. Fiscal strategic planning can also help restructuring expenditures and revenues to prevent future escalations in the debt burden.

Although there are several techniques to develop a strategy for depopulating areas, strategic foresight techniques can help identify the different opportunities and challenges that megatrends such as demographic change pose for the future development and well-being of a region (Box 4.1). Having an estimation of future population trends can assist authorities in shifting from growth-oriented planning to better adapt infrastructure systems for depopulation (Sutradhar, Spearing and Derrible, 2024[19]).

Box 4.1. Strategic foresight for depopulating regions

Strategic foresight refers to the structured and systematic method to explore different plausible futures, the opportunities and challenges they could present, and using those ideas to make better decisions and act now. Foresight can support government policy making by (1) better anticipating changes that could emerge in the future, (2) revealing options for policy experimentation with innovative approaches, and (3) stress-testing existing or proposed strategies and policies.

In depopulating regions, strategic foresight can help governments better anticipate the socio-economic shifts related to population decline, such as changes in workforce dynamics, shifts in consumer behaviour, as well as evolving service and infrastructure needs. It can also be used to examine the consequences of demographic trends on subnational budgets, helping policy makers understand the evolution of their fiscal space in different demographic scenarios and assisting in the design of actions to adapt fiscal frameworks. Strategic foresight can also be used to identify innovative policy interventions, from reimagining service delivery models to fostering economic diversification and resilience. It can also support in testing current strategies against a spectrum of potential demographic futures, revealing vulnerabilities and prompting adjustments to enhance strategies to adapt to shrinkage.

Source: (OECD, 2023[20])

Strategic planning in the field of demographic change often also happens at the national level, resulting in the production of national integrated strategies. These strategies usually take the form of comprehensive plans that seek to address the effects of a megatrend such as climate change, poverty, inequality or demographic change. If undertaken in close co-operation with subnational governments and other stakeholders, these strategies can contribute to co-ordinating policies across various sectors and levels of government and ensure that they are properly and strategically funded. This is the case of Spain's national integrated strategy *España 2050*, which examines the effects of the 10 key megatrends that the country

will face by 2050 and proposes several measures to respond to them in a way that preserves the well-being of its citizens (Ministerio de la Presidencia, 2021[21]). As a result, strategic planning can produce efficiency gains by avoiding policy incoherences or duplications.

Harnessing vertical and horizontal co-ordination to adapt to shrinkage

OECD countries have experienced a general trend towards greater decentralisation over the past five decades (OECD, 2019[22]). As a result, subnational governments have acquired essential responsibilities and resources to fulfil them, sometimes asymmetrically among regions within the same country (Allain-Dupré, Chatry and Moisio, 2020[23]). As demographic shrinking gradually affects regions and municipalities in charge of delivering essential public services and infrastructure, efficiency rates and citizen engagement may decrease.

As regions and municipalities experience shrinking, effective co-ordination mechanisms – both vertical and horizontal – become key to ensure the efficient delivery of services and infrastructure. To address the multi-dimensional challenges of shrinking, vertical co-ordination (i.e. among levels of government) helps to identify and prioritise investment opportunities, strategically co-ordinate investments, and ensure that adequate resources and capacity are in place to undertake investments. This can include the co-ordination of capital budgeting across investment sectors discussed and reviewed by different line ministries, regions and municipalities. Another vertical co-ordination mechanism is spatial planning across different levels of government, particularly when it is informed by a strategic vision that accounts for all infrastructure delivered at the national, subnational governments and the private sector. In sum, vertical co-ordination can result in an integration of policies from the national (or even supranational in the case of EU Member states) to the local levels of government, wherein the capacity of subnational governments is critical for them to be meaningful partners (OECD, 2020[24]). This can prevent duplication and promote coherence across sectoral policies (e.g. education, healthcare, public transport, utility management). Vertical co-ordination can take the shape of informal meetings among the relevant stakeholders, or they can be institutionalised in the form of conferences, platforms, or consultation committees, such as the Dutch Multi-Year Programme for Infrastructure, Spatial Planning and Transport, which acts as a Consultation Committee that discusses projects involving the physical domain and involves different ministries and regional actors to participate or launch MIRT programmes (OECD, 2023[25]).

In turn, horizontal co-ordination (i.e. among units within a level of government) is particularly important in depopulating areas to make the most of economies of scale. With inter-regional or inter-municipal co-ordination, subnational governments may be able to access or provide goods and services more quickly and at a lower cost (OECD, 2019[22]; OECD, 2021[26]). The benefits of horizontal co-ordination can lead to the integration of policies through management arrangements and development plans among different sectors, services, and agencies within the regional or municipal level of government (OECD, 2021[27]).

Many OECD countries, especially those experiencing demographic decline, actively promote voluntary horizontal co-ordination, including rural-urban linkages. France, for instance, rewards municipalities that choose to co-operate with special grants and a favourable tax environment. Similarly, countries such as Estonia and Norway provide additional funding for joint public investments. Slovenia has seen inter-municipal co-operation increase substantially since 2005, when it introduced a financial incentive that covered 50% of the staff expenses for joint management bodies. In general, these financial incentives can mitigate the political costs associated with co-operation and ensuring the sustainability of partnerships or agreements, which often hinge on the political commitment of the regional or local government (OECD, 2023[28]). Partnership development models are also a major part of the European Commission's regional development policy, particularly in rural areas, through the Community Led Local Development (CLLD), LEADER Local Actions Groups (LAG) and the Integrated Territorial Investments (ITI), among others.

Innovating governance structures and fiscal instruments

Regions facing demographic shrinkage are confronted with issues of size and scale. The challenge of maintaining essential services and infrastructure such as healthcare, education, and public transportation becomes more pronounced as the cost per capita rises due to declining population densities or increasing labour costs, a situation that affects regions to different extents.

Modifying the territorial boundaries of a region can serve as a tool to gain scale, although the effects on efficiency remain ambiguous and vary across countries (Tavares, 2018[3]). Amalgamating two or more regions or municipalities, thereby giving birth to a new politico-administrative, increases size and scale and can potentially enhance efficiency, but only under specific circumstances. For example, in Sweden the 1952 amalgamation reform triggered lower expenditure growth only in the case of the merger of highly fragmented municipalities of equal size but not when a large municipality amalgamated with a smaller one. On the contrary, municipal revenue growth was registered only in those municipalities that were small (2 000 inhabitants or fewer) prior to the reform (Hanes, 2015[29]). In Portugal, a reform diminishing the number of parishes led to efficiency gains in approximately 10% of municipalities but overall, the structural reform did not improve local spending efficiency in most parts of the country (Afonso and Venâncio, 2020[30]).

Amassing scale and using it to a region's advantage can also be achieved by operating at the functional scale rather than solely within the administrative boundaries of a region or municipality. This can offer several benefits. First, it can promote efficiency both by allowing for a more targeted allocation of resources based on the actual needs and patterns of the population and by encouraging the concentration of services and infrastructure in a strategic location accessible to most target groups. Furthermore, operating at a functional scale encourages joint planning and collaborative decision-making processes with multiple municipalities or other administrative units through joint planning agreements, commissions, or organisations (OECD, 2024[31]). Lastly, by considering functional areas that reflect population distribution and mobility patterns, regions can ensure that services and infrastructure are accessible to all residents, regardless of their location within administrative boundaries, thereby promoting social inclusion and reducing disparities in access to essential services. An example of operating at a different functional scale is provided by Castilla y León (Spain). The region created 13 "Service and Spatial Planning Units" with the objective of encouraging co-operation in service provision. These units can lead to the creation of *mancomunidades*, an inter-municipal body that can be charged with co-ordinating the task of providing specific services across municipalities without constituting a new independent political entity (Junta de Castilla y León, 2023[32]; Junta de Castilla y León, 2018[33]).

New governance arrangements can be complemented with innovative fiscal instruments or adjustments to existing ones. Inter-governmental grants, in particular equalisation systems, can be designed in a way that considers both the population change and the effect of shrinkage on demographic composition. For instance, some countries, such as Sweden, have included a special indicator into expenditure equalisation formulas to consider and adapt to demographic trends (Värja, 2023[34]). Others, such as Korea, have established new funds (e.g. Local Revitalisation Fund) in an attempt to contribute to the adaptation efforts of depopulating regions. Other transfer systems take into account the age structure – for instance, by providing higher block grants for healthcare or social services to municipalities with a larger proportion of elderly residents. The more the grant system considers circumstantial and service need factors, the better it alleviates the impact of a declining population. However, equalisation transfers should not replace local or regional responsibility for building local capacities, forming strategies to adapt to shrinkage and improving inter-governmental co-operation (Wirth et al., 2016[35]). Sufficient resources should be allocated to fiscal strategic planning in order to manage the increasing financial burden. This is one of the priorities and recommendations by the federal government in Switzerland to cantons such as Grisons, whose age-related expenditure as a proportion of cantonal GDP is expected to increase substantially by 2050 (Colombier, 2023[36]).

Facilitating stakeholder engagement at all stages of policy-making

Engaging citizens in the response to demographic shrinking is as crucial as it is complicated in depopulating regions. This is due to, on one hand, the relative weakness of actors such as the government, business, or civil society organisations and, on the other hand, a less dynamic population, often with youth outmigration. Moreover, weak communication strategies by the governments or perceptions of participatory activities as a tick-the-box exercise also prevents the creation of a channel through which citizens and policy makers can establish a shared vision and co-create initiatives for service and infrastructure provision. As a result, demographic shrinking can create a void in regional and local governance and may lead to an erosion of shared identity within the community (Haase et al., 2012[37]; Syssner and Siebert, 2020[38]).

Far from being a burden for decision makers, stakeholder engagement can provide solutions in contexts of shrinkage. Governments and citizens have complementary resources which can jointly result in more effective and legitimate strategies to adapt to shrinkage. Consulting citizens can provide important knowledge on local problems and needs. For instance, by engaging with its citizens, the Government of Zeeland (Netherlands) found out that public transport was used almost exclusively during peak hours only. This prompted the government into promoting car pooling instead of expanding public transport lines – a much costlier alternative (Haase et al., 2012[37]). Furthermore, by drawing citizens into the policy process or the delivery of public services, citizens can be presented with more information related to the challenges policy makers may face, resulting in a better understanding of policy decisions and potentially an increased trust in government (OECD, 2022[39]). Finally, other benefits may stem from the promotion of a sense of community through the participation in these initiatives and increased social cohesion, potentially preventing some from out-migrating. Therefore, for these benefits to materialise, it is important that the participation of a wide variety of actors is promoted and expected in governmental strategies. This is the case of Italy's Strategy for Inner Areas, an integrated strategy that involves governments, inter-municipal entities as well as citizens, civil society organisations and the private sector to "co-project" or actively participate in all phases of the strategy (Lucatelli, 2023[40]).

Stakeholder engagement can take a variety of shapes. One of the most well-known forms of stakeholder engagement is participatory budgeting. Citizens are generally asked to rank several policy areas or policies themselves in order of preference. The most voted areas are then allocated a line of budget to implement a project. Decision makers can also use these exercises inversely to ask which spending areas should be cut, as was the case in 2010 in Solingen (Cabannes and Lipietz, 2015[41]). New methods of collective ownership are another form of stakeholder engagement that can be found mostly in rural areas. In the United Kingdom, there are now over 250 community-owned village shops (Perry and Alcock, 2010[42]). Germany has created voluntary fire brigades and community-owned buses. With public transport in the German periphery almost gone, people in remote areas have created the "BürgerBus" system, which picks up the old-age population upon request and takes them on demand to a nearby city where they can access the services they may need (Haase et al., 2012[37]). Lastly, the LEADER approach, which aims to help communities in rural areas adapt to the changes affecting them – including depopulation, seeks to facilitate local engagement and empowerment through the Local Action Groups.

Acknowledging the critical role of stakeholder engagement, it is equally important to manage expectations, especially in regions or municipalities grappling with shrinkage. To maintain engagement and progressively enhance participation quality, governments should foster a culture of transparency about these limitations. Clearly communicating the process for considering community input and the realistic timelines for action can help align expectations. Additionally, highlighting incremental successes can keep the community engaged and informed, reinforcing the value of their continued involvement despite the challenges.

Training and retaining staff with the needed skills

Having sufficient and appropriate resources is key to achieve an effective multi-level governance system. Yet, depopulating regions face two main challenges in terms of staff provision. The first one is the relatively smaller pool of people available and willing to work within the region. This translates into a heavy workload for the remaining civil servants, which may encourage them to leave the region or the public sector. The second issue concerns the type of skills that the available pool of workers has, which may not match with the needs of these regions. The diversity of skills needed in government (from strategic planning, to budgeting, data management or procurement) makes it difficult to fill all vacancies.

As a result, strategies to respond and adapt to shrinkage should include measures to retain and train staff within the regional government administration, in co-operation with other levels of governance. Retaining workers implies boosting the attractiveness of a particular region. For example, affordable housing may be abundant in depopulating regions and green spaces may be bigger and pristine. It is crucial for subnational governments to preserve their green areas, promote cultural amenities and guarantee internet connectivity as this has been shown to drive talent attraction to regions across OECD countries (OECD, 2023[43]).

Furthermore, regional administrations should contribute to enhancing the skillsets of their in-house staff beyond their initial job descriptions. This can be achieved through targeted training programmes aimed at broadening employee expertise in diverse fields. Collaborative efforts with the national government and neighbouring regions can facilitate cost-effective joint training initiatives. For example, the region of Taurage (Lithuania) received substantial support, amounting to EUR 20 million over three years, to facilitate the development of a green public transport system. Part of those funds was dedicated to building the capacities of local governments to collaborate efficiently among each other rather than compete (Česonis, 2023[44]). Additionally, fostering internal mobility within the administration, including temporary assignments to different departments or levels of government, presents opportunities for skill development. It is imperative, however, to ensure that the investment in training yields lasting benefits by retaining skilled personnel within the region post-training.

Navigating service and infrastructure delivery in depopulating regions

Innovating service delivery in depopulating regions: collaboration, integration and technology to the multi-level governance frameworks and subnational finances may encourage governments to rethink how they can deliver essential services and infrastructure in depopulating areas in the most effective and efficient way. In this regard, there are three broad mechanisms through which governments can ensure service and infrastructure provision: (1) inter-regional or inter-municipal co-operation, (2) concentration of multi-service infrastructure, and (3) leveraging technology for mobile or on-demand services.

Inter-regional and inter-municipal co-operation is a valuable tool to address challenges faced by depopulating regions. By collaborating across jurisdictions, regional and local governments can pool resources and expertise to optimise the delivery of public services and infrastructure. Shared services agreements can enable regions and municipalities to maintain essential facilities such as schools, hospitals and employment centres more efficiently, mitigating the need for closures that exacerbate population decline. For instance, the municipalities of Lolland and Guldborgsund in Denmark have joined forces to deliver preparatory basic education and training in the Region of Zealand (Nordregio, 2021[45]). A similar case is that of the municipalities of the Päijat-Häme county (Finland), where its regional development unit has created a network of municipal educational directors which has set up a network-based comprehensive school system that aims to offer high-quality teaching services online to all children irrespective of their place of residence (Carlson, 2023[46]). In Iceland's Westfjords, for instance, various municipalities unite efforts to deliver essential services such as healthcare, public transport, and cultural activities. To ensure

accessibility, they have undertaken joint construction projects, such as the construction of the Bolungarvíkurgöng tunnel in Northern Westfjords, to ensure safe passage on roads (Nordregio, 2021[45]).

Co-operation can also take place across national borders. This is the case of six municipalities within the regions of Alentejo, Centro (Portugal) and Extremadura (Spain), which established a network through which they can share resources, experiences and strategies, with the ultimate goal of structuring catchment areas around these villages to offer complementary services (Simão, 2023[47]). Another example is the European Groupings of Territorial Co-operation (EGTC) of Hospital de la Cerdanya. The hospital, which opened in September 2014, is a successful example of the joint management of a health facility by two public health systems in neighbouring countries, located in a mountainous region characterised by remoteness and lack of basic services and infrastructures (ESPON, 2018[48]).

Another strategy to bolster the efficiency of service delivery involves consolidating multiple services within a shared area or facility. This can help manage the operating costs of infrastructure, which are inextricably intertwined with the scale of service provision. Analysing the drivers of major service and infrastructure costs and how service demands are distributed in the region can help identify optimal locations where services are easily accessed by a majority of individuals and help to determine what policy actions could provide value for money. This can lead to repurposing existing infrastructure or, where possible, transforming it into multiple-use facilities where different services are concentrated. A collaborative effort between the Bergö Island Council and the municipality of Malax in Finland exemplifies this approach through the establishment of a multi-functional service hub, Fyrgården (Nordregio, 2021[45]). This hub integrates supportive housing units tailored for the old-age population with an array of nearby amenities, including a public library and a local healthcare station operational once a week. In Groningen (Netherlands), multi-functional community centres have been set up as part of its Depopulation Agenda 2020-30, combining healthcare services with other commercial activities (van Wingerden and Sibbes, 2023[49]). In Italy, the POLIS project is currently repurposing the physical infrastructure of Poste Italiane's postal services in depopulating areas, transforming its current offices into one-stop shops for postal and public administrative services as well as banking, energy solutions and even co-working space services, thereby reducing costs (CEB, 2023[50]).

Finally, technological innovation in service provision stands as a catalyst for efficiency gains and enhanced accessibility. The integration of mobile and on-demand services efficiently caters to the punctual needs of residents, eliminating the necessity for a fixed facility dedicated solely to those services. For example, the Fyrgården hub mentioned earlier offers adaptable, on-demand services such as mobile hairdressing and specialised medical care visits. Similarly, in France, the *bébé bus* serves as a mobile drop-in daycare centre, catering to the sporadic demands of working parents, while on-demand transportation and meal delivery services have been set up for the elderly (Intercommunalités de France, 2023[51]).

Although one of the three main mechanisms through which governments can provide services in depopulating areas may be prevalent, all of them can co-exist. Municipalities can co-operate precisely to consolidate services within an area, each covering a part of the costs. Moreover, the testing and establishment of more innovative solutions for service delivery can be undertaken by a group of regions or municipalities, and this can take place also across national borders. An example of this is the inter-regional co-operation between the Swedish region of Jämtland Härjedalen and the Norwegian county of Trøndelag, through which the VälTel' Mixed Zone for Welfare Technology TestLab' was implemented. This project created a cross-border innovation mixed zone that promoted research for developing, testing, and implementing welfare technology solutions, such as mobile health solutions, digitalisation of homes, and emergency support systems (Nordregio, 2021[45]).

References

Afonso, A. and A. Venâncio (2020), "Local territorial reform and regional spending efficiency", *Local Government Studies*, Vol. 46/6, pp. 888-910, https://doi.org/10.1080/03003930.2019.1690995. [30]

Agencia Tributaria (2023), *Estadística de IRPF por municipios y tramos de BI 2013-2021*, https://sede.agenciatributaria.gob.es/Sede/datosabiertos/catalogo/hacienda/Estadistica_de_los_declarantes_del_IRPF_por_municipios.shtml. [8]

Allain-Dupré, D., I. Chatry and A. Moisio (2020), *Asymmetric decentralisation: trends, challenges and policy implications*, OECD. [23]

Cabannes, Y. and B. Lipietz (2015), "The democratic contribution of participatory budgeting", *Working Paper Series, Department of International Development, London School of Economics and Political Science (LSE)*, https://www.econstor.eu/handle/10419/224794. [41]

Carbonaro, G. et al. (2018), "Demographic Decline, Population Aging, and Modern Financial Approaches to Urban Policy", *International Regional Science Review*, Vol. 41/2, pp. 210-232, https://doi.org/10.1177/0160017616675916. [15]

Carlson, A. (2023), *Presentation at the First Peer-to-Peer Knowledge Exchange Event of the OECD-DG REGIO project "Shrinking Smartly and Sustainably"*. [46]

CEB (2023), *Presentation at the First Peer-to-Peer Knowledge Exchange Event of the OECD-DG REGIO project "Shrinking Smartly and Sustainably"*. [50]

Česonis, G. (2023), *Presentation at the First Peer-to-Peer Knowledge Exchange Event of the OECD-DG REGIO project "Shrinking Smartly and Sustainably"*. [44]

Collette, M. (2023), *Presentation at the First Peer-to-Peer Knowledge Exchange Event of the OECD-DG REGIO project "Shrinking Smartly and Sustainably"*. [14]

Colombier, C. (2023), *Presentation at the First Peer-to-Peer Knowledge Exchange Event of the OECD-DG REGIO project "Shrinking Smartly and Sustainably"*. [36]

ESFRI (2019), *Guidelines on Cost Estimation of Research Infrastructures*, https://www.esfri.eu/sites/default/files/StR-ESFRI2_STUDY_RIs_COST_ESTIMATION_0.pdf. [12]

ESPON (2018), *Fighting rural depopulation in Southern Europe*, https://www.espon.eu/sites/default/files/attachments/af-espon_spain_02052018-en.pdf. [48]

European Commission (2023), *The impact of demographic change in a changing environment*, https://commission.europa.eu/system/files/2023-01/the_impact_of_demographic_change_in_a_changing_environment_2023.PDF. [7]

Fadic, M. et al. (2019), "Classifying small (TL3) regions based on metropolitan population, low density and remoteness", *OECD Regional Development Working Papers*, No. 2019/06, OECD Publishing, Paris, https://doi.org/10.1787/b902cc00-en. [52]

Haase, A. et al. (2012), *Shrinking areas: front-runners in innovative citizen participation*, European Urban Knowledge Network, The Hague. [37]

Hanes, N. (2015), "Amalgamation Impacts on Local Public Expenditures in Sweden", *Local Government Studies*, Vol. 41/1, pp. 63-77, https://doi.org/10.1080/03003930.2013.869496. [29]

Hortas-Rico, M. and A. Solé-Ollé (2010), "Does urban sprawl increase the costs of providing local public services? Evidence from Spanish municipalities", *Urban Studies*, Vol. 47/7, pp. 1513-1540, https://doi.org/10.1177/0042098009353620. [10]

Intercommunalités de France (2023), *Presentation at the First Peer-to-Peer Knowledge Exchange Event of the OECD-DG REGIO project "Shrinking Smartly and Sustainably"*. [51]

ISO (2017), *ISO 15686-5:2017(en): Buildings and constructed assets — Service life planning — Part 5: Life-cycle costing*, https://www.iso.org/obp/ui/#iso:std:iso:15686:-5:ed-2:v1:en (accessed on 20 March 2024). [13]

Junta de Castilla y León (2023), *Presentation at the First Peer-to-Peer Knowledge Exchange Event of the OECD-DG REGIO project "Shrinking Smartly and Sustainably"*. [32]

Junta de Castilla y León (2018), *Mapas AFES*, https://www.jcyl.es/web/es/administracionpublica/ordenacion-territorio/mapas-areas-funcionales-estables.html (accessed on 19 March 2024). [33]

L. Dijkstra; H. Poelman; P. Veneri (2019), "The EU-OECD definition of a functional urban area", *OECD Regional Development Working Papers*, No. 2019/11, OECD , Paris. [53]

Lucatelli, S. (2023), *Presentation at the First Peer-to-Peer Knowledge Exchange Event of the OECD-DG REGIO project "Shrinking Smartly and Sustainably"*. [40]

Ministerio de la Presidencia (2021), *España 2050: Fundamentos y propuestas para una estrategia nacional de largo plazo*, https://www.lamoncloa.gob.es/presidente/actividades/Documents/2021/200521-Estrategia_Espana_2050.pdf. [21]

Nordregio (2021), *Public service delivery in the Nordics: An exercise in collaborative governance*, https://pub.nordregio.org/r-2021-4-public-service-delivery-in-the-nordics/public-service-delivery-in-the-nordics.pdf. [45]

OECD (2024), *OECD Territorial Reviews: Brussels-Capital Region, Belgium*, OECD Territorial Reviews, OECD Publishing, Paris, https://doi.org/10.1787/0552847b-en. [31]

OECD (2024), *Regional Government Finance and Investment - Disaggregated*, https://data-explorer.oecd.org/vis?fs%5b0%5d=Topic%2C1%7CRegions%2C%20cities%20and%20local%20areas%23GEO%23%7CSubnational%20government%20finance%20and%20employment%23GEO_SNG%23&pg=0&fc=Topic&bp=true&snb=4&df%5bds%5d=dsDisseminateFinalDMZ&df%5bid%5d=DSD_SN. [9]

OECD (2023), *Enhancing Strategic Planning and Innovation Services: Supporting Romanian Regional Development Agencies*, OECD Regional Development Studies, OECD Publishing, Paris, https://doi.org/10.1787/8d80ef62-en. [16]

OECD (2023), *OECD Public Governance Reviews: Czech Republic: Towards a More Modern and Effective Public Administration*, OECD Public Governance Reviews, OECD Publishing, Paris, https://doi.org/10.1787/41fd9e5c-en. [28]

OECD (2023), *OECD Regional Outlook 2023: The Longstanding Geography of Inequalities*, OECD Publishing, Paris, https://doi.org/10.1787/92cd40a0-en. [20]

OECD (2023), *Public Investment in Bulgaria: Planning and Delivering Infrastructure*, OECD Public Governance Reviews, OECD Publishing, Paris, https://doi.org/10.1787/b73ef3b4-en. [25]

OECD (2023), *Rethinking Regional Attractiveness in the New Global Environment*, OECD Regional Development Studies, OECD Publishing, Paris, https://doi.org/10.1787/a9448db4-en. [43]

OECD (2022), *Building Trust to Reinforce Democracy: Main Findings from the 2021 OECD Survey on Drivers of Trust in Public Institutions*, Building Trust in Public Institutions, OECD Publishing, Paris, https://doi.org/10.1787/b407f99c-en. [39]

OECD (2022), "G20-OECD Policy Toolkit to Mobilise Funding and Financing for Inclusive and Quality Infrastructure Investment in Regions and Cities". [17]

OECD (2021), *Better Governance, Planning and Services in Local Self-Governments in Poland*, OECD Publishing, Paris, https://doi.org/10.1787/550c3ff5-en. [18]

OECD (2021), *Decentralisation and Regionalisation in Bulgaria: Towards Balanced Regional Development*, OECD Publishing, Paris. [27]

OECD (2021), *Delivering Quality Education and Health Care to All: Preparing Regions for Demographic Change*, OECD Rural Studies, OECD Publishing, Paris, https://doi.org/10.1787/83025c02-en. [26]

OECD (2020), *Rural Well-being : Geography of Opportunities*, OECD Rural Studies, OECD Publishing, Paris, https://doi.org/10.1787/d25cef80-en. [24]

OECD (2019), *Making Decentralisation Work: A Handbook for Policy-Makers*, OECD Multi-level Governance Studies, OECD Publishing, Paris, https://doi.org/10.1787/g2g9faa7-en. [22]

OECD (forthcoming), *Indicators on multi-level governance and subnational finance relevant to depopulation and shrinkage*. [2]

OECD (forthcoming), *Municipal Finance Database*. [1]

OECD/UCLG (2022), *2022 Report of the World Observatory on Subnational Government Finance and Investment - Key Findings*, OECD/UCLG. [4]

Perry, M. and J. Alcock (2010), "Community owned village shops - a better form of business.", *Journal of Co-operative Studies*, Vol. 43/2, pp. 37-45, http://www.futuresdiamond.com/casi2020/app/web1/files/download/587_s5-perryalcock-129.pdf. [42]

Ruud, I. (2023), *Presentation at the First Peer-to-Peer Knowledge Exchange Event of the OECD-DG REGIO project "Shrinking Smartly and Sustainably"*. [5]

Simão, R. (2023), *Presentation at the First Peer-to-Peer Knowledge Exchange Event of the OECD-DG REGIO project "Shrinking Smartly and Sustainably"*. [47]

Sotkanet (2021), *Operating net expenditure of the municipal health care (incl. environmental health care), euro per capita (up to 2020) (ind. 1291)*, https://sotkanet.fi/sotkanet/en/haku?indicator=szYstLDWNTTVt9Y1LrQ2TM4GcpJzrI2LQfx4QwA=&region=VVC7CgMxDPujgB_hOPwdXW7xUOja_99qS7kjJSA7kuLYDh2a4ho6JNXi3SGOQg_rXIwxTmDbLOaf7kOK147pspziMkX7gDeGsoO8P1zISr7fOn-qaqdGGWwa-a2KU9gerbKMDt7YyoEpiLTWRCXW8x6onXt7n8a5. [11]

Sutradhar, U., L. Spearing and S. Derrible (2024), "Depopulation and associated challenges for US cities by 2100", *Nature Cities*, Vol. 1, pp. 51-61, https://doi.org/10.1038/s44284-023-00011-7. [19]

Syssner, J. and C. Siebert (2020), "Local governments and the communication of demographic decline in Sweden and Germany: who, what and why?", *Ager. Revista de Estudios sobre Despoblación y Desarrollo Rural*, Vol. 29, pp. 79-105, https://doi.org/10.4422/ager.2020.01. [38]

Tavares, A. (2018), "Municipal amalgamations and their effects: A literature review", *Miscellanea Geographica*, Vol. 22/1, pp. 5-15, https://doi.org/10.2478/MGRSD-2018-0005. [3]

UN-Habitat (2021), *Applying the Degree of Urbanisation — A methodological manual to define cities, towns and rural areas for international comparisons*, UN-Habitat | European Union | FAO | OECD | The World Bank, https://unhabitat.org/applying-the-degree-of-urbanisation-a-methodological-manual-to-define-cities-towns-and-rural-areas. [54]

van Wingerden, A. and D. Sibbes (2023), *Presentation at the First Peer-to-Peer Knowledge Exchange Event of the OECD-DG REGIO project "Shrinking Smartly and Sustainably"*. [49]

Värja, E. (2023), *Presentation at the First Peer-to-Peer Knowledge Exchange Event of the OECD-DG REGIO project "Shrinking Smartly and Sustainably"*. [34]

Wirth, P. et al. (2016), "Peripheralisation of small towns in Germany and Japan – Dealing with economic decline and population loss", *Journal of Rural Studies*, Vol. 47, pp. 62-75, https://doi.org/10.1016/J.JRURSTUD.2016.07.021. [35]

Woodland, A. (2016), "Taxation, Pensions, and Demographic Change", *Handbook of the Economics of Population Aging*, Vol. 1, pp. 713-780, https://doi.org/10.1016/BS.HESPA.2016.09.005. [6]

Annex A. Territorial definitions and typologies

OECD subnational regions are classified into two scales: large regions, referred to as **Territorial Level 2 (TL2),** and small regions, referred to as **Territorial Level 3 (TL3).** Large regions generally refer to the first government level after the national or federal one. Small regions are contained within large regions and, in the case of European countries, correspond to the NUTS3 nomenclature. Small regions can be classified based on their accessibility to cities (large metropolitan regions, midsize metropolitan regions, regions near a midsize/large Functional Urban Area (FUA), regions near a small FUA, and remote regions) (Fadic et al., 2019[1]).

OECD metropolitan areas are defined based on **Functional Urban Areas (FUA)**. Developed in collaboration with the European Union and endorsed at the 2020 Statistical Commission of the United Nations, FUAs consist of densely populated cities together with their surrounding commuting zones. This definition looks at the full extent of cities' labour markets to capture the economic boundaries of cities. FUAs are generally the aggregation of local units (L. Dijkstra; H. Poelman; P. Veneri, 2019[2]).

The degree of urbanisation (DEGURBA) classifies local administrative units as cities, towns and suburbs or rural areas based on a combination of geographical contiguity and population density. It facilitates international statistical comparisons and it enables to classify the whole territory of a country along an urban-rural continuum (UN-Habitat, 2021[3]).

In the Degree of Urbanisation definition, settlements are identified from clusters of adjacent 1 km^2 grid cells with medium or high population density. Such clusters meet the criteria for settlements if their total population is also above a certain threshold (e.g. 500 persons for a village). The Degree of Urbanisation Levels 1 and 2 both define cities, but the Level 2 definition helps distinguish towns and villages – which are settlements – from suburbs and dispersed rural areas, which are not settlements.

Table A.1. Degree of Urbanisation (DoU) definitions

DoU Level 1	DoU Level 2	Settlement?	Minimum density in grid cells (per km^2)	Population threshold
City	City	Yes	1 500	50 000
Town or semi-dense area	Town	Yes	300	5 000
	Suburb or peri-urban	No	300	n/a
Rural area	Village	Yes	300	500
	Dispersed rural area	No	n/a	n/a
	Mostly un-inhabited area	No	n/a	n/a

References

Fadic, M. et al. (2019), "Classifying small (TL3) regions based on metropolitan population, low density and remoteness", *OECD Regional Development Working Papers*, No. 2019/06, OECD Publishing, Paris, https://doi.org/10.1787/b902cc00-en. [1]

L. Dijkstra; H. Poelman; P. Veneri (2019), "The EU-OECD definition of a functional urban area", *OECD Regional Development Working Papers*, No. 2019/11, OECD , Paris. [2]

UN-Habitat (2021), *Applying the Degree of Urbanisation — A methodological manual to define cities, towns and rural areas for international comparisons*, UN-Habitat | European Union | FAO | OECD | The World Bank, https://unhabitat.org/applying-the-degree-of-urbanisation-a-methodological-manual-to-define-cities-towns-and-rural-areas. [3]

Annex B. Geospatial data available for land use and infrastructure analysis

Table B.1. Housing data

Indicators	Description	Data source	Notes
Housing quality	Average number of rooms per inhabitant (ratio)	OECD Regional Statistics > Regional social and environmental indicators > Housing indicators	TL2, 2000~2022 *The dwelling's floor area is another proxy for quality
Share of housing cost	Share of housing cost (in % of household disposable income)	OECD Regional Statistics > Regional social and environmental indicators > Housing indicators	TL2, 2000~2022 *Too many missing values
Average building height	Calculate average building heights at granular scale using height data for individual buildings (Bing Maps, Microsoft product)	https://github.com/microsoft/GlobalMLBuildingFootprints	*Could be useful as a measure of density. *Potential issues with using data from private sources
	Calculate average building heights at granular scale using average height and volume data at the grid level (100m2, 2018)	https://ghsl.jrc.ec.europa.eu/download.php?ds=builtH	*Aggregated to grid level, so less detailed than Bing data, but from public source (JRC)
Residential built-up area per capita	(Residential built-up area) / (total population)	https://ghsl.jrc.ec.europa.eu/download.php?ds=bu	*Could be interesting to measure residential built-up area changes vis-à-vis population changes. Could also work as an environment indicator
House prices, house price change	Percentage change of house prices on the same period of the previous year *House prices respond to demographic change, determine wealth of local populations and are typically important for subnational government revenue *"Relying on transacted prices (and the number of transactions) rather than rents or survey responses ensures that the data reflects long-term commitments of housing choices rather than transitory ones."	Available in OECD dotstat: Residential Property Prices Indices (RPPIs)	TL2 from 2018 Q1 to 2021 Q4 for 21 countries TL3 from 2018 Q4 to 2022 Q3 for 12 countries *RPPIs are index numbers measuring the rate at which the prices of residential properties (flats, detached houses, terraced houses, etc.) purchased by households are changing over time. Both new and existing dwellings are covered if available, independently of their final use and their previous owners. *Only market prices are considered. They include the price of the land on which residential buildings are located.
Housing vacancies	Percentage of vacant houses as a share of total housing stock *Use of granular geospatial population data and population change data, combined with residential building data, could provide an indication were housing is being abandoned.	https://ghsl.jrc.ec.europa.eu/download.php?ds=bu	*Data available at the national level only for a limited number of countries, but not comparable. Would be very interesting (and important) if we could estimate this at the subnational level, if possible.

Table B.2. Infrastructure data

Indicators	Description	Data source	Notes
Internet broadband access	Share of households with internet broadband access (in % of total households)	OECD Regional Statistics > Regional social and environmental indicators > Internet broadband access	TL2, 2000~2022 *We also have internet speed for regions, probably more pertinent.
	Share of households with internet broadband access	Eurostat > Science, technology, digital society > Digital economy and society > ICT usage in households and by individuals > Regional ICT statistics	NUTS1(&2), 2006~2021
Internet speed	Global fixed broadband and mobile (cellular) network performance	Speedtest by Ookla Global Fixed and Mobile Network Performance Maps – Registry of Open Data on AWS	zoom level 16 web mercator tiles (approximately 610.8 meters by 610.8 meters at the equator), quarterly updated
Network of public infrastructures	Network of public infrastructures and human settlements	https://ghsl.jrc.ec.europa.eu/download.php?ds=bu	
Access to infrastructure	Number of facilities reachable by mode of transport (car, bike, walk) within a specific amount of time	http://project-osrm.org/	*Using OpenStreetMap data, can calculate isochrones. *Also can obtain point data on facilities using OpenStreetMap, or can obtain them from statistical offices (if they have this data in GIS form)

Table B.3. Environment data

Indicators	Description	Data source	Notes
Air pollution	Air pollution, level of PM2.5 (average level in µg/m³ experienced by the population)	OECD Regional Statistics > Regional social and environmental indicators > Environmental indicators in regions	TL2, 2000~2022
Change in built-up area and built-up area per capita	Using GHSL data to calculate ourselves	https://ghsl.jrc.ec.europa.eu/download.php?ds=bu	*Would need to check comparability with the dotstat data that is provided by ENV if we were to calculate our own indicators
	available both in absolute terms and percent of total land area	Available in OECD dotstat	TL2, TL3 and FUA level 1975, 1990, 2000, 2014
GHG emissions	GHG emissions per capita by sector	EDGAR	Already available at NUTS2 level, more granular estimates possible.
Land cover and land use data	Artificial cover, tree cover, semi-vegetated land cover; land use for forest, agriculture, residential and commercial use, etc.	Available in OECD dotstat	*To identify inefficient land cover and land use trends.
	Land cover: tree; grassland; wetland; shrubland; sparse vegetation; cropland; artificial surfaces; bare area; inland water		TL2 and TL3 1992, 2004, 2015, 2018, 2019
	land use (in absolute terms and %): arable land and permanent crop; permanent meadows and pastures; forest; other areas		National level only, 2010-2021
Climate-related natural hazards	Temperature (1979 to present) *health, especially in the context of ageing	Copernicus Climate Data Store (CDS) ERA5 hourly data on single levels	All from the OECD Environment Working Papers No.201 'Monitoring exposure to climate-related hazards: Indicator methodology and key results' (p.15)
		Thermal comfort indices derived from ERA5 reanalysis ERA5-HEAT	
	Precipitation (1979 to present)	Copernicus CDS ERA5 hourly data on single levels	
	Drought (1950 to present)	Copernicus CDS ERA5 Land monthly averaged data	
	Wildfire (1997 to 2021) *impacts on infrastructure, including transport and energy infrastructure, livelihoods, homes	Global Fire Emissions database	

Indicators	Description	Data source	Notes
	Wind (1979 to present)	Cyclone wind hazard maps (GAR 2015)	
		Copernicus CDS ERA5 hourly data on single levels	
	River flooding (no time coverage)	JRC flood hazard maps at European and global scale	
	Coastal flooding (no time coverage)	Global coastal flood hazard maps	
Environmental hotspots (carbon sink potential; biodiversity)	Areas of global significance for conservation, biodiversity, and biomass carbon density distribution	https://explorer.naturemap.earth/methods	10km grid cell
	IIASA Global Hotspots Explorer *Water (water stress index, non-renewable groundwater stress index, drought intensity, peak flows risk, seasonality, inter-annual variability); *Energy (lack of access to clean cooking, heat event exposure, cooling demand, hydroclimate risk to power production); *Land (crop yield change, agricultural water stress index, habitat degradation, nitrogen leaching)	https://hotspots-explorer.org/news	2010, 2020, 2030, 2040, 2050, 2060, 2070, 2080, 2090, 2100 *Global Hotspots Explorer (hotspots-explorer.org) provides projections based on climate change (1.5, 2.0, 3.0 degrees Celsius) scenarios and socioeconomic (SSP1, SSP2, SSP3) scenarios
	Local vulnerability to environmental hazards, including from climate change	https://www.fao.org/faostat/en/#data/RL	National level only, 1961-2021
	Global Forest Resources Assessment 2020	https://fra-data.fao.org/assessments/fra/2020/	National level only, 1990-2020

Table B.4. Service facility data

Indicators	Description	Data source	Notes
Health care facilities	The number of active physicians for 1000 pop.	OECD Regional Statistics > Regional Social and Environmental indicators > Health access	TL2/TL3, 2008-2022
	The number of hospital beds for 1000 pop.		
	The number of hospital beds	https://ec.europa.eu/eurostat/databrowser/view/HLTH_RS_BDSRG/default/table?lang=en	NUTS2, 1993-2016
	Locations of hospitals, doctors, and pharmacies	OECD postgis database	*Using the points data we can calculate accessibility *We also have cinemas, retail shops, banks, and airports
Education facilities	Locations of schools and universities		
	Share of population 25 to 64 year-olds by educational attainment (Below upper secondary education; Upper secondary and post-secondary non-tertiary education; Short-cycle tertiary education; Bachelor or equivalent; Master or equivalent; Doctoral or equivalent)	OECD Regional Statistics > Regional Education > Educational attainment of the population, by age group	TL2 -2016-2022 *Educational attainment is defined as the highest grade completed within the most advanced level attended in the educational system of the country *We also have the same data for the population group of 25 to 34 year-olds
	Locations of kindergarten, Library, School, University, College	https://wiki.openstreetmap.org/wiki/Map_features	*Using the points data we can calculate accessibility *Getting data from national/regional statistics offices would be more desirable
Transport	Locations of bus station, EV charging stations, Gas/petrol/marine fuel station		
Financial service facilities	Locations of ATM, Bank		
Entertainment facilities	Locations of cinema, Theatre		
Emergency facilities	Locations of fire station, Police station, Ambulance station		

OECD Rural Studies

Shrinking Smartly and Sustainably

Strategies for Action

Many OECD countries are facing population decline and ageing, with these trends set to continue in the coming decades. However, these trends, and their effects, can differ markedly across space within countries. Urbanisation, for example, is increasing in most economies as people migrate from shrinking rural areas, yet even in urban areas, about one in five are also shrinking. These complexities pose challenges for policy makers at all levels of government, especially for depopulating places, where labour and skills shortages, lowering economies of scale for service provision, and eroding tax bases put increasing pressure on local development. Addressing these challenges requires a multi-level governance approach, looking across a wide range of policy areas, including the public finances, infrastructure, spatial planning, land use, social cohesion and service delivery. At the same time, policies should be tailored to the needs, challenges and opportunities of each region, combining effective adaptation strategies with efforts, including on attractiveness, to mitigate demographic decline. This report provides a comprehensive policy framework to support policy makers in responding to demographic change, helping them design and implement place-based strategies that foster resilience, inclusiveness and long-term sustainability.

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