

2 Adapting land use and spatial planning to shrinkage in Estonia

This chapter analyses the patterns of land use and the spatial planning framework of Estonia, identifying trends relevant to assessing the country's response to shrinkage. It also presents data supporting the argument for efficient land use and the curbing of sparse, outward development from an environmental and fiscal perspective. Finally, the chapter offers a range of policy responses aimed at addressing depopulation and shrinkage, with a focus on strengthening and streamlining the spatial planning framework at the regional level and better equipping local plans to deal with future demographic challenges.

Introduction

Regional disparities in demographic trends across Estonia illustrate the critical importance of place-based interventions. Between 2000 and 2017, the population increased only in the capital region around Tallinn. The population declined in all other counties. Even within declining counties, some municipalities close to urban centres grew while others declined rapidly. With projections suggesting further decline and spatial polarisation, rural and remote regions in particular will become even more vulnerable to the adverse effects of depopulation in the future. In Estonia, policies targeted at metropolitan areas such as Tallinn and Tartu must be devised differently from those that address rural and remote regions.¹ Among other problems, depopulation and ageing result in deteriorating tax bases, greater per capita costs in services and infrastructure provision, and lower productivity for these declining municipalities and regions (OECD, 2021^[1]).

A logical first step in addressing Estonia's challenges is through the lens of land use and spatial planning, as both are inherently place-based tools. Furthermore, land use planning policies have implications that reach far outside local areas and also across a multitude of policy sectors. For example, allowing less efficient use of land results in an increased need for automobile-related infrastructure, greatening the fiscal burden of local and central governments. Less efficient land use often leads to sprawling development, which results in greater air pollution, severe health effects, increased morbidity and increased costs related to service provision, all issues which transcend local borders (Künzli et al., 2000^[2]; OECD, 2018^[3]). Grounding policies to tackle depopulation and ageing within a land use and spatial planning framework allow various policies across sectors to be harmonised within a theme of coherent spatial development. In this way, decisions taken in different policy sectors are less prone to inefficiencies due to consequences that inadvertently result in contradicting spatial outcomes.

This chapter examines land use patterns along with Estonia's spatial planning framework and derives policy recommendations to prepare Estonia's regions for demographic change. It starts with an overview of the importance of spatial planning as opposed to simple land use regulation for a coherent response to depopulation and ageing. Subsequently, the chapter highlights characteristics of Estonia's land use, mainly using data on land cover and built-up area, grid-level population and cadastres. The chapter then moves on to look at the spatial planning system, with a focus on the regional (county) and local levels. Finally, it suggests policy recommendations that aim to counter the inherent problems observed in Estonia's land use patterns and spatial planning framework, providing justification for these recommendations using data and international examples across OECD countries.

Land use planning versus spatial planning

Governing the use of land is complex because it is both highly place-based and location independent. For example, environmental standards for land use are often set at the national level, independent of specific land plots, by defining protected areas and minimum distances between high-risk and residential areas. In many OECD countries, maximum floor area ratios are also defined at the national level. On the other hand, assigning uses to specific land plots is a decision that is mostly made by local governments (OECD, 2017^[4]). Due to this unique characteristic, land use planning requires considering the interests of multiple stakeholders across and within levels of government, and across public and private sectors. Hence the tendency is for land use planning to be fragmented, both vertically and horizontally. This makes compromises difficult when the interests of different stakeholders are at odds with each other. For example, in a given location, land owners may wish for greater building rights, municipalities might strive to limit these rights to ensure the overall quality of the built environment, while national environmental authorities may wish to restrict development altogether. The parties involved are not negotiating over the allocation of any one good: rather, they are pursuing different goods, with different rights, incentives and mandates.

In this context, it is important to make the distinction between *land use* and *spatial* planning. Here, land use planning describes the more detailed processes by which the exact ways in which land can be utilised are addressed. Spatial planning is a more generic term used to describe systems for managing spatial development (see Box 2.1). Land use planning instruments such as permitted uses, floor area ratios (FARs) and settlement areas lay the groundwork for which spatial planning objectives are realised. While many definitions exist, spatial planning is generally defined as a set of governance practices for developing and implementing strategies for territorial development and the future distribution of activities in space (CEC, 1997^[5]; Healey, 1997^[6]). Spatial planning seeks to achieve, among other goals: i) the co-ordination of the spatial dimensions and impacts of various sectoral policies; ii) the establishment of integrated and functional organisations of land uses; and iii) balance between the demand for socio-economic development and the need to protect the environment (Silva and Acheampong, 2015^[7]).

Accordingly, land use planning without spatial planning risks land use that is inconsistent with overarching policy objectives. Without an overall vision of balanced development across space, the varying interests of stakeholders are likely to result in contradicting regulations, leading to inefficiencies. Crucially, in the context of depopulation and ageing, it is important to devise policy interventions that align with one another in a spatial planning context, as demographic challenges touch upon a wide range of spatially interrelated policy sectors. For example, the development of public service centres to consolidate services in low-density areas should be done near transport corridors to maximise accessibility and with consideration for changing land use patterns due to depopulation. Consolidation of services based on spatial planning would lead to potential cost savings when such developments capitalise on synergies with nearby efforts. This also leads to an enhancement of the quality of the built environment. Without such considerations, these policy interventions are at risk of being implemented in a piecemeal fashion, with potentially contradictory consequences for land use. It is these types of relationships that spatial planning seeks to clarify and streamline within an overarching spatial framework.

Land use and settlement patterns in Estonia

Data

The main source of information used to analyse land use patterns is official OECD statistics derived from land cover data, taken from the Global Human Settlement multitemporal built-up grid (Florczyk et al., 2019^[8]). These data map the extent and change over time of built-up areas using satellite imagery. The definition for “built-up” is the presence of roofed structures, excluding other footprints such as paved surfaces and green spaces. Thus, statistics may be different from data that use alternative definitions. In addition, differing spatial resolutions of satellite images may also result in varying statistics across sources.

The use of satellite data has the advantage of allowing an objective overview and comparison of land use across the OECD. In addition, the data utilise a very high spatial resolution of 30 metres, which makes it suitable for studying changes in smaller, more remote areas. Nonetheless, the data come with limitations, such as not being able to distinguish between the types of land use and not containing information on land use density.

The chapter uses additional datasets to supplement the built-up data. Analysis of settlement patterns over time relies on grid-level population data (at a 1x1 km resolution) from the European Commission Joint Research Centre GEOSTAT (Batista e Silva, Dijkstra and Poelman, 2021^[9]), in conjunction with land use patterns. In addition, cadastre data on land and buildings, taken from the Estonian Topographic Database (Estonian Land Board, 2021^[10]) and the Cadastral Information System (Estonian Land Board, 2021^[11]), supplement land use data. Notably, while data sources vary, similar insights to those reported in the following sections have also been found in other instances (Sooväli-Sepping, 2020^[12]).

Box 2.1. Trends in spatial planning across OECD countries

There is growing recognition across OECD countries of the importance of moving from sectoral policies to integrated approaches across multiple policy areas. Spatial plans are following this trend: 76% and 69% of national and regional plans in OECD countries cover 3 or more policy fields – most commonly transport, environment and housing (OECD, 2017^[4]). Notably, however, spatial plans still struggle to integrate with policy sectors such as energy, education, retail and health (ESPON, 2018^[13]). In comparison, the national spatial plan of Estonia (National Spatial Plan Estonia 2030+) is unique in that it places a strong emphasis on energy infrastructure, along with dedicated plans for green networks and transportation. However, sectors such as education, health, environment and economic development are still not well integrated into the current national spatial plan, other than indirectly through the planning of “daily activity spaces”. The revision of the national plan in Estonia aims to partially solve these issues by explicitly addressing climate, built environment, heritage and spatial stratification (Estonian Ministry of Finance, 2020^[14]).

Importantly, integrated spatial planning not only concerns multi-sectoral planning but also integration across functionally connected territories. While commonly cited as an important planning approach across the OECD (OECD, 2015^[15]), it is much less often realised in practice. Dedicated metropolitan and inter-municipal plans are rare, with only 11 types of such plans identified in a survey of 32 OECD countries (OECD, 2017^[4]). Nonetheless, as the purview of spatial planning continues to expand, some countries have begun to arrange for planning within functional territorial boundaries, rather than administrative ones. For example, France has passed a legislature in 2015 that mandates regions to develop a comprehensive spatial strategy, the SRADDET (Schémas régionaux d’aménagement et de développement). The SRADDET defines medium- and long-term objectives relating to 11 compulsory areas, which include balance and equality of territories, infrastructure, housing, transport and climate change, among others (Government of France, 2016^[16]). The Austrian Conference on Spatial Planning (*Österreichische Raumordnungskonferenz*, ÖROK) is an example of a special body dedicated to co-ordinating spatial planning policies between the three levels of government in Austria. It not only prepares the Austrian Spatial Development Concept but also acts as the co-ordinating body for structural funds provided by the European Union (EU) (ÖROK, 2015^[17]).

There is no one-size-fits-all solution to effective spatial planning. This is because spatial planning requires correctly identifying the various spatial scales to which policy and decision-making relate. It also depends on governance structures and historical attitudes toward co-operation. Indeed, Table 2.1 shows that across European countries, there is no clear pattern to the rescaling of spatial planning competencies in recent years.

Table 2.1. Rescaling of competencies for spatial planning, 2000-16

	AUT	BEL	CHE	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GRC	HUN	IRL	ISL	ITA	LTU	LUX	LVA	NLD	NOR	POL	PRT	ROU	SWE	SVN	SVK
National						↑	↑		↓	↓		↑					↑	↑	↓	↑			↓				↓
Regional															↑								↓				
Local	↑	↓		↓	↓	↓			↓	↑	↓	↓	↓	↑		↓	↓	↑	↑	↑		↑		↑			

Note: Grey indicates no major change.

Source: Adapted from ESPON (2018), COMPASS - Comparative Analysis of Territorial Governance and Spatial Planning Systems in Europe.

The success of spatial planning depends in large part on the institutions that elaborate the plans, the capacity of municipalities and joint municipal associations to implement them, the fiscal incentives for or against co-operation, and concrete policy measures to carry out strategic objectives. Importantly, increased policy co-operation brought by spatial planning should not increase the complexity of the planning system nor reduce its flexibility. Instead, spatial planning should simplify the implementation process of local land use plans through a unified and guiding vision for spatial development.

Source: ESPON (2018^[13]), *COMPASS - Comparative Analysis of Territorial Governance and Spatial Planning Systems in Europe*; Government of France (2016^[16]), "Schémas régionaux d'aménagement et de développement", <https://www.cohesion-territoires.gouv.fr/schemas-regionaux-damenagement-et-de-developpement> (accessed on 12 September 2021); Estonian Ministry of Finance (2020^[14]), *Ülevaade üleriigilise planeeringu „Eesti 2030+“ ning maakonnaplaneeringute elluviimisest*, https://www.rahandusministeerium.ee/sites/default/files/Ruumiline_planeerimine/yrp_eesti_2030_ja_mp_ylevaade_2020.pdf (accessed on 2 December 2021); OECD (2015^[15]), *Governing the City*, <https://dx.doi.org/10.1787/9789264226500-en>; OECD (2017^[4]), *Land Use Planning Systems in the OECD: Country Fact Sheets*, <https://doi.org/10.1787/9789264268579-en>; ÖROK (2015^[17]), *Austrian Conference on Spatial Planning*, https://www.oerok.gv.at/fileadmin/user_upload/Bilder/1.OEROK/OEROK_Folder_EN.pdf (accessed on 8 September 2021).

Despite depopulation, the built-up area is growing

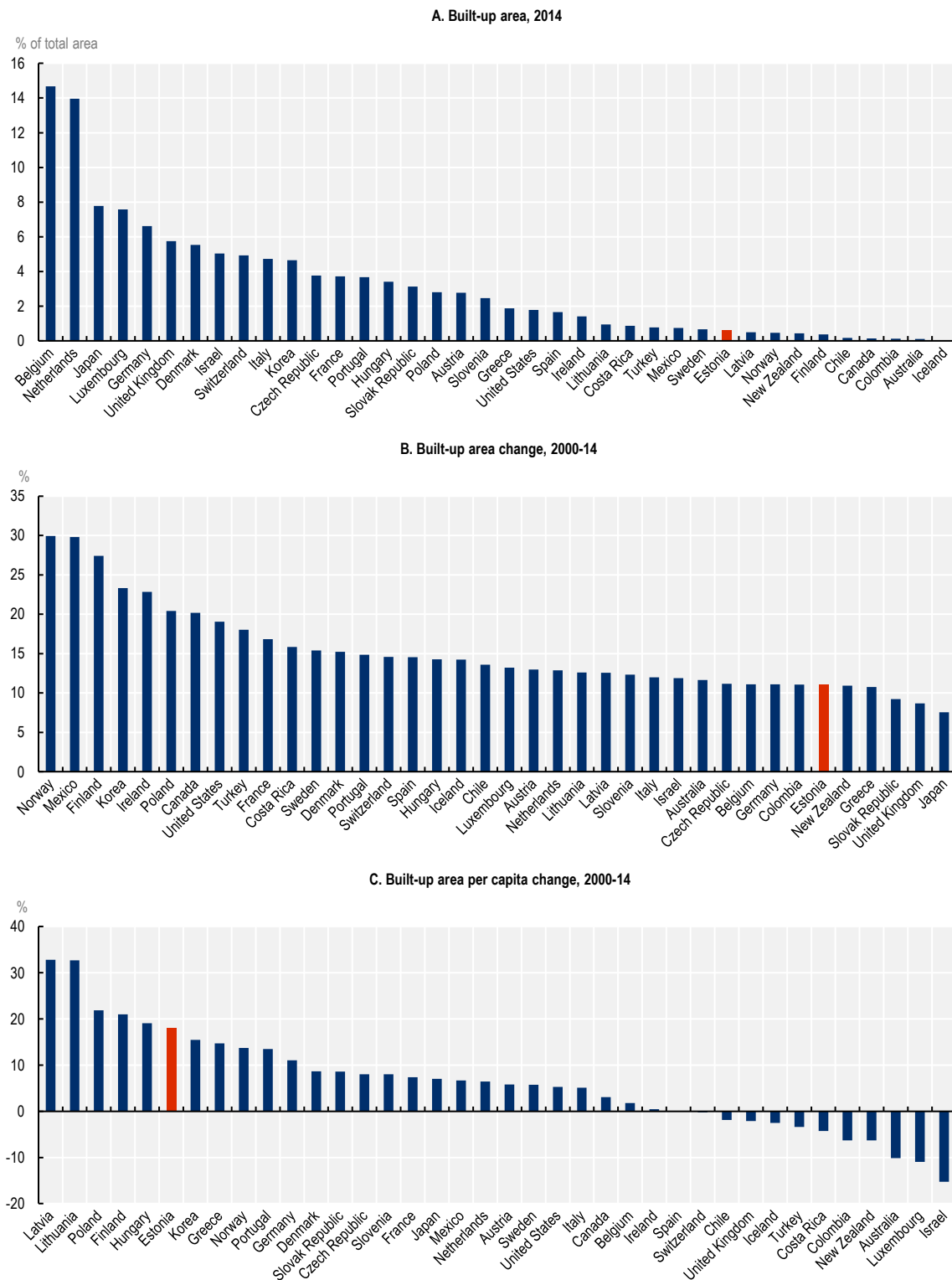
Estonia's total built-up area amounted to 257 km² in 2014, translating to 0.6% of its total land mass (Figure 2.1, Panel A). This percentage is roughly in line with other neighbouring countries such as Finland, Latvia and Lithuania. It is well below the OECD average. However, built-up area shares are highly dependent on the size of the country and its population. Indeed, Estonia is a sparsely populated country with a population density of 30.6 people per km² of land area, below the OECD average of 38.6 and ranking 30th out of the 38 OECD countries (OECD, 2021^[18]). It is this sparsity that accounts for Estonia's relatively low overall utilisation of its land.

More relevant to the question of land use patterns is the change in built-up area and built-up area per capita (Box 2.2). Over 2000-14, the total built-up area in Estonia increased by 25 km², representing an 11% increase and ranking Estonia 33rd out of the 38 OECD countries (Figure 2.1, Panel B). However, this increase came as Estonia's population decreased by almost 5%. This is contrary to other OECD countries where the population grew by 10% on average. Estonia saw an increase of 18% in built-up area per capita over the same period, ranking it 6th among OECD countries and well above the OECD average of 6% (Figure 2.1, Panel C).

An increase in built-up area per capita suggests decreasing efficiency in land use patterns. Most commonly, this can be attributed to urban in-migration and sprawl as cities grow outward to accommodate new residents. Only in very rare instances does once developed land return to an undeveloped state, resulting in abandoned (yet still built-up) land in rural areas. Indeed, for Estonia, Tallinn and Tartu experienced urban sprawl and spatial polarisation, as will be shown in the following sections. In addition, built-up areas also increased substantially in rural and remote regions. While overall levels of built-up area per capita are still comparatively low, the ongoing pattern of sparse development is concerning given Estonia's shrinking and ageing population. Such patterns reinforce difficulties in providing services and infrastructure to an ever-spread-out population, straining municipal and national fiscal resources.

Estonia's increase in built-up area per capita in recent years can also be attributed to a number of "soft" factors related to the political and policy landscape, such as the new liberal legislation of Estonia, strong private ownership rights, vested interests of real estate developers undermining public interests and the overall lack of emphasis on coherent spatial development (Roose et al., 2013^[19]; Samarüütel, Steen Selvig and Holt-Jensen, 2010^[20]). The following sections discuss these issues.

Figure 2.1. Built-up area across countries



Note: Built-up statistics are calculated using Florczyk et al. (2019).

Source: Florczyk, A. et al. (2019^[8]), GHSL Data Package 2019, EUR 29788 EN, Publications Office of the European Union, <http://dx.doi.org/10.2760/290498>; OECD (2021^[18]), OECD.Stat (database), <https://stats.oecd.org/> (accessed 8 July 2021).

Box 2.2. Understanding built-up area per capita

Built-up area per capita is defined as the total amount of built-up land in an area divided by the number of inhabitants. Importantly, a change in built-up area per capita can be caused by a change in the numerator (amount of built-up area) or by a change in the denominator (number of inhabitants). For example, in cases where the number of inhabitants decreased, the built-up area per capita can increase quickly even if the total amount of built-up area remained relatively unchanged or increased moderately. This is the case for countries such as Estonia, Latvia and Lithuania. Conversely, in cases where the number of inhabitants increased over time, the built-up area per capita can decrease even if the total amount of built-up area increased. This is the case for countries such as Israel and Luxembourg.

Another important aspect to consider is that, as always, growth rates are calculated from a baseline value. In our case, changes in built-up area per capita are calculated based on the amount of built-up area per capita in the year 2000. For example, consider the case where Country A had a baseline value of 100 m² of built-up area per capita, while Country B had a baseline value of 50. If both countries were to develop 75 m² of land per capita for each new resident, Country A would have a negative growth rate while Country B would have a positive growth rate, even though the land was developed at the same efficiency within the studied time period. The difference here is that Country A experienced an increase in land use efficiency while Country B experienced a decrease in efficiency.

Source: Adapted from OECD (2017^[21]), *The Governance of Land Use in OECD Countries*, <http://dx.doi.org/10.1787/9789264268609-en>.

Built-up area growth has little to do with the local demand for land

The increase in built-up area and built-up area per capita that Estonia is experiencing has little to do with local demand for land. Figure 2.2 shows that there is no correlation between the change in built-up area and the change in population over the period of 2000 to 2014 at the county level. Harju County, where the capital city of Tallinn is located, was the only county that experienced an increase in built-up area (roughly 10%) that corresponded with an increase in population (roughly 7%). In fact, Harju was the only county that experienced an increase in population at all. Jõgeva County, which experienced the second-largest increase in built-up area, saw a decrease in population of 20% during the period. The story is similar for other more rural areas such as Valga, Viljandi and Võru, which also experienced increases in built-up area despite significant decreases in population.

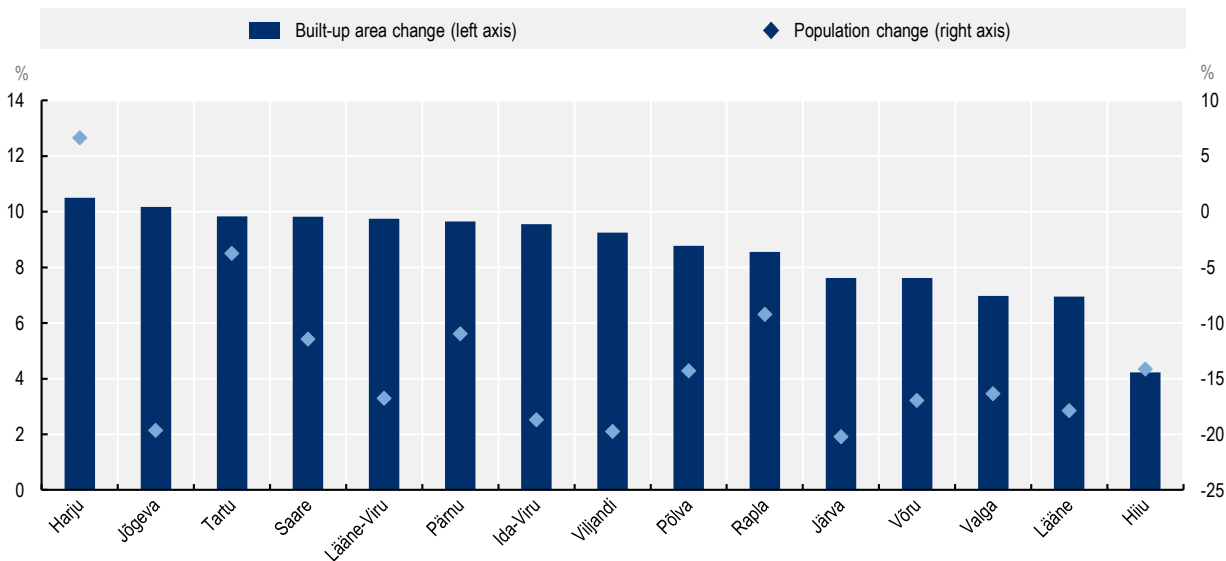
Such discrepancies between development and demand can partially be attributed to the high number of residents with second homes. The 2011 Housing and Population Census (Government of Estonia, 2011^[22]) documented 6% of Estonian residents with multiple homes, where a multiple home is defined as a dwelling where one lives at least 3 months every year. This suggests the percentage of people with second homes would be considerably higher if summer and country homes and cottages were also included. The sections that follow illustrate how the low land and housing prices in rural and remote areas together with extremely low assessed values for taxation likely contribute to these trends, which result in greater built-up area per capita and efficiency losses in land use.

Growing outward results in inefficient settlement patterns

The sharp increase in built-up area per capita in Estonia has led to sparse settlement patterns. The number of 1 km² inhabited grids increased by roughly 30% but only around 24 000 people (1.8% of the population) live in these new grids. In addition, 91% of these new grids are populated by less than 5 people, well below the national population density average of 30. As Figure 2.3 shows, there is no clear pattern as to where these new grids are located. Both areas outside of the main functional urban areas (FUAs), as well as

areas outside of previously populated rural regions, experienced an expansion (even in the island areas of Hiiu and Saare), in line with data on built-up area increases shown in Figure 2.2. Taken together, Estonia's land use and settlement patterns are indicative of increasingly inefficient use of land.

Figure 2.2. Increases in built-up area and population in Estonian counties, 2000-14



Note: County-level changes in built-up areas calculated using GIS data from the Global Human Settlements multitemporal layer and administrative boundaries taken from Republic of Estonia Land Board Geoportal.

Source: Corbane, C. et al. (2019^[23]), "GHS-BUILT R2018A - GHS built-up grid, derived from Landsat, multitemporal (1975-1990-2000-2014)", European Commission, Joint Research Centre (JRC) [Dataset], <http://dx.doi.org/10.2905/jrc-ghsl-10007>; Statistics Estonia (2021^[24]), RV002: Population by Sex, Age Group and County, 1 January (accessed 4 March 2021).

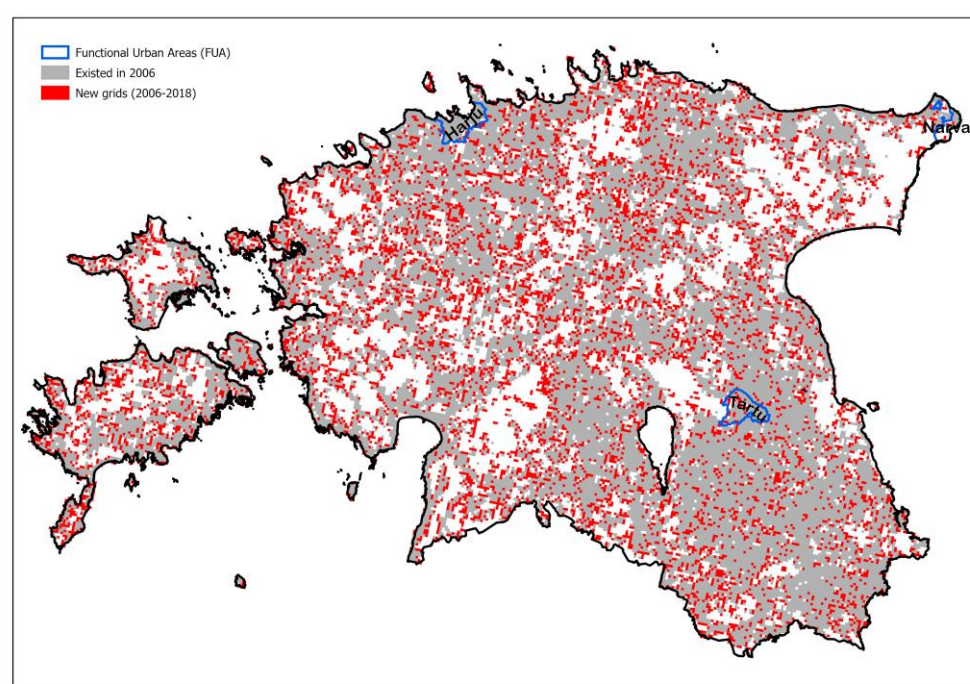
Spatial polarisation is increasing

Estonia's population is increasing in the urban periphery

Outward development in Estonia has been accompanied by greater spatial polarisation in recent years. Grid-level population data shows that between 2006 and 2018, the population increased significantly in the urban peripheries of Tallinn and Tartu, and to a lesser extent Pärnu (Figure 2.4). Importantly, significant population increase did not even occur in the FUAs themselves, indicative of a strong trend towards urban sprawl (or in other words "peripheralisation") in the main urban centres. Excluding these urban peripheries, virtually all of Estonia experienced a decrease in population over the period.

Along with other Central and East European countries, Estonia's regional inequalities have increased due to job opportunities concentrating in urban centres and the resulting rural exodus (Lang and Görmar, 2019^[25]). However, other factors also contribute to this trend. For example, it has been highlighted how the shift from a welfare-distributive approach to a competitiveness and innovation approach for EU cohesion policy resulted in centrally administered and spatially blind policies at the state level that were supported by EU funds (Sooväli-Sepping, 2020^[12]). In addition, stigmatisation of rural and remote regions as disadvantaged, problematic and lagging areas has further shaped the negative image of these regions, arguably exacerbating peripheralization (Plüschke-Altof and Grootens, 2018^[26]).

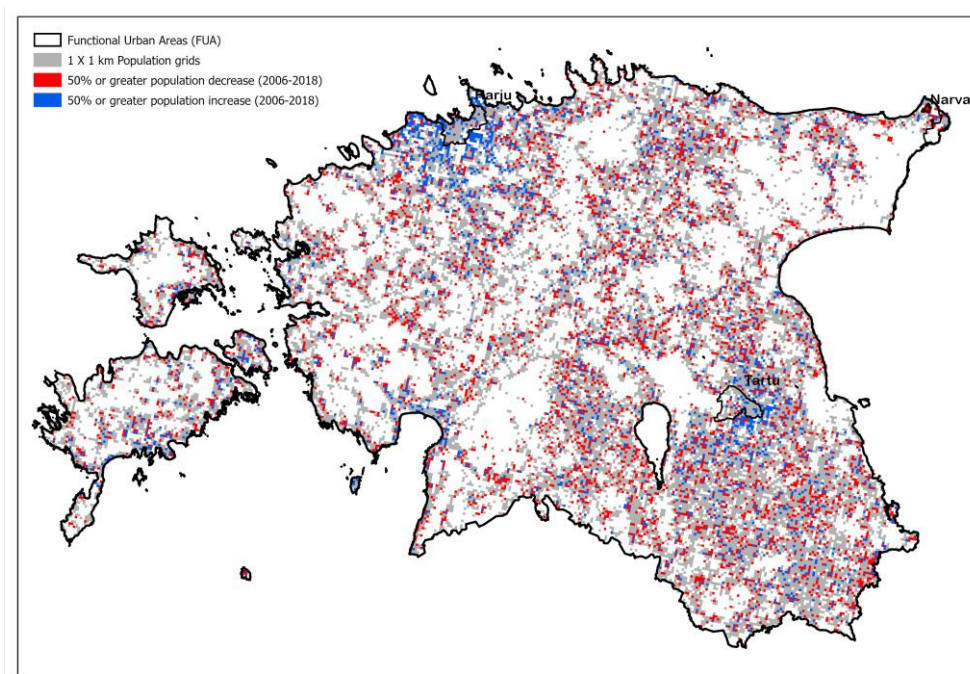
Figure 2.3. Settlement patterns in Estonia, 2006-18



Note: Depicted using data from the 2006 and 2018 JRC-GEOSTAT population grid and administrative boundaries are taken from Republic of Estonia Land Board Geoportal.

Source: Batista e Silva, F., L. Dijkstra and H. Poelman (2021^[9]), *The JRC-GEOSTAT 2018 Population Grid*, JRC Technical Report.

Figure 2.4. Spatial polarisation in population



Note: Depicted using data from the 2006 and 2018 JRC-GEOSTAT population grid and administrative boundaries are taken from Republic of Estonia Land Board Geoportal.

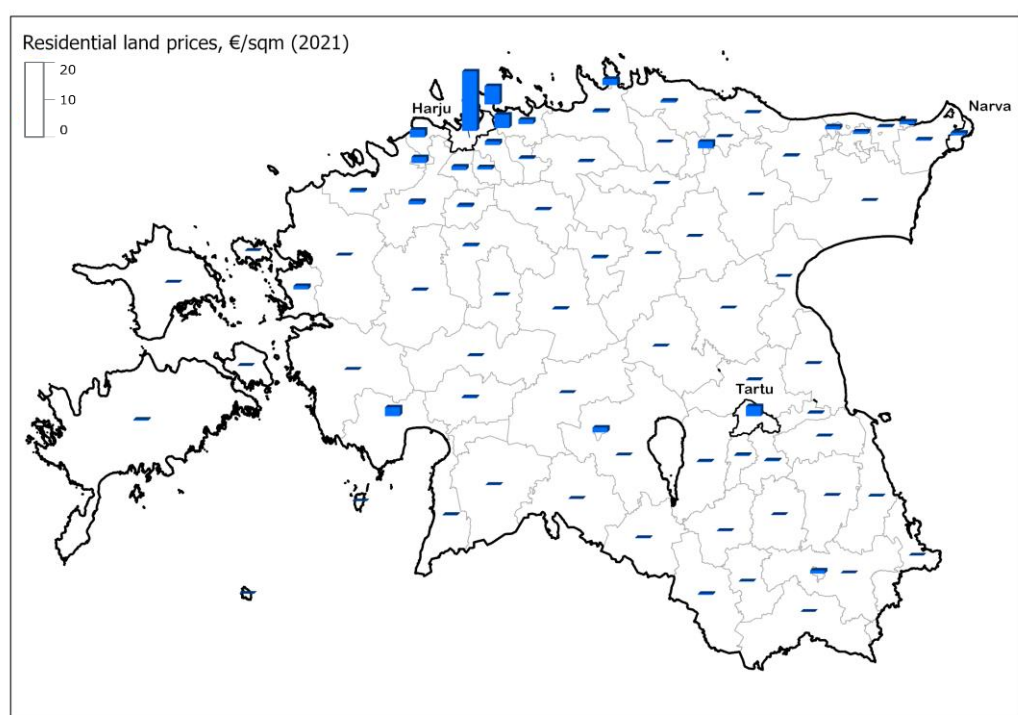
Source: Batista e Silva, F., L. Dijkstra and H. Poelman (2021^[9]), *The JRC-GEOSTAT 2018 Population Grid*, JRC Technical Report.

Regional disparities in income and land prices are widening

In addition to the polarisation of the population, income disparities between regions in Estonia are also relatively high compared to other EU countries. Such gaps in economic conditions accelerate migration to more prosperous regions, resulting in severe polarisation in housing and land prices. In 2021, the median price of an apartment in Tallinn at EUR 2 159 per m² was almost 10 times higher than in the city of Valga, at EUR 212 per m² (Estonian Land Board, 2021^[10]).

Disparities are also apparent in land prices. Figure 2.5 depicts residential land prices across municipalities. These prices are calculated based on assessed values from the cadastre and thus are most likely underestimated compared to actual values. Nonetheless, the relative differences are illuminating. For residential land, at the extreme, prices are more than 360 times higher in Tallinn compared to Setomaa, a municipality in Southwest Estonia next to the Russian border. In addition, residential land plots in urban municipalities are six times more expensive than in rural municipalities. Prices have also decreased much faster in rural areas, by 7% compared to 1% for urban areas during the period between 2012 and 2021.

Figure 2.5. Residential land prices in Estonian municipalities



Note: Residential land prices are based on assessed values in the land cadastre. As such, they most likely underestimate true transaction prices. Source: Estonia Land Board (2021^[11]), *Cadastral Units*, <https://geoportaal.maaamet.ee/eng/Spatial-Data/Cadastral-Data-p310.html> (accessed on 8 July 2021).

Extremely depressed property values in many rural and remote regions make it harder to obtain financial support through mortgages or loans from the private banking system for housing purchases and renovations. This results in new construction and renovation activities being concentrated in metropolitan regions, with public investment being no exception (Sooväli-Sepping, 2020^[12]). This in turn widens the regional disparities in the housing market and makes it difficult for people to move between regions, which reinforces regional disparities and chronic labour shortage in the non-metropolitan regions. Low residential mobility can be an obstacle to labour adjustment, making labour markets less efficient, with adverse effects on overall economic performance (Causa and Pichelmann, 2020^[27]).

The causes behind sparse development and spatial polarisation in Estonia

Among other causes, land use is strongly influenced by economic factors such as the level of economic activity and property prices. As a sparsely populated country, Estonia has had an abundance of cheap (mainly agricultural) land that has been utilised extensively for development (Sooväli-Sepping, 2020^[12]). This coupled with strong economic growth following independence from the Soviet Union in 1991, together with restitution efforts and the development of property markets, has resulted in residents with rising incomes wanting larger, more pleasant living spaces. Estonia is not alone in this regard, as these factors also contributed to rapid outward growth (especially in suburban and ex-urban areas) in neighbouring countries such as Latvia and Lithuania.

Moreover, the general trend of economic growth leading to outward development can be seen across the globe in many countries such as Finland, Korea and the United States (US) (OECD, 2018^[3]). In general, economic growth also leads to urbanisation, as cities become the drivers of productivity and growth through what is termed agglomeration economies (Glaeser and Gottlieb, 2009^[28]). This results in spatial polarisation as cities attract jobs and people at the expense of rural areas. This has been exacerbated by depopulation in Estonia that has brought about greater disparities in economic opportunities between the main cities and their surrounding areas on the one hand and the rest of the country on the other.

However, these factors do not completely explain the development patterns highlighted in the previous section. Countries such as Germany and Ireland that have also experienced economic growth and strong housing demand are not experiencing outward expansion to the degree of Estonia. Arguably, some unique characteristics of Estonia's history and political landscape shape current land use. After independence, Estonia experienced a period of liberal conservatism throughout the 1990s and 2000s, where a general discontent with "planning" stemming from the Soviet era led to low interest and participation in spatial planning. It has been argued that ultra-liberal policy practices and free-market ideologies led to modest regulation of land use, resulting in patchy and scattered land use patterns that were determined based on developer interests (Roose et al., 2013^[19]). Estonian strategic spatial planning has been described as lacking political support, being reactive rather than proactive and not being used to address critical trends like shrinking settlements or climate change, with the planners' role diminished to accept any development proposal (Metspalu, 2019^[29]). In addition, aspects of Estonia's spatial planning system, such as its fragmented regional framework and municipalities' lack of planning experience, have also contributed to the spatial development patterns seen today. The following section addresses these issues.

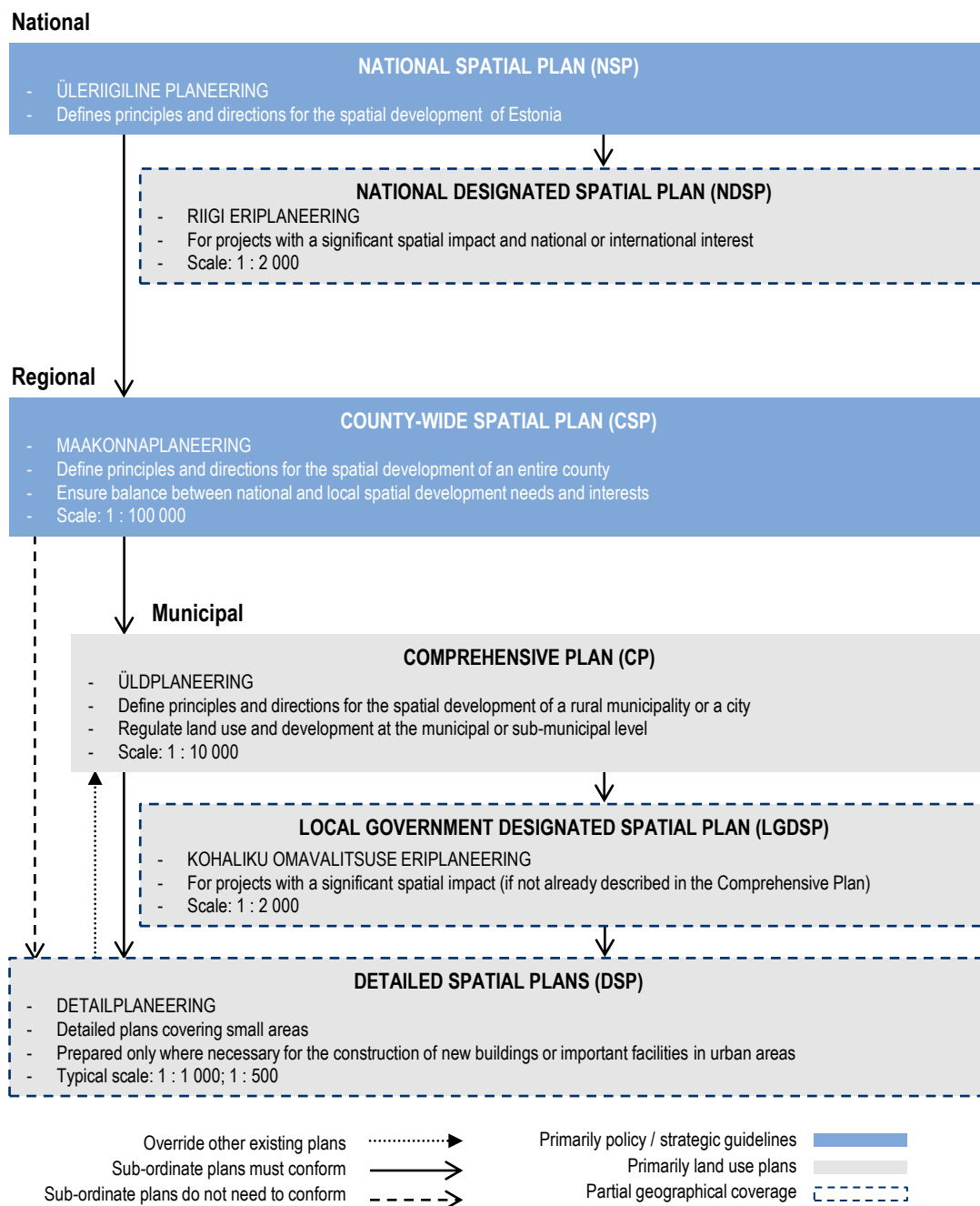
The spatial planning framework of Estonia

Estonia's planning system

After regaining independence in 1991, the Estonian system of land use planning was completely overhauled. The restitution of land occurred according to pre-World War II ownership, leaving municipalities with little land ownership. Even today, municipalities own only 1.3% of all land registered in the cadastre (Government of Estonia, 2021^[30]). A shift took place from the top-down tradition of Soviet planning towards a system where municipalities played a larger role in land use decisions. The Planning and Building Act was enacted in 1995, creating a system that follows the Scandinavian model of land use planning. Arguably, this was not accompanied by sufficient competencies and policy instruments on the local level. In 2003, the Planning Act was separated from the Building Act. The Planning Act was overhauled in 2015, aiming to increase the efficiency of planning and building procedures. The reform of 2015 also introduced new types of spatial plans. In addition to the statutory planning instruments, the National Designated Spatial Plan (NDSP) was introduced for the construction of infrastructure or buildings that were of significant national interest and had a significant spatial impact. Local Government Designated

Spatial Plans (LGDSP) were introduced to erect buildings and infrastructures that had a significant spatial impact within the municipality. Figure 2.6 depicts the current spatial planning hierarchy of Estonia.

Figure 2.6. The spatial planning hierarchy in Estonia



Source: Adapted from OECD (2017^[4]), *Land Use Planning Systems in the OECD: Country Fact Sheets*, <https://doi.org/10.1787/9789264268579-en>.

On the national level, the National Spatial Plan (NSP) provides the outlines of spatial policy in Estonia. The national government influences spatial policies directly through the NSP and indirectly through a variety of sectoral agencies, such as the Road Administration, the Environmental Board, the Land Board (responsible for the 42% of Estonian land that is state-owned) and the Heritage Board, together with the

various ministries. At the county level, County-wide Spatial Plans (CSPs) define the principles of spatial development of the county and is prepared, in theory, to express interests that transcend municipal boundaries and balance national and local spatial development needs. They are prepared by the Ministry of Finance (as the successor to county administrations in land use planning issues), in co-operation with ministries and local authorities. The Comprehensive Plan (CP) is the main municipal planning instrument and is prepared by local governments. It aims to define spatial development principles in the municipality, and, by agreement, can be prepared for several municipalities. Finally, Detailed Spatial Plans (DSPs) are designed to implement the CP and to create a spatial solution for the planning area. They form the basis for issuing building rights. Notably, DSPs have the authority to override the CP in certain instances.

In Estonia, horizontal co-operation occurs primarily through the involvement of the different national sectoral agencies in the planning process on all levels of government. The Ministry of Finance is responsible for the implementation of the Planning Act and the preparation and implementation of the NSP and CSP. Co-operation occurs generally on an ad hoc basis as no governmental body is explicitly dedicated to either horizontal or vertical co-operation. However, in local municipality planning, land use planning dispute mechanisms are in place and gone through before plan enforcement in case disputes are not solved in the planning process.

County-level spatial planning is fragmented

The aim of a CSP is to define the principles and directions of spatial development at the county level, while also fulfilling the functions that emanate from the NSP. In addition to promoting balanced and sustainable development, the Planning Act outlines the functions of the CSP to include, among others, determining locations of transport networks, waste treatment sites and sites serving national defence purposes. As such, CSPs are not required to cover other important infrastructure and service areas such as health, education or power generation. In addition, CSPs do not cover the spatial development aspects of economic and social development, which instead are delegated to various sectoral policies that are outlined below.

Estonia is currently undergoing changes to its regional development policy after the municipal reform of 2017. The former national Regional Development Strategy is being replaced with a Regional Policy Programme as a planning instrument. However, this programme is not horizontal, as it does not apply to sectoral policies or ministries, only addressing the activities of the Ministry of Finance, which is in charge of regional policy and spatial planning (ESPON, 2021^[31]). In addition to this plan, a new Regional Policy Action Plan (RPAP) is set to be established. The RPAP is a horizontal policy document addressing sectoral policies and is expected to define roughly ten key challenges for regional development Estonia faces, along with key activities for sectoral policies to mitigate these challenges.

Furthermore, the introduction of the NDSP in 2015 brought about a shift in the functions of the CSP. Previously, CSPs could be used to select locations for construction projects that could be located across municipalities. The new Planning Act took away this power from CSPs, transferring authority to NDSPs. As a result, there is currently a lack of a clear instrument for projects that are not in the national interest but important for regional spatial planning, such as network infrastructure (Estonian Ministry of Finance, 2020^[32]).

There is also separation between spatial and strategic planning at the county level. The Local Government Organisation Act (paragraph 37-3) mandates counties to enact development strategies covering economic, social and also population health themes. They provide the basis for jointly directing county development by the local authorities and co-operation partners, while also planning jointly made investments. Critically, however, such strategic development strategies are planned outside of the scope of CSPs and the spatial aspects of these development strategies are not emphasised. This weakens the link between strategic goals related to economic and social development, and spatial development within regions.

As a whole, county governance in Estonia is complex. The fragmentation of various development strategies and a patchwork of plans makes it difficult to co-ordinate county-level spatial planning. Such difficulties are augmented by the recent reforms made to the Planning Act that has weakened the decision-making power of CSPs. In addition, the disconnect between strategic objectives related to economic and social development and spatial planning has hampered the development of coherent county spatial policies.

Local government spatial plans are ill-equipped to adapt to demographic change

Comprehensive Plans (CPs) are the primary instrument for land use planning in Estonia. In theory, they define spatial development principles in the municipality, taking into account higher-order plans such as the CSP and NSP. The Planning Act identifies a long list of functions that CPs are to fulfil, including determining general land uses and the location of infrastructure networks and utilities, setting building conditions and uses, determining minimum lot sizes and designating valuable land in need of protection. In addition to the CP, the DSP exists at a smaller scale to implement the CP by determining detailed land use functions at the plot level.

Land use and spatial planning at the municipal level are still relatively new in Estonia compared to other Scandinavian countries. During Soviet occupation, planning processes were centralised and local administrations had little authority to do anything other than implement orders from the state. However, with independence came a change in planning practices that favoured decentralisation and Western planning principles. The early 1990s were characterised by setting the framework for municipal planning, together with defining property rights. At this time, there was no master planning and development was based on construction permits (Roose et al., 2013^[19]). The enactment of the Planning and Building Act in 1995 paved the way for spatial planning at the municipal level by charging local governments with the development of CPs.

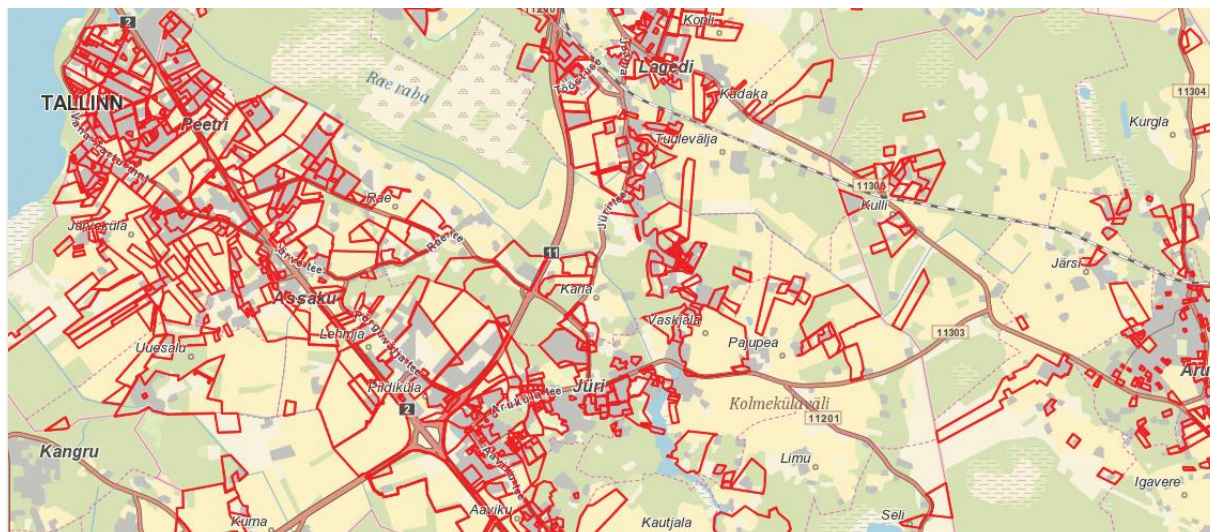
It has been argued that local governments, now challenged with the role of implementing planning policies for which they had little experience and knowledge of, were unable to devise coherent land use and spatial plans, often being influenced by strong local actors pursuing private interests (Samarüütel, Steen Selvig and Holt-Jensen, 2010^[20]). Supporting this claim is the fact that the development of new settlements is often determined by fragmented, small-scale DSPs prepared and adopted separately and in random chronological order (Figure 2.7). While in theory, the authority that arranges the preparation of DSPs is the local government, in practice the initiation of DSPs is most often requested by property developers for a particular development and the content of these is steered by the developers.

As a result, CPs struggle in their function of promoting coherent spatial development within the municipality. Importantly, they fail to address the problem of depopulation through a re-evaluation of settlement boundaries or densification of central areas. This is due to the fact that while population projections exist, they are not well integrated into spatial strategies and are not acted upon. CSPs in particular are vague in setting spatial guidelines for land use at the local level based on county-level population trends. This results in CPs having difficulty implementing spatial development guidelines based on realistic assumptions. In addition, single-use zoning still dominates CPs, with more flexible approaches such as mixed-use zoning or permitting temporary usage remaining rare. The rigidity of CPs in mainly setting rules and regulations results in land use being inflexible, making it difficult for local governments to adapt to changing demographic trends or economic opportunities. As a result, CPs have seldom been used to steer spatial development, rather being used for setting land use regulations (Estonian Ministry of Finance, 2020^[32]).

In addition, the process to devise CPs and have them approved is arduous. As a result, many local municipalities lack the capacity to prepare CPs in-house, and their preparation is often outsourced to external private consultants. Hiring external consultants is not always a bad practice, as many consultants have a greater experience that can prove to be valuable in the planning process. However, this becomes problematic when local planning authorities retreat from their leading roles and leave the process of

balancing interests, making discretionary decisions and reaching agreements with these hired experts (Estonian Ministry of Finance, 2020^[32]). Such has become common practice in recent years, often resulting in CPs that are not substantive enough to be an appropriate tool for local governments to guide spatial development. Too often, important spatial decisions at the local level are made by actors upholding private interests.

Figure 2.7. A patchwork of DSPs



Note: Red (darker) borders indicate the boundaries of DSPs in the rural municipalities of Raasiku and Rae.

Source: Sooväli-Sepping, H. (ed.) (2020^[12]), *Estonian Human Development Report 2019/2020: Spatial Choices for an Urbanised Society*, Estonian Cooperation Assembly.

Legal frameworks encourage sparse development

Land taxes

Property taxes are a key tool that can be used by governments to facilitate sustainable land use policies, provided that they are well structured. Estonia utilises a pure land value tax, opting out of taxing buildings. Municipalities choose land tax rates within the limits set by the central government, which are at present between 0.1% and 2.5%. In reality, most municipalities apply the highest permitted rate. As taxable land values have not been re-evaluated since 2001, land tax revenue has not increased even in nominal terms since 2012 and land taxes form only 4.4% of municipal tax revenue (see Chapter 3 for further information).

A pure land value tax that does not take into account the value of buildings may help contain sprawl. This is because land values are independent from what the land is used for (e.g. empty brownfields versus skyscrapers) and thus land that is underdeveloped becomes comparatively more expensive to maintain. As such, Estonia's current property tax system is correctly specified, in principle, given its circumstances. Nonetheless, the aforementioned lack of regular re-evaluation of taxable land values, together with incentives that encourage sparse development, deter efficient spatial development. Land tax exemptions exist for residential land plots where the owner's permanent residence is located. The exemption extends up to 0.15 hectares in densely populated areas such as cities and towns, and up to 2.0 hectares elsewhere. The much larger exemptions for residential land in rural areas, coupled with already low land prices in these areas, incentivises residential land owners to locate in rural and remote regions.

Expropriations

Expropriation is a balancing act between public interests and private property rights. In certain circumstances, governments have a legitimate need to take private property for public purposes. For example, in environmental emergencies, authorities may need to resettle people who are located in contaminated areas. In other instances, governments expropriate land for the “public good” to build infrastructure. Estonia’s spatial development patterns have resulted in a high percentage of old and vacant dwellings, many of which are in need of demolition or remodelling. To do this, expropriation needs to take place as private incentives for demolition or remodelling do not exist in declining areas because of low property values. Without such measures, half-empty apartment buildings detract from pleasant living environments and contribute to sprawl and migration. Vacant houses also increase the per capita cost of providing essential services such as district heating, water and sewerage, aggravating the fiscal burden placed on local governments.

While some municipalities have been dealing with these issues and the central government is beginning to address these problems through studies and pilot projects, legal barriers regarding expropriation, together with a lack of experience is hampering efforts. Legislatively, the Immovables Expropriation Act was superseded by the Acquisition of Immovables in the Public Interest Act (hereafter Acquisition of Immovables Act) in 2018 in Estonia. By law, expropriations are only possible under strict conditions and expropriation for “public interest” or “public use” is not allowed, unlike in the majority of OECD countries (OECD, 2017^[4]). Thus, expropriations in Estonia are strictly limited to the purposes outlined in the Acquisition of Immovables Act, which are generally confined to public infrastructure construction, such as ports, utilities or roads. Compared to other OECD countries, expropriation restrictions in Estonia are comparatively strict (Box 2.3). The revision of 2018 did however begin to allow expropriations of apartment buildings where more than half of apartments had been abandoned. Nonetheless, the agreement procedures for expropriation of apartments in such cases has proven arduous and time-consuming. Furthermore, even today, the expropriation of abandoned detached housing is not allowed.

Box 2.3. Expropriations in neighbouring OECD countries

Denmark

Expropriations for the common good are possible under strict conditions and with full compensation of the land owner. The Commission of Expropriation, an independent authority represented by ministries and municipalities, carries out the process in cases of national or state expropriations. In local cases, the municipal council is the main authority and expropriation procedures are carried out involving relevant professionals, independent parties, the owner and the municipality. Typically, land is expropriated for infrastructure construction but provisions exist for expropriations related to urban development in the Planning Act.

Finland

According to the Expropriation Act, expropriation is allowed for a public need. Expropriations are possible for a variety of reasons, such as the provision of public infrastructure, housing and the establishment of nature protection areas. In addition, land may be expropriated when its uses do not conform to local land use plans. Expropriation for private land uses is not possible yet the state can, in theory, expropriate land and sell it to private developers. As a general rule, the compensation is monetary. However, it is possible to substitute monetary compensation for other forms of compensation such as land readjustment, land exchanges and land banking.

France

France has a long history of expropriations dating back to the Declaration of Human and Civic Rights that was passed during the French Revolution in 1789. Expropriation is permissible if it is in the public interest. Public interest is broadly defined and there are no specific justifications for expropriation defined in law. Thus, the scope of expropriations depends on judicial interpretation and has evolved over time. The state and subnational governments, along with public entities and private entities (in limited circumstances), are allowed to expropriate.

Latvia

Article 105 of the Constitution of Latvia allows expropriating property for public purposes. The need to ensure public purposes is the only reason that needs to be justified for the expropriation of immovable property. The Expropriation Act provides an extensive but not an exhaustive list of purposes, such as national defence, environment protection, infrastructure construction and to “ensure other public needs” when these needs cannot be reached by other means. One of the most essential elements in expropriation proceedings is fair compensation, which is regulated by the Expropriation Act and the Cabinet Regulation.

Poland

Expropriation is regulated by the Real Estate Management Act of 1997. Expropriation is possible if a public purpose cannot be achieved in any other way than by restriction of property rights. Permitted purposes include infrastructure, utilities, protection of places of national remembrance and national defence. In addition, if revised or newly established land use plans restrict the development potential of land, land owners may demand compensation from public authorities. During negotiations, a replacement property may be offered, in lieu of monetary compensation.

Sweden

In Sweden, at least 20 enactments separately address restrictions on land use in various situations. The Expropriation Act provides the general framework for expropriations and specifies broader reasons for expropriation, such as infrastructure projects, housing developments and resource extraction. The Real Property Formation Act gives municipalities the right to expropriate land in specific circumstances and also gives cadastral authorities the right to order the transfer of a property or parts of a property to another property to facilitate plot formation and re-allotment of agricultural or forest properties. The Planning and Building Act allows for expropriation when implementing detailed development plans.

Source: Balodis, K. (2017^[33]), Expropriation of property for public purposes: Common interests of the public and protection of owner's rights", *Juridiskā zinātne/Law*, Vol. 10, pp. 112-129, <https://doi.org/10.22364/jull.10.09>; Nuuja, K. and K. Viitanen (2007^[34]), "Finnish Legislation on Land Use Restrictions and Compensation", *Washington University Global Studies Law Review*, Vol. 6/1; OECD (2017^[41]), *Land-Use Planning Systems in the OECD: Country Fact Sheets*, <https://doi.org/10.1787/9789264268579-en>.

Fiscal instruments used to target land use

Land-based fiscal instruments can be an effective way to steer spatial development in a more sustainable and compact manner. They consist of instruments that, in essence, provide incentives to individuals and businesses that encourage or discourage particular uses of land. For example, impact fees are levied to landowners for the construction of infrastructure that directly services their plots. In this way, the hidden costs of living in a particular area are monetised and landowners are incentivised to locate in areas that are close to current infrastructure networks. Such instruments can complement an effective fiscal framework for shaping land use.

A wide range of policy instruments are applied to control, regulate and stimulate desired development outcomes in OECD countries. Many fiscal instruments operate as taxes and exactions levied on developers to raise revenues and mitigate the negative impacts of development. Some common tools include brownfield redevelopment incentives, historic rehabilitation tax credits, transfer of development rights, use-value tax assessments, development impact fees and betterment levies (OECD, 2017^[21]). The limited implementation of such land-based fiscal instruments in Estonia provides a disincentive for compact development.

While Estonia uses impact fees to levy costs related to upgrading technical infrastructure (based on the Planning Act, paragraph 131), its implementation is limited only to instances where the development falls under a DSP. Other instruments are not used in Estonia. The lack of a scheme to internalise the costs of infrastructure and service provision in remote areas makes living in these areas cheaper, further encouraging spread-out development. As a consequence, many rural homes in Estonia are second residences inhabited only during certain months of the year.

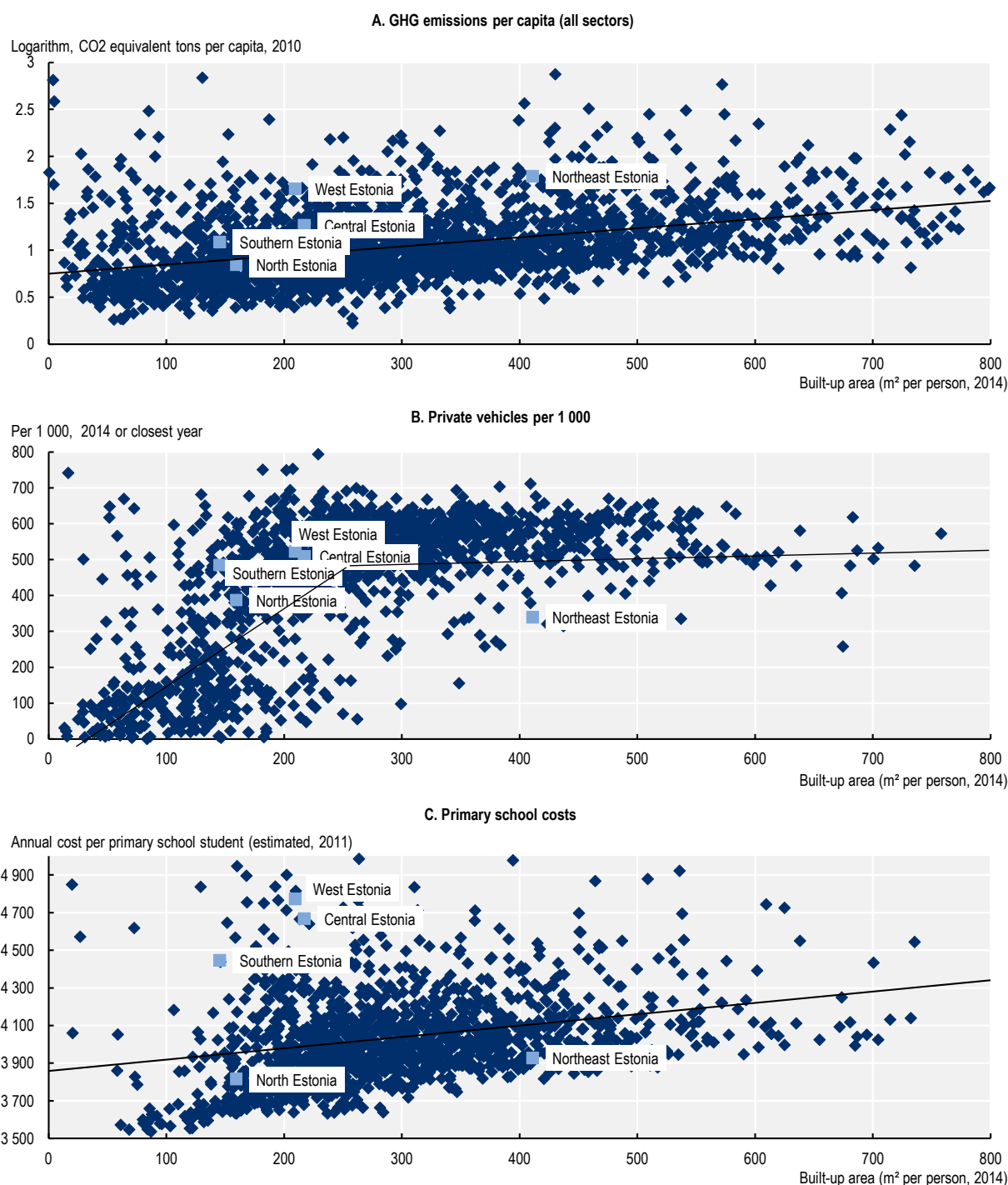
A related instrument often used with infrastructure development initiatives is land readjustment. Land readjustments do not transfer property rights from one owner to another but rather reshape existing plots in order to allow for more efficient use. It is defined as a process where land plots are pooled and shaped into more efficient plots, which are then redistributed to owners such that their value corresponds to that of the former plot. Land readjustment often entails the provision of public infrastructure and facilities in the process, which means the absolute size of the readjusted plots is reduced. However, the efficient plot allocation together with densification and the provision of a good built environment leads to an increase in the value of land. In Estonia, the Land Consolidation Act (paragraphs 16-29) highlights the procedures for land readjustment. However, its implementation has been limited to date, mainly being utilised to facilitate the Rail Baltica project. There is potential to implement readjustment measures to facilitate densification and the provision of infrastructure and services, especially in small towns in rural municipalities.

Sparse development is unsustainable

The environmental problems related to outward development have been documented extensively in the literature (OECD, 2018^[3]). They concern the three dimensions of global environmental challenges: climate change, biodiversity loss and the degradation of land. For these, United Nations Framework Conventions on Climate Change call for wide-ranging measures to reduce emissions and increase protected natural habitats. Land in Estonia is particularly valuable for conservation for these environmental objectives (IIASA et al., 2021^[35]).

Sparse development leads to more cars and increased travel demand because travel distances are longer. Sparse areas are also difficult to serve with public transport, which requires minimum densities to be operated efficiently. Thus, sparse development increases carbon emissions from transport (OECD, 2021^[36]). Analyses based on active mobile positioning data from Estonia have shown that the carbon load of transport is lowest in smaller cities, rather than Tallinn (Poom, 2017^[37]). This may be explained by the fact that in Tallinn, peoples' points of interest (anchor points) may be scattered over a considerable area, promoting car use. Per capita transport and residential emissions are estimated to be higher in rural regions, where they have risen the most since 2010. Figure 2.8, Panel A, illustrates the positive relationship between built-up area per capita and greenhouse gas (GHG) emissions. This relationship holds when controlling for income levels and country-specific effects. Thus, the positive correlation is not due to higher incomes positively affecting both GHG emissions and built-up area per capita.

Figure 2.8. Greater built-up area per capita is costly and unsustainable, TL3 regions



Note: Annual costs per primary school student includes the sum of estimated expenditure in all simulated primary schools based on 2011 population information.

Source: Crippa, M. et al. (2021^[38]), *EDGAR v6.0 Greenhouse Gas Emissions (dataset)*, <http://data.europa.eu/89h/97a67d67-c62e-4826-b873-9d972c4f670b>; Goujon, A. et al. (eds.) (2021^[39]), "The demographic landscape of EU territories: Challenges and opportunities in diversely ageing regions", EUR 30498 EN, Publications Office of the European Union, Luxembourg; Jacobs-Crisponi, C. et al. (n.d.^[40]), "Development of the LUISA Reference Scenario 2020 and production of fine-resolution population projections by 5 year age group"; OECD (2021^[18]), *OECD.Stat (database)*, <https://stats.oecd.org> (accessed on 8 July 2021); OECD/EC-JRC (2021^[41]), *Access and Cost of Education and Health Services: Preparing Regions for Demographic Change*, <https://dx.doi.org/10.1787/4ab69cf3-en>.

Land development is one of the main causes behind the loss of biodiversity. This is because development reduces the overall size of natural habitats and also because it fragments them into a patchwork of areas that are too small. This is particularly relevant in the case of Estonia where outward growth is occurring not only near urban areas but also in rural and remote areas. Relatedly, sparse development also detracts from food supply as agricultural land is converted for development. Again, this is especially relevant for Estonia where the bulk of development occurs through the transition of agricultural land (Sooväli-Sepping, 2020^[12]). Covering vegetated land with artificial surfaces also results in the permanent degradation of land and the ecosystem services vegetated land provides, including carbon sinks, soil regeneration and biodiversity. These impacts may be reinforced if existing forests are affected and the afforestation potential reduced. Afforestation is a key lever to reach net-zero GHG emissions by 2050 and maintain net-negative carbon dioxide (CO₂) emissions in net-negative territory thereafter, as needed to limit global warming to 1.5 degrees. Moreover, biomass from sustainable forest management is a key material and energy resource as fossil fuels are phased out in the context of moving to net-zero GHG emissions.

Land intensive development also pollutes the air. Air pollution is a major cause of premature deaths across OECD countries, although population exposure to small particle air pollution is still low in Estonia (OECD, 2016^[42]). Sparse development contributes to air pollution through increased car use and longer driving distances. Evidence suggests that an increase in residential density increases the modal share of public transport while reducing the modal share of car-based transport (Balcombe et al., 2004^[43]). Figure 2.8, Panel B, not only illustrates the effect greater built-up area per capita has on infrastructure burden but also air pollution, as a greater number of cars on the road directly results in increased air pollution.

The environmental context of land use should be considered in relation to Estonia's unique circumstances related to energy production and consumption. Estonia has the most carbon-intensive economy among OECD countries, with 533 kg of CO₂ emissions per USD 1 000 of gross domestic product (GDP) in purchasing power parity in 2014 (OECD, 2017^[44]), well above second-place Canada at 370. This is due in large part to the fact that oil shale accounted for 72% of Estonia's total domestic energy production, 73% of total primary energy supply and 76% of electricity generation. Electricity production from oil shale is the most CO₂-intensive among all combustion technologies, which is why Estonia's power and heat production has the second-highest CO₂ intensity of all International Energy Agency (IEA) countries after Australia (IEA, 2019^[45]).

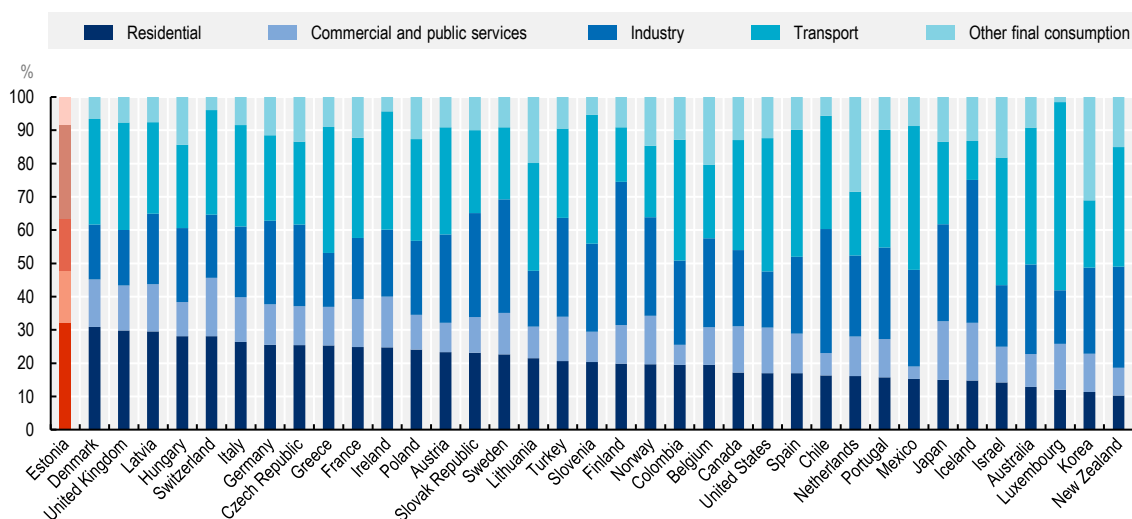
Sparse land use is strongly related to residential and transportation energy consumption (OECD, 2018^[3]). Sparsity results in more detached houses that consume more energy per m² and are farther away from each other, increasing travel distances. Figure 2.9 shows how Estonia ranks first among OECD countries in the residential sector's share of total final consumption (TFC) of energy. This is partially attributed to Estonia's land use patterns, along with the country's old and energy-inefficient building stock (IEA, 2020^[46]): 32.1% of TFC in Estonia comes from the residential sector, and when combined with transport, Estonia ranks 6th among OECD countries, at a combined 60.3% of TFC. The residential and transport sectors are consuming a disproportionately large share of electricity that is more carbon-intensive to produce. Reducing energy demand is a key priority in the context of moving to net-zero GHG emissions, a target the EU has set for 2050, as most energy demand needs to be electrified and electricity generation moved to renewables. Lowering energy demand makes this process more manageable and less costly.

Sparse development is costly

One of the consequences of sparse development is the inefficient use of infrastructure. This is the case because most network infrastructure such as roads, telecommunication, electricity, water and sewerage are provided for by first incurring fixed, upfront costs that are not related to the intensity of which the network is utilised. The less dense the land use, the fewer people can use the same infrastructure, resulting

in greater usage of infrastructure per capita. This not only increases the costs of providing for such infrastructure on the part of governments but also increases operating and maintenance costs.

Figure 2.9. Sectoral share of total final consumption of energy (2019)



Source: IEA (2021^[47]), *World Energy Balances (database)*, <https://www.iea.org/data-and-statistics/data-product/world-energy-balances-highlights> (accessed on 24 September 2021).

The situation is similar for public services, including education and health. Sparse development patterns result in the need for smaller, more spread-out public facilities because the number of people living within their catchment areas is much smaller. As is the case for infrastructure, this increases the costs of public services because they are subject to economies of scale (e.g. it is cheaper to operate 1 school for 1 000 students than 10 schools for 100 students each). For other services such as waste disposal and postal services, the distances between people directly affect the costs of delivering the service. For example, sparse development and lower population densities require more mailmen per resident served because each mailman must cover greater distances.

Figure 2.8, Panels B and C, illustrate this argument using actual subnational data (including for Estonia) on built-up area per capita and the number of private vehicles per 1 000 residents (Panel B) and estimated cost per primary school student (Panel C) respectively. A strong positive relationship exists between the amount of built-up area per capita and both the number of private vehicles and annual primary school costs. For Panel B, it can be seen that private vehicle ownership increases sharply up to around 250 m² per person of built-up area and levels off afterwards, due to the number of vehicles per person approaching saturation. A greater number of vehicles on the road indicates the need for more road infrastructure, which is directly related to the costs of road provision. Even when the absolute number of vehicles is low (such as in rural regions), an increase in vehicles results in higher costs for maintenance and upkeep. Again, this positive correlation remains after controlling for income levels and country-specific effects. For Panel C, it can also be seen that a positive correlation exists between built-up area per capita and primary school costs. Regions with a greater amount of built-up area per capita also pay more to provide education for primary school students. This relationship also continues to hold when controlling for the share of the elderly population (65 years and above) and country-specific effects, meaning that the positive correlation is not due to a greater number of elderly people positively affecting both built-up area per capita and school costs.

Sparsity and polarisation result in building vacancies and an old and energy-inefficient housing stock

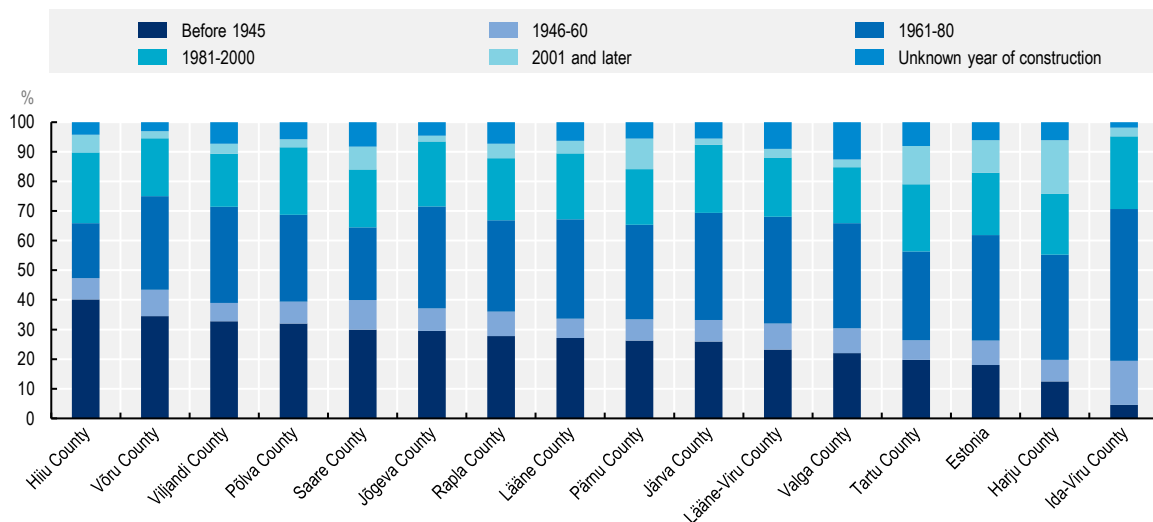
The pattern of sparse development shown in Figures 2.2 and 2.3, combined with depopulation results in a lack of a functioning real estate market and high building vacancies in rural and remote areas. Estonia's vacancy rate is estimated at 24.5% (Government of Estonia, 2021^[30]). At the county level, Harju has the lowest vacancy rate at 20.2%, followed by Ida-Viru at 21.2%. Lääne and Lääne-Viru had the highest vacancy rate at 32.2% and 32.9% respectively. Japan and Eastern Germany (well-known areas experiencing decline) had vacancy rates of 13.6% (2018) and 10-12% (2013) respectively (Hattori, Kaido and Matsuyuki, 2017^[48]). In the face of depopulation, vacancy numbers will continue to increase.

High vacancy rates cause serious problems related to the built environment. They detract from pleasant living environments, reinforcing the exodus from depopulating areas. High vacancies and poor living environments further decrease population, leading to lower municipal revenues that strain resources to maintain a suitable built environment. In addition, empty dwellings negatively affect the price of surrounding real estate, increase crime and decrease the attachment of residents, thereby hindering the vitality of the city. As properties are abandoned for long periods of time, perceptions of surrounding neighbourhoods become more and more negative, which further depress housing prices while deterring potential residents (Han, 2013^[49]). Interviews with local governments suggest that many of them suffer from the decline of their city centres, yet have not been able to effectively respond to this problem due to complicated and slow procedures related to expropriation and demolition, insufficient administrative and planning capacity, and general lack of political will. While the central government is beginning to address these problems through studies such as the Vacant Housing Survey and the demolition pilot project, efforts are still made difficult due to legal barriers regarding expropriation and complex ownership structures together with a general lack of experience and available data.

The housing stock is old and energy-inefficient

As most new construction and renovation investments are concentrated in the large cities of Tallinn and Tartu, the gap in housing quality is widening, notably with respect to energy efficiency standards, which are lower for older buildings. Figure 2.10 illustrates this argument. For Estonia as a whole, about 60% of the housing stock was supplied during the Soviet Union prior to 1990. The rural and remote regions have much higher percentages of dwellings that were completed before 1960. It can be seen that the concentration of relatively new constructions after 2001 is especially concentrated in the main urban areas of Harju, Pärnu and Tartu. Noteworthy is the fact that roughly 30% of the dwellings in rural areas were constructed before 1945. Dwellings constructed in that era were mostly built of wood, lacked basic sanitation and heating was provided with firewood. After independence in 1991, many people abandoned these old wooden dwellings, moving into apartments abandoned by Russians (Tintëra, 2019^[50]). The management of this stock of old dwellings requires a place-based spatial strategy and implementation plan to direct demolition and preservation efforts.

As shown in Figure 2.9, the energy consumption share of Estonia's residential sector is the highest of all IEA countries. Within the residential sector, heating accounts for the largest share of energy consumption at around 75%. Due to Estonia's old dwelling stock, the energy demand for space heating per surface area in residential buildings is among the highest in the EU (IEA, 2019^[45]). Even accounting for Estonia's cold climate, Estonia's consumption is significantly higher than in many of the neighbouring Nordic and Baltic countries, pointing to other factors including the age of the building stock that drive the inefficient use of energy in the residential sector.

Figure 2.10. Dwellings by year of construction

Note: Adapted from indicator KVE02: Conventional dwellings by year of construction and county (after the 2017 administrative reform), 1 January (<http://andmebaas.stat.ee/Index.aspx?DataSetCode=KVE02>).

Source: Government of Estonia (2021^[30]), *Statistics Estonia*, <https://www.stat.ee/en> (accessed on 10 September 2021).

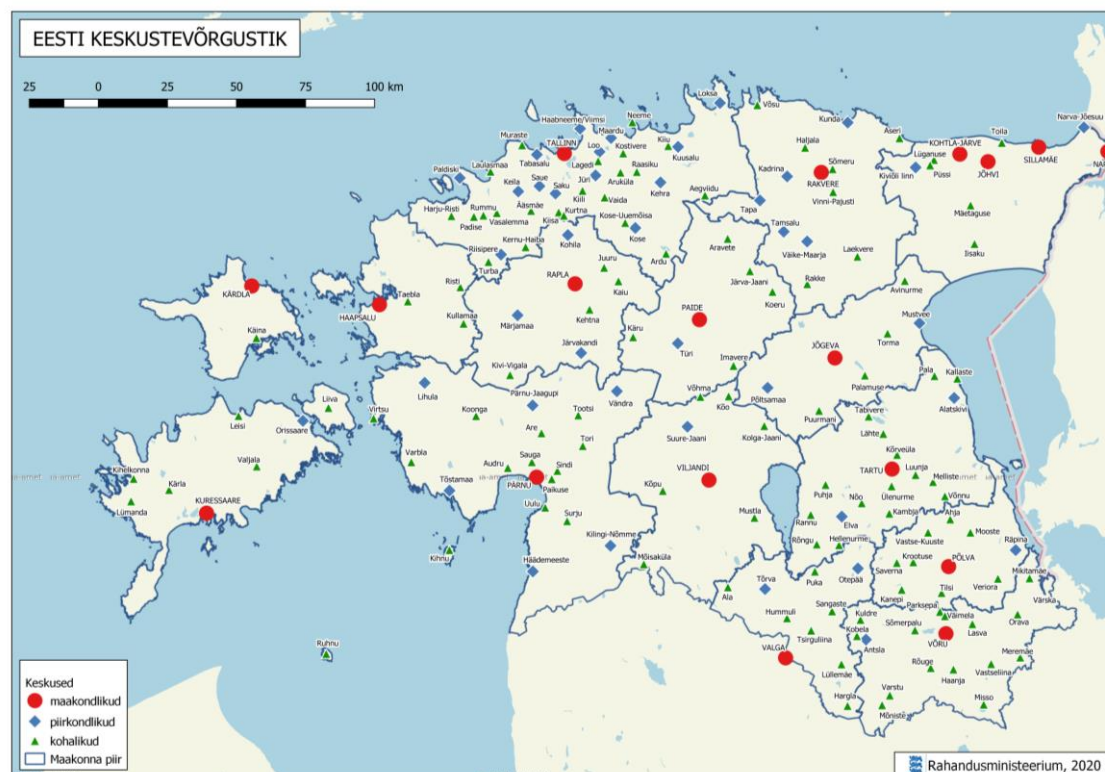
In Estonia, more than 60% of the population uses district heating. Estonia has 239 district heating systems with 1 430 km of heat pipelines, the majority of which are operated by private companies at the municipal level. While the Estonian Competition Authority regulates district heating prices, the price of district heating varies from roughly EUR 35 per MWh to EUR 87 per MWh, with prices typically being higher in small network regions with annual sales volume below 10 GWh (IEA, 2019^[45]). This means that residents living in remote areas pay more for the same unit amount of energy, all the while living in dwellings that are less energy-efficient (OECD, 2021^[36]). While renovating buildings can reduce heating demand, it is worthwhile to note that the less energy-efficient buildings in Estonia are owned by people with limited financial resources. While loan guarantees and grants are available for renovations, nonetheless renovating old buildings requires significant resources and is not attainable for many households, in particular in rural areas where real estate values are low. Moving to climate neutrality by 2050 requires renovating all buildings that will remain in use and equipping them with net-zero carbon emission consistent equipment. Reducing vacancies and clarifying which residential buildings should remain abandoned and which should be preserved and maintained within a spatial framework would help limit refurbishment work that will require government subsidies.

Public services and network infrastructure lack planning coherence

The lack of a substantive regional spatial planning framework that integrates spatial and strategic planning and encompasses relevant policy sectors has contributed to the inefficient delivery of public services. The former Ministry of Internal Affairs developed a concept of a hierarchical network of service centres in 2015 (Figure 2.11), taking into consideration the regulatory frameworks, economic viability and the frequency of visits and travel distances. According to this plan, settlements are classified into four levels within a distance that can be reached in one hour by public transportation and the necessary service facilities are presented according to the size of the settlements at each level. While this network was developed within the framework of CSPs, their implementation has been hampered due to a lack of co-operation between ministries in charge and also a lack of interest from local governments as follow-up administrative and financial implementation plans were not devised (Sepp et al., 2015^[51]). For example, many educational

cultural, sports and welfare facilities are operated by municipalities. The lack of a coherent regional framework has hampered consolidation and cost-sharing efforts among local governments. In reality, public services, in general, have not been reviewed and restructured according to the service network.

Figure 2.11. Network of service centres



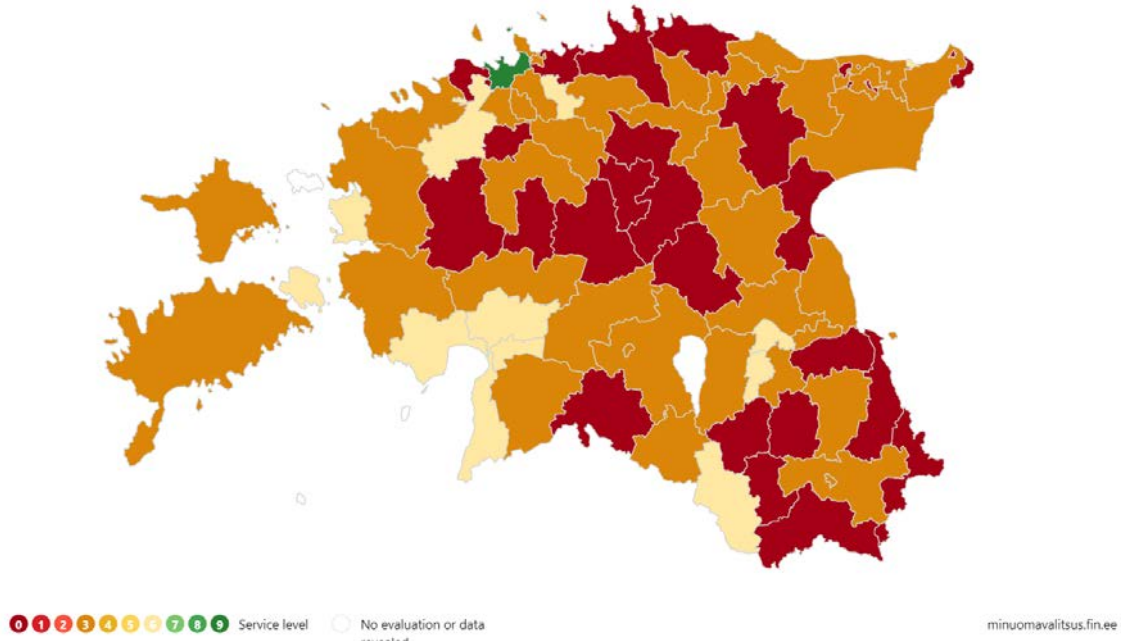
Note: County centres: red circles; regional centres: blue diamonds; local centres: green triangles.

Source: Estonian Ministry of Finance (2020^[52]), *Maakonnaplaneeringud*.

Transportation

The situation is similar for network infrastructure. The International Transport Forum (ITF) highlights key challenges for Estonia's transportation sector that include: i) a lack of co-ordination with spatial planning agendas; ii) low public transport quality in peripheral and rural regions; iii) low road pavement ratio; and iv) low investment efficiency (ITF, 2021^[53]). Figure 2.12 shows how satisfaction with public transportation is particularly low for the rural and remote regions of Estonia (Government of Estonia, 2021^[54]). The main issue is the fact that there are no clear links between spatial planning and transport policy. For example, there are no rules that make the provision of public transport links a compulsory requirement for new developments within or outside urban areas. In addition, many municipalities do not have a comprehensive overview of ongoing developments (e.g. in the form of an electronic database). They also lack the capacity to enforce specific rules regarding density or proximity to public transport on developers.

Figure 2.12. Satisfaction with public transport



Source: Government of Estonia (2021^[54]), *Minuomavalitsus (My municipality)*, <https://minuomavalitsus.fin.ee/en/kov> (accessed on 10 October 2021).

Although Estonia is aiming to introduce demand-responsive transport (DRT) through pilot projects and a public transport application (Government of Estonia, 2020^[55]), progress is slower than in neighbouring countries (Box 2.4). Fragmented governance of public transport is a major obstacle. For example, public transport is operated by public transport authorities while social transport is handled by local governments. Rigid five-year contracts with private carriers are major obstacles (Kirsimaa and Suik, 2020^[56]). A more coherent project evaluation process would also raise the efficiency of road investments (ITF, 2021^[53]) and make it easier to integrate environmental objectives, such as moving to climate neutrality. For example, the road administration is preparing for a predicted 50% increase in traffic volume for main state roads by 2040, even when population projections contained in the NSP predict a population decrease of nearly 10%. The absence of an official analysis agency and a public corporation specialising in road construction and maintenance have been cited as potential causes for such a disconnect (ITF, 2021^[53]).

Box 2.4. Innovative approaches for public transport

Demand-responsive transport (DRT)

The municipality of Niepołomice in Poland had the goal to make its public transport routes more efficient and convenient for users, whilst also driving down costs and emissions by reducing the number of unnecessary journeys. Their solution was the Tele-Bus system, an on-demand bus service with no regular routes or timetable, operating in three districts with low population densities. Users can request a journey between any 2 of 77 stops in the coverage area, up to 30 minutes before the required departure. The main user groups are commuting workers, students and elderly people. Despite some initial opposition to the cancellation of traditional bus services, the DRT system now has an average of

more than 3 500 users per month, from around 300 when the system was launched in 2007, thanks to ongoing communications efforts and a focus on good service.

Co-operation with other services

In countries such as Switzerland and the United Kingdom (UK), the postal service is a major bus operator. Existing postal vehicle runs collect mail from local post offices and transport them to regional sorting offices, most often in a nearby town. Such routes provide two-three runs per day on weekdays, depending on the frequency of postal collections. Approaches that replace a small postal van with a minibus has allowed public transport services to “piggyback” on postal operations.

Source: Interreg (2018^[57]), *A Policy Brief from the Policy Learning Platform on Low-carbon Economy Demand-responsive Transport*, <http://www.interregeurope.eu/regio-mob/> (accessed on 15 February 2021); OECD (2016^[58]), *OECD Territorial Reviews: Japan 2016*, <https://dx.doi.org/10.1787/9789264250543-en>.

Water and sanitation

Water networks are exposed to issues similar to that of district heating, such as large differences in rates between regions and increasing unit costs of service provision. These issues must be addressed in the face of shrinking and ageing, as municipalities deal with lower fiscal resources and a more spread-out population. Estonia’s water supply is fragmented, with 1 165 suppliers operating in 2011. Of these, only 52 have more than 2 000 customers. Water networks differ widely in terms of size; the largest serves the capital city Tallinn providing services to more than 438 341 people and the smallest serve only several hundred. While 90% of Estonian cities are served by fully publicly owned water companies, smaller towns and rural municipalities are often served by a variety of entities, including specialised water companies with mixed (public and private) ownership, private companies and, in some cases, directly by local government agencies (Tooming, 2011^[59]). There is an ongoing process of consolidation of water companies in Estonia, together with government support in the form of financing for regional companies (OECD, 2020^[60]). When completed, consolidation would not only improve efficiency in the face of shrinkage but also allow better access to external capital such as EU funds.

Policy recommendations

Given the land use and spatial planning circumstances in Estonia, the policy recommendations are generally geared towards reducing land consumption sustainably and promoting gradual densification of central areas in rural and remote regions. Rural and remote regions experiencing population decline and ageing should aim to increase land use efficiency, taking into account infrastructure and service delivery capacities. The benefits include lower service delivery and infrastructure costs for municipalities and lower environmental impacts from spread-out development. Furthermore, denser places are on average more productive due to agglomeration economies, with the population density of a region being a strong predictor of economic performance.

In addition, the recommendations stress a need for co-operation across policy sectors, along with co-operation across levels of government. An approach to managing land use and spatial development using a more integrated approach is critical to overcome sectoral silos and avoid policies that are potentially at odds with each other. In addition, co-operation, both horizontally and vertically, across governments is crucial in enabling sustainable service provision, promoting coherent spatial development that goes beyond administrative boundaries and getting the spatial frame for planning right.

County-wide Spatial Plans (CSPs) should be the central platform in guiding regional development

In theory, the aim of a CSP is to define the principles for coherent spatial development within county boundaries. Its primary role is to formally express interests that transcend local municipal boundaries and to balance national and local needs and interests regarding spatial development. In this way, CSPs are the ideal platform to address regional issues related to shrinkage, as most all of these issues (e.g. land use, infrastructure, services) need to be solved collectively at a higher spatial scale. In practice, however, CSPs are weakly implemented and lack proper details regarding the scope and procedures for inter-municipal co-operation (IMC). This is in part due to the reduced powers of county governments over time, along with a lack of political support for regional-level policies in favour of sectoral policies.

The recent changes Estonia has undergone in its county governance have brought about fragmentation in county strategies. The Regional Policy Programme and Regional Policy Action Plan (RPAP) should be streamlined to provide one coherent regional policy framework that integrates spatial objectives with strategic objectives. Importantly, this policy framework should be well integrated within the NSP such that it provides a clear framework that can be implemented by individual CSPs. NSPs should also present policy and planning priorities based on spatial patterns of development and demographic change. Furthermore, the NDSP should also be well integrated into the NSP so that CSPs can better take national level construction projects into account when devising county-level spatial planning strategies.

CSPs should be a *de facto* platform for which regional issues relating to spatial development are outlined. CSPs need to outline a clear division of roles between the central government and municipalities for tackling issues that span municipal boundaries, in order to reduce confusion and prevent inefficiencies in implementing regional strategies. In addition, CSPs should expand the scope of functions to determine the conditions for IMC in other policy areas pertinent for tackling depopulation and ageing, including education, health and other critical services and infrastructure. To this end, the central government and municipalities need to review the appropriateness and feasibility of the current hierarchical service network and outline clear implementation plans with timelines in CSPs. For spatial planning, CSPs should better outline areas for IMC with regards to the function of the network of centres and clearly determine principles for municipalities in co-ordinating development patterns. There is also a need to combine strategic planning with spatial planning at the county level. In this regard, county development strategies and CSPs should be well integrated, possibly by subsuming county development strategies within CSPs. Discussions on the correct spatial scale of regional spatial planning should also continue, as planning within administrative boundaries versus functional boundaries both have their weaknesses and strengths. Administrative boundaries make co-operation administratively easier and less burdensome, yet many spatial issues span across administrative boundaries. If feasible, CSPs could be allowed to be flexible in their reach, for example by encouraging multiple counties to prepare a unified spatial plan.

Land taxes and land-based financing instruments should be revised to deter spread-out development in rural areas

Land tax rate limits should be relaxed to allow municipalities greater autonomy in collecting revenues and to encourage efficient land use. Land taxes should not incentivise spread-out development and the ownership of single-family homes over multi-family homes. Tax exemption for residential land in remote areas should be abolished, or at least reduced, while exemptions in denser areas within rural municipalities could be relaxed further. The additional revenues collected from land taxes should be reinvested towards improving amenities in shrinking regions. Importantly, these measures would need to come hand-in-hand with the re-evaluation of taxable land values, as the current low valuations make such measures ineffective. Differentiated land tax rates depending on how land is used could also be utilised. For example, Germany has proposed a land use tax, which differentiates land tax rates depending on how land is used and the

associated environmental costs. In the Netherlands and the US, there have been discussions on a tax on the welfare loss associated with the loss of open space due to development.

Alternative fiscal instruments could be used to better align land use with desired spatial outcomes. Importantly, impact fees should be actively utilised to not only apply to developments in dense areas but also to sprawl areas in remote regions, with the rationale being the internalisation of additional costs related to service and infrastructure delivery. Money gathered from impact fees should be used to improve the quality of the built environment by investing in public infrastructure and services.

Demolition and renovation projects should take place at a larger scale, through coherent planning, fiscal support and legislative changes

Current efforts to improve living conditions and residential environments through demolition and renovation projects in Estonia, while ongoing, are still in their infancy. For example, the *Hea avalik ruum* programme in Estonia has been implemented since 2014 and the rejuvenation of ten town centres has been completed. They have been successful in achieving their goal of improving the built environment of central areas yet these projects have been implemented in a piecemeal fashion at the site level. It is necessary to establish a system in which these projects can be implemented at a larger scale through co-operation between government levels, ideally within the spatial planning framework through the CPs and CSPs. Importantly, these programmes should be implemented in a participatory and horizontal manner. This would not only improve their efficiency but also better align regeneration efforts with strategic objectives.

Most importantly, demolition and renovation projects should be aligned with spatial planning objectives outlined in CSPs and CPs. The CSPs should outline which areas are in need of demolition and renovation based on population projections and spatial development trajectories. The CPs should outline the settlement boundaries, allocate land uses (e.g. residential, industrial, commercial) and development densities, directing demolition and renovation projects according to these plans. The demolition and renovation projects should follow a process of “shrinking from the outside in” (Box 2.5), where the building stock in the periphery is reduced and renovation efforts are concentrated in town centres.

Box 2.5. Addressing shrinkage in East Germany: The Urban Restructuring Programme (*Stadtumbau Ost*)

Background

The reunification of Germany in 1990 brought economic hardship to Eastern Germany. The unemployment rate had reached double-digit levels by the early 1990s and rose sharply to an alarming 17.8% in 1998. The difficult employment situation affected migration: between 1989 and 2002, almost 2.8 million people moved from east to west. At the beginning of the 21st century, a clear division in the housing market situation also became evident. By 1998, the share of vacant housing in Eastern Germany was more than 2 times higher than in Western Germany and, by 2000, Eastern Germany had a vacancy rate of 14%. As a response, the federal government introduced a new policy called the Urban Restructuring Programme (*Stadtumbau Ost*) for Eastern Germany in 2001. Unique within the framework of federally supported urban policies, *Stadtumbau Ost* was the first to explicitly address the issue of shrinkage.

Phase 1 (2001-09): Demolition dominated

The introduction of *Stadtumbau Ost* was based on the work of an expert commission, which had been affected by the interests of the housing sector to a large extent. The programme aimed to eliminate roughly 350 000 dwellings by 2010 with the support of public subsidies. Upgrades to the housing stock were also recommended. *Stadtumbau Ost* had a budget of EUR 2.5 billion in public subsidies during

the period of 2001-09, of which about EUR 1 billion were federal government funds. It was formally decided that demolitions and upgrading should each receive 50% of the subsidies at the federal level, although municipalities did not have to follow such rules. What made *Stadtumbau Ost* particularly distinctive among other federally supported urban policies in Germany at that time was the preferential treatment for demolition projects. While demolitions were financed completely by the federal government and federal states (each contributing 50%), upgrading projects required a one-third contribution from local authorities. Considering the financial difficulties of shrinking municipalities at the time, the financing rules made demolitions more attractive. By June of 2010, about 283 000 dwellings had been demolished.

The urban restructuring strategy followed a spatial concept called “shrinking from the outside in” (*Schrumpfen von außen nach innen*). The strategy aimed for a reduction of the housing stock (i.e. demolition) in the periphery, while inner city districts would be the focus of upgrading projects. About 70% to 80% of residents affected by demolitions were relocated within the same neighbourhood. The effort, while with its fair share of troubles, was nonetheless a general success. In Leipzig, by 2009, 74% of residents of the largest prefabricated housing estate declared to be satisfied with their place of residence, compared to 35% in 1992.

Phase 2 (2010-16): Shift towards renovation and cultural heritage protection

Even before the German parliament's decision to extend *Stadtumbau Ost* for the period from 2010 to 2016, the overall direction of the policy had begun to shift from demolitions towards upgrading. In regard to spatial development, more attention began to be paid to the inner city districts. Starting in 2007, it became mandatory for municipalities to use 50% of subsidies on upgrading. Notably, *Stadtumbau Ost* interpreted the meaning of “upgrading” in a broad way. Earlier policies had tended to be narrowly focused on the physical modernisation of houses while neglecting the wider urban context. By contrast, upgrading funds for *Stadtumbau Ost* were also utilised for the improvement of urban infrastructure, the re-use of vacant lots and public space improvements, as well as for the preparation of urban development concepts.

Following the new policy orientation, new forms of subsidies became available that allowed for the temporary preservation of houses in a technically safe condition in expectation of future demand. No municipal contribution was required for these subsidies, which was important given the difficult financial situation of many municipalities. Over time, the practice of using preservation funds became more widespread. Having been of only marginal significance until 2009, projects within this new priority accounted for almost 15% of the total funds spent within *Stadtumbau Ost* between 2012 and 2015.

Phase 3 (2017 onwards): Permanent fight against housing vacancies in the East, integration support in the West

In 2017, *Stadtumbau Ost* was merged with *Stadtumbau West*, a parallel initiative in Western Germany that was started in 2004 to tackle demographic change in western regions. The combined annual budget was estimated to be approximately EUR 260 million. As a result of the evaluation of previous urban redevelopment programmes, instruments that focused on safeguarding and upgrading old buildings and other buildings that characterise the cityscape were introduced for all urban development support programmes with a reduced municipal contribution. Urban redevelopment measures in 1 081 municipalities had been funded by both programmes by the end of 2016, with 494 municipalities in *Stadtumbau Ost* and 586 municipalities in *Stadtumbau West*.

Source: Radzimski, A. (2016^[61]), “Changing policy responses to shrinkage: The case of dealing with housing vacancies in Eastern Germany”, <http://dx.doi.org/10.1016/j.cities.2015.10.005>; Radzimski, A. (2017^[62]), “Involving small landlords as a regeneration strategy under shrinkage: Evidence from two East German cases”, <http://dx.doi.org/10.1080/09654313.2017.1391178>.

As mentioned in the Estonia Reconstruction Strategy 2020, the estimated annual investment needed for demolition and renovation is 4.5 times larger than that of current investments. The central government should prepare a sufficient and stable financing mechanism, possibly through the Estonian Credit and Export Guarantee Fund (KredEx) or by establishing a housing investment fund, and increasing annual investment scales. In addition, mid-to-long-term investment plans including the amount of funds available should be agreed upon between the national and local governments as early as possible so that local governments and the private sector are able to promote projects in advance with a long-term view. Importantly, it is necessary to continue to give funding priority to non-metropolitan regions, as private financing in metropolitan regions is generally more feasible. If residential environments in non-metropolitan regions can be improved, the national cost burden can be reduced as local real estate values will be better maintained, reducing the population exodus to large cities. Additional bonuses or higher grant percentages could also be awarded to projects reflected in the CSPs or CPs.

Legislation regarding expropriation should be revised to allow for the easier demolition of vacant buildings. Estonia's expropriation laws are much stricter compared to neighbouring OECD countries (Box 2.3). Expropriations should be allowed for the demolition of empty detached housing, while the expropriation of apartment buildings should be streamlined. Expropriation initiatives should be integrated with land use plans through the CP and CSP, thus allowing expropriations to be carried out at a larger scale based on demographic projections and settlement boundaries. This would require expropriations to be allowed based on land use decisions, such as in countries including Denmark, Finland, Latvia and Poland.

When expropriation proves difficult, strategies such as land readjustment or land banking could be utilised. Land readjustment strategies could provide residents with an alternative residence in the vicinity of their current plot that is more valuable due to infrastructure and built environment improvements but smaller in area. This would not only provide for infrastructure and increase land values but also promote densification as built-up areas could be reduced significantly. "Land banking" or the practice of assembling plots of undeveloped or abandoned land for further development or sale, could be useful in declining areas. Land banks help municipalities to identify, prepare and redevelop vacant sites and, when done by publicly owned land banks, can be a particularly effective tool in promoting coherent development of abandoned areas.

Comprehensive Plans (CPs) should steer spatial development, while subordinate plans should adhere to spatial planning objectives

According to the Planning Act (paragraph 142), the DSP, despite being the subordinate plan in the planning hierarchy, has the authority to override the CP (Figure 2.6). This authority is often exercised in practice when preparing DSPs. While such arrangements are not uncommon in OECD countries (e.g. Belgium, Norway, Portugal), this poses issues in the case of Estonia as DSPs are most often requested for initiation by developers and thus are influenced by private interests. As DSPs are mainly initiated at the small-scale level of a development site, the overriding of the CP in favour of a more detailed plan influenced by private interests carries the danger of detracting from a more coherent spatial development strategy (Sooväli-Sepping, 2020^[12]).

Two underlying causes of such planning practices can be identified. First, it may be the case that the CP itself is prepared in too much detail, being inflexible and hindering the nimble development of areas. Exacerbating this is the fact that the process of developing CPs is arduous and lengthy, meaning that in many cases CPs are already out of date when approved for implementation. Second, it may be the case that changes to spatial development principles outlined in the CP are allowed to be altered too easily. This can be the result of many factors, including the lack of experience and capacity on the part of local governments to implement spatial planning strategies and Estonia's historical traditions that put a strong emphasis on private property rights.

Rearranging the hierarchy of local plans is necessary to promote coherent spatial development at the local level. This is especially important because in addition to DSPs, LGDSPs and design criteria also exist to set building regulations and land uses, which without streamlining can result in misunderstandings and confusion regarding planning processes. The CP should confirm its role as the higher-order plan that sets out strategic initiatives for land use and development. The subordinate plans and codes should conform to the CP and complement it by implementing building and land use details based on these agendas.

Alterations to the CP by subordinate plans should be disallowed or at the minimum allowed only in exceptional circumstances. In return, CPs should refrain from “over-planning” by moving away from setting detailed building codes and specific uses, and rather focusing on planning the strategic location and amount of land use categories, housing, infrastructure and service networks based on population projections and demographic trends, while also setting strict development boundaries. This would have the added benefit of easing the requirements of what constitutes a CP and shortening approval processes. Furthermore, the following subsections highlight how increased flexibility in CPs is advantageous to effectively adapting to depopulation and demographic change.

CPs need to integrate population projections into land use planning and adjust development boundaries accordingly

Without population projections, land use plans tend to overestimate the future demand for land. This is especially the case when regions are declining, as plans tend to be overly optimistic in estimating land demand compared to population forecasts. Certainly, local governments are entitled to set their development objectives based on self-governance principles, especially in light of decentralisation trends. However, the appropriate spatial scale also needs to be considered, especially when local governments have an incentive to develop more and more land in the absence of regional-level guidelines. In order to prevent a “race to the bottom”, CPs should incorporate the population guidelines set in CSPs and implement them into land use plans and regulations, encouraging densification of core areas. Local land use plans should consider the forecasted demand for housing, infrastructure and other uses, as well as allow for the adjustment of densities and development boundaries as needed. If needed, Statistics Estonia could provide municipal level population projections that CPs could utilise for land use decisions.

A strategy of proposing settlement boundaries and service limits while providing various incentives for investments within those boundaries helps in deterring spread-out development in rural and remote areas. Instruments such as urban growth boundaries, urban service boundaries and greenbelts are commonly used to set temporary limits on urban expansion. They are effective at increasing infill development and limiting spread-out development. Such boundaries should be clearly laid out and enforced in CPs, in harmony with strategic objectives and socio-economic development plans. These boundaries should then be adjusted as needed to better contain development in areas that face population decline. When coupled with fiscal incentives, these boundaries are capable of improving the quality of the built environment within the limits, which can attract residents and businesses.

Such strategies have been effective to a certain degree in OECD countries. For example, various states in the US use a combination of incentives and regulations to deter sprawl (Table 2.2). In Maryland, an incentive-based policy of providing government subsidies and support programmes together with infrastructure investment is used within urban containment boundaries, or so-called Priority Funding Areas (Howland and Sohn, 2007^[63]). Such efforts have been able to attract new residents and businesses to these areas, although their success depends on co-operation between adjacent municipalities. Other states such as Minnesota and Tennessee utilise a regulation-oriented policy, where urban growth boundaries restrict development outside of designated limits but flexibly adjust these limits according to development demand and sometimes allow development in condition for infrastructure installation. Other countries such as Japan and Korea have utilised greenbelts with success to contain development within designated areas.

Table 2.2. State-level urban containment boundaries in the US

State	Urban boundary	Adopted (year)	Legislation
Arizona	Requirement to adopt 10-year growth boundaries	Introduced and defeated in 2001	Proposition 202
California	Urban growth boundary	Introduced and defeated in 2001	AB 1514
Colorado	Urban growth boundaries	Introduced and defeated in 2000	Amendment 24
Kentucky	Urban growth boundaries	Introduced 2000-01, passed but not signed by the governor	HB 524
Maryland	Priority Funding Areas	Passed in 1997	Smart Growth Areas Act
Minnesota	Urban growth boundaries	Introduced and defeated in 2001	SF 786 and HF 882
Pennsylvania	Urban growth boundaries	Issued in 1998 but not enacted	Proposed by the Governor's 21 st Century Environmental Commission
Oregon	Urban growth boundary	Enacted in 1973, adopted in Portland in 1980	Senate Bill 100
Tennessee	Urban growth boundary	Enacted in 1998	Growth Policy Law, Public Chapter 1101
Washington	Urban growth boundary	Enacted in 1990	Growth Management Act

Source: Adapted from American Planning Association (2002^[64]), *Planning for Smart Growth: 2002 State of the States*, <http://www.miami21.org/PDFs/Planning%20for%20Smart%20Growth.pdf> (accessed on 12 October 2021).

Local plans should be more flexible to adapt to demographic trends and economic opportunities

Zoning should be sufficiently flexible to allow neighbourhoods to change over time according to evolving population patterns and changes in housing demand. Flexible zoning plans allow underused areas to be allocated to new uses, possibly even through temporary uses. For example, the authorisation agreement (“*Gestattungsvereinbarung*”) in Germany allows for the limited-term public use of private property while still maintaining owners’ building rights (Rall and Haase, 2011^[65]). This can increase the density of development and improve environmental sustainability while reducing burdens on transport infrastructure. Flexible zoning also ensures efficient patterns of spatial development, especially in low-density areas and along public transport corridors.

Importantly, however, flexibility in land use planning should not lead to uncontrolled land use that does not internalise the potentially harmful externalities stemming from developments. When allowing for more flexibility, zoning regulations and planning should target nuisance levels, with uses that create fewer nuisances than the maximum level allowed for a zone being permitted. A good example of such an approach is the national zoning system of Japan (OECD, 2017^[21]). Indeed, all types of residential buildings are allowed in a commercial zone but hotels are only allowed in denser residential areas. Relatedly, while warehouses and garages are allowed in commercial areas, factories are not. In addition, none of the zones are strictly single-use and control land use instead through more flexible floor area ratios and building coverage ratios.

Flexible zoning districts or special-purpose bodies (SPBs) could improve the adaptability of land use in instances where new developments need to be implemented quickly. Many OECD countries have adopted extraordinary measures for such cases. For example, in Poland, Special Infrastructure Acts suspend common planning law for key projects. While the acts have been instrumental in helping Poland take advantage of investments funded through EU Structural Funds, nonetheless these acts can be implemented even where they are contradictory to the aims of a local spatial strategy (OECD, 2017^[21]). Thus, in the case of Estonia, such zoning districts, if implemented, should only be utilised in cases where a significant investment or opportunity arises for which quick development is necessary to take advantage

of available resources. As mentioned, these districts should also adhere to the spatial planning objectives set out in CPs.

Relatedly, restrictive zoning regulations should be avoided in most cases. Single-use zoning should be used mainly for specific purposes such as hazardous industrial areas, while other areas should actively utilise mixed-use zoning. Density regulations should be upward flexible to allow the gradual densification of central neighbourhoods, in line with infrastructure and service delivery capacity. Mixed uses and flexible density regulations have the benefit of not only allowing land use to be sustainable and more adaptable to changing demographic conditions but also benefit the environment and deter sprawl by reducing demand for vehicles and shortening travel distances between residential areas and other land uses. This is important especially in rural and remote regions where reliance on personal vehicles is high. Thus, when utilising mixed uses and flexible density regulations, the priority should be to establish well-functioning public transport networks including DRT services through transit-oriented development (TOD). Such land use patterns also result in a reduction of service per capita and infrastructure delivery costs. This is critical for rural and remote areas and small towns facing decline, as their fiscal capacity to provide for an extensive infrastructure network that spans thinly developed areas is limited.

The central government should aid municipalities by providing data and open information systems together with administrative support

Establishing data and open information systems for vacant houses and buildings in particular is necessary to provide information on the spatial distribution and status of depopulation across regions. A database documenting the costs and outcomes of main municipal services should be established to support benchmarking of service provision across municipalities. Relatedly, existing and planned platforms such as “My municipality” (*Minuomavalitsus*) and the e-construction platform could be expanded to include key aspects of spatial planning and the built environment, to regularly evaluate and monitor the quality of life in regions. For example, the UK’s Ministry of Housing, Communities and Local Government has developed and published online a relative deprivation index based on 39 separate indicators at the municipal level that is used to gauge the living conditions of residents across multiple domains (UK Government, 2019^[66]). A dedicated e-platform could also integrate data from various government sources, such as the land portal and the building register.

Such information is necessary for effective spatial planning, policy establishment and execution, as well as performance measurement in the face of depopulation. For example, information on education services could be used to help municipalities plan and reorganise school networks. Information regarding empty houses could be shared with the private sector to identify various business opportunities, including temporary use contracts, by checking empty houses and publicly owned idle facilities. Importantly, these information systems could be utilised to raise awareness in municipalities regarding the added costs of shrinking populations and spread-out development and to aid them in planning land use and reorganising service and infrastructure networks accordingly.

In light of local governments’ short history of land use planning, it is also important for the central government to aid in the capacity building of local governments to effectively design CPs. For example, the central government could train and maintain a national pool of certified planning and architectural experts that would aid local municipalities in devising CPs as needed and serve as consultants for the planning authority. This would provide local planning officials with the administrative capacity to co-operate on planning efforts, balance the interests of various stakeholders and overall ensure that a comprehensive spatial solution is prepared for the municipality.

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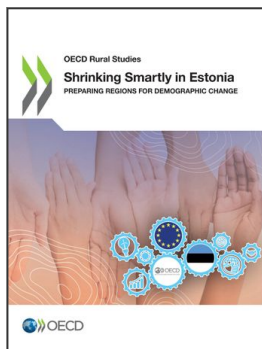
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Note

¹ Some differentiation already exists in Estonia. Financial support for apartment renovation is differentiated regionally (<https://kredex.ee/et/teenused/ku-ja-kov/rekonstrueerimistoetus-2020#oluliseks-tingimused>). Some measures supporting transport and education infrastructure are directed at urban areas (<https://www.riigiteataja.ee/akt/106032015030?leiaKehtiv>), while the “distributed settlement programme” is targeted towards sparsely populated areas (<https://www.riigiteataja.ee/akt/107012021004>).



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