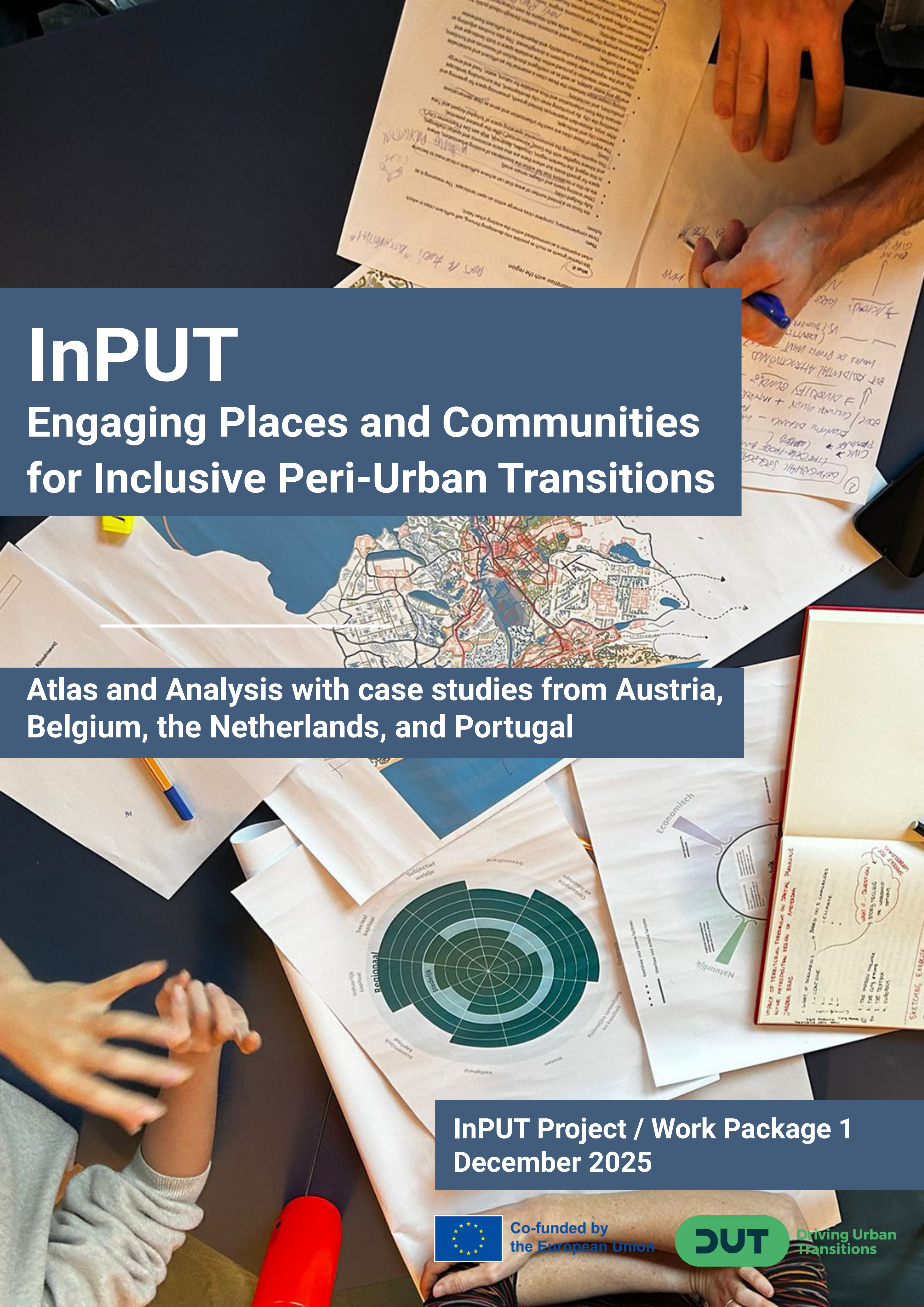

InPUT

Engaging Places and Communities for Inclusive Peri-Urban Transitions

Atlas and Analysis with case studies from Austria, Belgium, the Netherlands, and Portugal

InPUT Project / Work Package 1
December 2025

Co-funded by the European Union

DUT Driving Urban Transitions

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PART I

Introduction

Extending the principles of the 15-minute city across peri-urban Europe

Urban development concepts founded on wellbeing, community inclusion and environmental sustainability have become widespread in recent years. Long-standing ideas about human-centric cities where residents can easily access their daily needs, the need to align urban planning with climate goals, and the demand for participation in decision-making converged in a renewed interest in neighbourhood-scale models of proximity, mixed use, and liveability. The most prominent among them is perhaps the 15-minute city, but its rapid success as a planning theme and policy priority is uneven. The model thrives in dense central cities with sufficient amenities serving a variety of needs and the 'right' urban form to make them accessible, based on dense, walkable areas, mixed uses, and good transport infrastructure. These cities also benefit from institutional capacity to invest in urban regeneration and tend to have an alignment between municipal authorities and local communities around progressive, climate-oriented agendas.

Yet, while the popularity of the 15-minute city has been largely linked to its demonstration in these well-connected centres most suited to adopt it, a just and wide-ranging urban transition requires attention to other forms of urbanization. Consequently, recent research aims to make the principles behind the model more applicable to various urban conditions. Indeed, a large share of Europeans does not live in dense and cosmopolitan core cities, but rather in spatially, functionally, and institutionally fragmented peripheries, conceptualised here as peri-urban areas. These dynamic, low-density areas are integral parts of the European socio-spatial landscape but may struggle to provide a high quality of life for their inhabitants, as they are typically underserved in mobility, amenities and governance capacity. As a result, peri-urban areas exhibit limited alignment with the preconditions underpinning 15-minute city models, which makes interventions along its principles both urgent and difficult.

The research underlying this report argues that this makes peri-urban areas an important frontier to implement principles of liveability, accessibility and proximity inspired by the 15-minute city. Long labelled as amorphous, transitional or structurally weak peripheries, these areas have remained at the margins of policy and planning priorities, with little attention paid to their specific spatial structures, functions and networks, socioeconomic conditions, societal aspirations and governance capacities. But peri-urban areas are complex territories where planning cultures, the historical-geographic structures of the landscape and infrastructural networks build distinctive socio-spatial logics. These logics are not necessarily suited for 15-minute city models, whereas institutional cultures and societal aspirations are not necessarily aligned with its principles. This points to ways of materializing liveability, proximity, and accessibility that differ fundamentally from those in the model core cities.

Meanwhile, peri-urban Europe is undergoing rapid socio-spatial changes, including demographic shifts, new economic and technological innovation clusters in agri-food, logistics and energy, land pressures linked to housing and infrastructure provision and climate adaptation, and deeper spatial and economic integration in metropolitan systems. Many peri-urban areas to cope with these changes and face rising socio-economic vulnerability. In these places, the existing conditions require greater investments in socio-spatial development, but the existing resources preclude them, fuelling perceptions of policy neglect and disengagement from democratic institutions.

Peri-urban governance actors therefore have a strong incentive to implement effective planning solutions to increase wellbeing and spatial quality. Yet, the places most in need of improving proximity, accessibility and liveability conditions are often the least able to adopt them. Without expanding its applicability, the 15-minute city risks becoming a selective vision reserved only for some places, undermining broader ambitions such as the EU's climate neutrality pathways. A just urban transition agenda must surpass this divide and embrace the full diversity of urban Europe. This implies acknowledging not only the spatial specificities of peri-urban areas but also the capacities of their governance actors and the aspirations of their communities. The InPUT project seeks to build upon the core promise of the 15-minute city to achieve precisely this.

The InPUT Project

The InPUT project is part of the Driving Urban Transitions Partnership (DUT), a research and innovation programme addressing urban challenges co-funded by 28 European countries. The project is integrated in the 15-minute city Transition Pathway, which promotes liveable neighbourhoods and climate-neutral cities. Within that scope, InPUT explores how principles of proximity, accessibility and liveability can be extended across European peri-urban areas and endorsed by local societies. The aim is to develop fairer and more cohesive territories, providing both conceptual models transferable between locations sharing similar challenges and practical visions grounded in specific sites.

For that purpose, the project works with academic and policy partners in the Netherlands, Belgium, Austria and Portugal (see Colophon). Four peri-urban regions in these countries serve as case studies:

- The Foodvalley/Groenemetropool region in the Netherlands, west of the cities of Arnhem and Nijmegen. The area consists of small and medium-sized towns and villages, mostly following a compact development pattern close to historical waterways. Besides its key role in agriculture, logistics and distribution, the region is under strong pressure to build more housing, while experiencing a relative lack of amenities and local mobility options, and being prone to flooding and other ecological risks.

- The Campine region in northeastern Flanders, Belgium, between the cities of Antwerp and Turnhout. The region has a heterogeneous socioeconomic profile and spatial structure of towns, villages and ribbon developments along main infrastructural corridors. A fragmented pattern of residential, industrial, commercial and agricultural functions leads to highly differentiated employment and public investment contexts, fragmented planning competences and poor integration of complex socio-spatial problems.

- The district of Bruck/Leitha region in Austria, a low-density region west of Vienna along the Danube river. With two thirds of the land dedicated to agriculture, the region has a diverse spatial structure, from denser peripheries near the capital city to small towns and rural villages close to the border, as well as various protected natural and landscape areas. The area has a diverse social and employment profile and high car-based commuting.

- The Braga-Guimarães-Famalicão region in northwest Portugal, a densely populated and fragmented area structured as a dispersed built fabric mixing residential, industrial, logistical and commercial uses. Urban and rural land profiles are interspersed, and the region has a high level of car dependency to access dispersed amenities. Based on a hierarchic institutional structure, the area struggles with multi-actor and multi-scale governance.

InPUT is divided into three work packages. In the first stage, we conduct an extended spatial, governance and social analysis of the four peri-urban regions. Moving beyond purely technical aspects of transport and amenity distribution, the project also examines institutional factors that influence policy priorities and investments, as well as sociocultural preferences and values that determine the desirability of the transformations for local societies. This is reflected in the transdisciplinary lens adopted throughout the research, based on continuous knowledge sharing between the various fields involved in the consortium. To support this approach, we work with local stakeholders to identify their functional and mobility needs, institutional resources and community aspirations. In the second stage, that knowledge is synthesised into potential socio-spatial interventions and practices that enable more liveable peri-urban environments. This is shared again with local actors (residents and policymakers) and used to assess and co-design transformations collaboratively. In the third stage, the project develops tools and criteria to systematically evaluate future peri-urban visions along principles of wellbeing, sustainability, inclusion and social innovation.

How this report is structured

This report presents the results of Work Package 1 of the InPUT project. It provides the spatial, governance and social analysis of each case and discusses them in a cross-case comparison. The peri-urban areas in the analysis justify this combination of individual and comparative approaches because their selection is purposefully representative of the peri-urban condition in Europe, complementary in terms of contextual uniqueness and specificity, and diverse in terms of spatial, social and institutional contexts. Together, the regions illustrate both the relevance and urgency of planning interventions in peri-urban areas: they have strong economic activity and population density variations, lie relatively close to compact cities but are not integrated in their nearest suburbs, have fragmented and dispersed settlement structures, and face regional or intermunicipal cooperation challenges.

Focusing first on the individual cases, the report starts with a spatial analysis. The objective is to move beyond generic definitions and understand the diversity of peri-urban social and spatial structures. Through a typological classification, we extract various types of peri-urban settings based on distinctive demographic and spatial profiles. Contrasting morphologies, networks, and accessibility levels are highlighted, and their potentials, weaknesses and alignment with the 15-minute city principles can be examined. This fine-grained knowledge of peri-urban conditions serves as a basis for better informed intervention proposals.

The next section consists of the governance analysis. The 15-minute city is more than a technical design problem and requires a deep engagement with local societies and institutions. Peri-urban areas are shaped by planning cultures and institutional decisions reflected over time in the structure of the built environment. Governance capacities and priorities vary across multi-scalar and multi-actor institutional frameworks. Our analysis identifies these frameworks and assesses the implications of the instruments and institutional dynamics behind spatial planning policies.

The socio-spatial analysis follows, in which the research gets closer to the life-worlds of people, exploring how they interpret their environments and articulate their needs and aspirations. Perceptions and interpretations are disclosed in focus groups and interviews, clarifying the meanings attributed to daily spatial experiences in peri-urban areas. This allows us to reveal the different ways in which peri-urban inhabitants interpret questions of accessibility, proximity and liveability and infer how 'their' 15-minute city looks like.

Overall, the approach engages with the grounded knowledge and imagination of local societies and gives a central role to participatory research. This is visible again in the report of the various co-identification workshops conducted with policymakers. This is presented as an interlude in the report, illustrating our participatory methods with text and images. Rather than providing systematic evidence of established policy approaches, this exercise explores the value of collective discussions and explorations in semi-informal environments.

The report continues with the cross-case analysis of the findings. The purpose is to highlight similarities and differences between the four cases – their spaces, people and institutions – and synthesize common learning points. We explore how the case selection strategy – representative, complementary and diverse – provides an overview of peri-urban conditions in Europe, illuminates practices, opportunities and challenges for better accessibility, proximity and liveability, and draws broader lessons for spatial planning and policy.

We conclude with a discussion on what can be learned from the peri-urban for planning. We critically examine alternative ways to materialize accessibility, proximity and liveability in peri-urban contexts and point out the different imaginaries of planners, academics and residents. This allows us to promote a focus on principles inspired by the 15-minute city as a path to improved social and territorial cohesion in these areas and to define the conceptual and methodological guidelines for the next phases of the project.

PART II

Methodology

Research approach of InPUT

In this project we relied on a mixture of methodological approaches which were considered appropriate to guide the research process. Generally speaking, we used qualitative, quantitative and participatory research approaches to answer our basic research questions. The mixed methods approach is necessary to fulfil the project's ambition of transdisciplinary integration, which in turn responds to the need to move beyond the conventional perspective of the 15-minute city as a technical and design solution delivered by the spatial allocation of functions and mobility networks. Peri-urban areas are extremely diverse and hard to typify, not only in morphological and functional aspects, but also in terms of governance structures and sociocultural characteristics. Therefore, rather than a predetermined model of spatial organisation, implementing principles of proximity, accessibility and liveability in peri-urban areas requires a careful differentiation and understanding of their spatial and functional conditions, of fragmented and multi-scalar governance resources, capacities and instruments, and of the spatial experiences, aspirations and manifested needs of inhabitants.

By conducting a spatial analysis based on a method of typological classification, we are able to capture the specificities of various peri-urban conditions, in terms of density, morphology, land use and networks. This stage of the analysis is mainly quantitative, meaning that we gather and process spatial data with the implicit underlying assumption that reality is structured and works along certain laws and regularities which we can reliably extract - hence the emergency of spatial 'types' and our assumption that they can objectively characterised and mutually compared. This understanding guides the spatial analysis, which processes different data, such as population density, age distribution, land cover, network centrality, among others. This leads to a relatively fine-grained typology of peri-urban spaces.

Governance analysis allows us to identify the actors, objectives, instruments and institutional structures responsible for spatial planning policies in peri-urban areas, and critically assess their implications of the adoption of 15-minute city principles. This is a qualitative research approach based on empirical observation and critical interpretative frameworks. It starts by a scoping stage of actors and instruments, followed by a detailed analysis and critical evaluation of their workings and challenges. The analysis is supported by semi-structured interviews, which allow us to understand how governance processes work, how power relations come into play and how policy actors interpret the potentials, challenges and limitations of governance.

The qualitative approach allows deeper insights into the life-worlds of people, how they make sense of their actions and interpret reality. Employing such methodologies means for researchers to be closer to the research phenomena and, in our case, to people. The approach can therefore be more open to potentially surprising and incoherent results that provide depth and detail to the quantitative approach. Indeed, through the use of semi-structured interviews and focus groups, we can disclose perceptions, interpretations and aspirations, both from policymakers and inhabitants, about the meaning they attribute to their spatial experiences in the peri-urban area. The socio-spatial analysis is therefore able to understand - even if roughly - what people value and what they perceive as missing in their regions, as well as the reasons for their perceptions and interpretations.

Participatory research is also central to our project, as a means to engage with the knowledge and imaginations of peri-urban communities. Participatory research predominantly means to conduct research together with the persons who are researched, bringing together science and practice and producing knowledge in a joint and democratic process. This points to a cooperative way to influence social reality which clearly differs from an understanding of knowledge production as solely the job of scientists. In this report, the participatory approach is mainly visible in the results of the co-identification workshops in which practitioners and policymakers from a variety of local and regional administrations, non-governmental organisations and citizen collectives come together outside their formal setting in semi-informal environments that allow collective discussion, exploration and creation of needs and priorities that may bring about a future 15-minute city in their regions. A similar participatory approach will also characterise the research work in the upcoming work packages of the InPUT project.

Spatial Analysis

The spatial-functional analysis employed in this project comprises four main steps: first, to define what places are considered peri-urban, second, to generate the basic spatial analytic data that serves, third, to differentiate the peri-urban places by their spatial and demographic characteristics, and fourth, to assess to what degree these types are served with amenities, as defined by Moreno et al. (2023).

1.Defining peri-urban areas

The definition of peri-urban areas in the case study regions follows the methodology described by Wandl et al. (2014) and further developed in the Horizon Repair project (Geldermans et al. 2017). The approach integrates population density and selected categories of land use and follows the four steps indicated below. The InPUT project adapts the method by using the EU population grid of 1 km as aggregation unit, to allow for a homogenised comparison among the four countries, and to link publicly available socio-economic and demographic data in later stages of the analyses.

a. The starting point is the EU grid with the cell resolution of 1 km; data set: EU population grid 2021 (Pigaiani et al. 2024)

b. Select those grid cells with a population between 152 and 5000 inhabitants per km2.

c. Add grid cells with a lower population density to the selection if they overlap with areas of the CORINE land cover (2018) classes industrial or commercial units, port areas, airports, mineral extraction sites, waste sites, port and leisure facilities, and all major roads and railway tracks and associated land;

d. Subtract all cells that are classified as continuous urban fabric according to the same CORINE land cover classification.

2. Spatial mapping

The second step generates the information used to differentiate the peri-urban places in step three. We

Figure 1: Example of grid approach

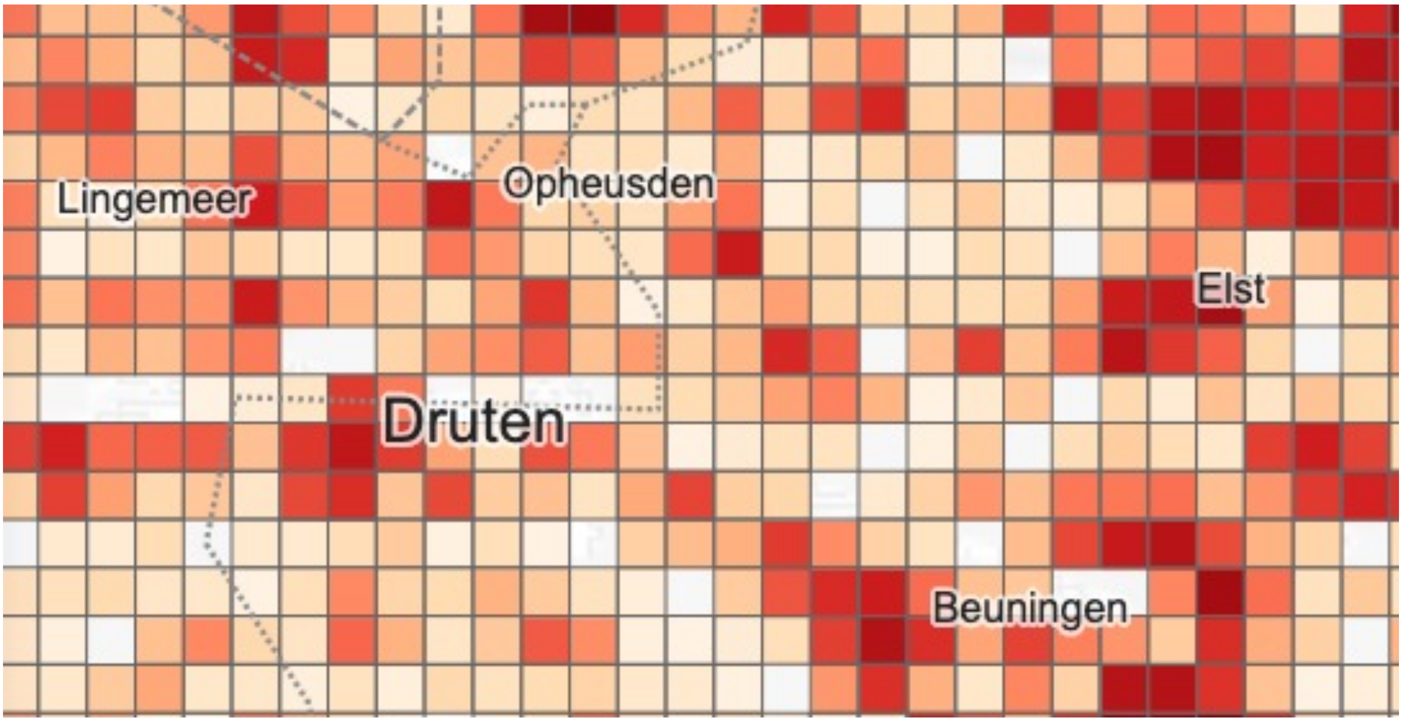
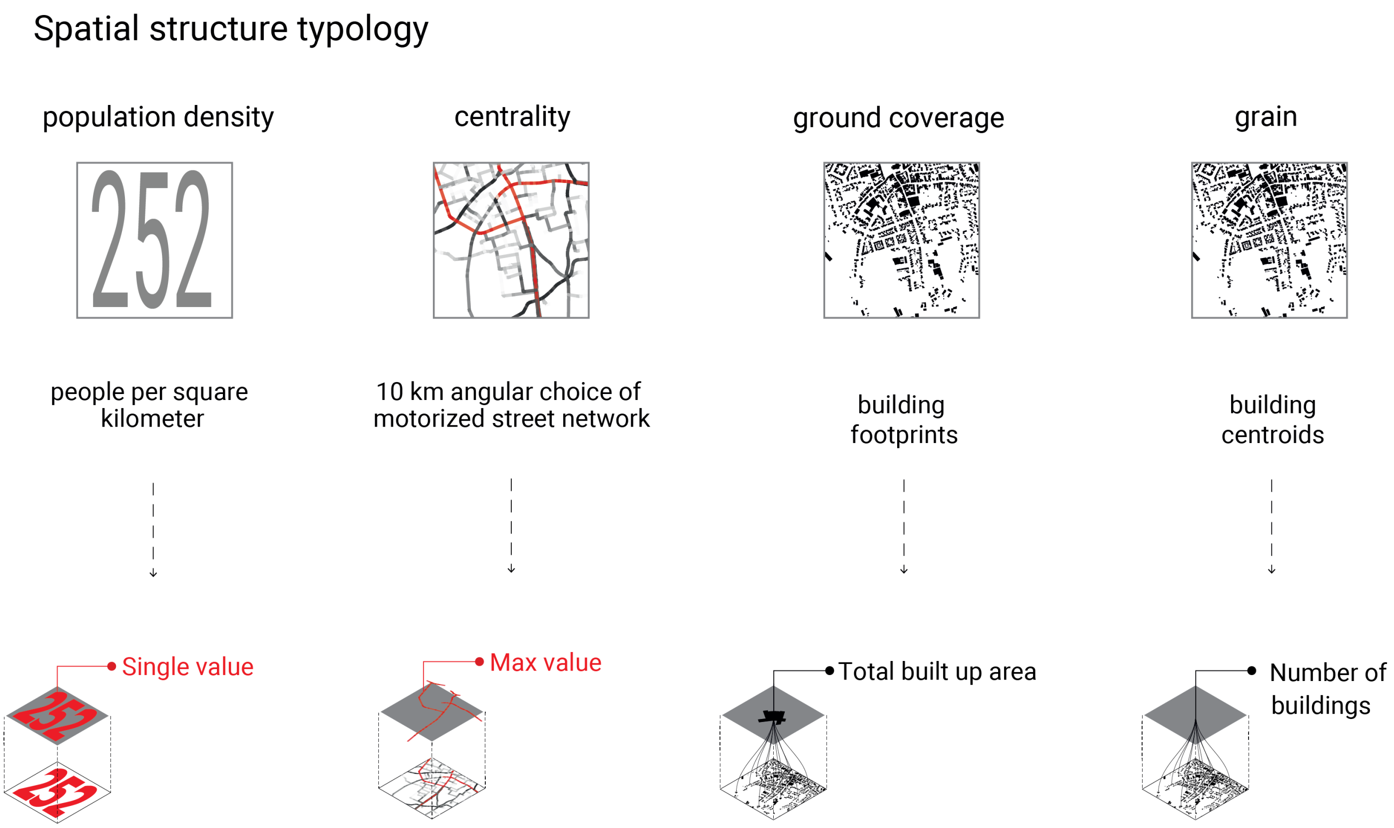


Figure 2: Typology of peri-urban places: characteristics that differentiate the spatial types



consider peri-urban areas as structurally heterogeneous and containing highly diverse settlement patterns and socioeconomic compositions. Classifying them requires a multidimensional lens that captures both who lives there and how the territory is structured. This provides insights not only into peri-urban morphologies but also their functions and socioeconomic profiles.

To define the demographic types, the EU population grid provides the input to form the demographic profile of different places. The following characteristics are used:

a. **Population age distribution** (0-15, 15-65, 65+), potentially providing insight on aging population, youth migration and other demographic challenges.

b. **Population densit**y (within the peri-urban grid cells), allowing a gradation between compact peri-urban nodes and dispersed, low-density settlements.

c. **Share of individuals on employment**, reflecting integration in labour markets and economic vitality.

The spatial-morphological condition describes the main features of the settlement form: the centrally of the area is, how densely it is built and how granular its morphology appears. The following attributes are used:

a. **Street network centrality** analysis (Hillier & Hanson, 1984) allows assessing how accessible a place is in the region. The measure of angular choice counts how often each street segment falls on the shortest path between all pairs of segments within a selected distance. The 'shortest path' refers to the path of least angular deviation (namely, the straightest route) through the system. (Hillier & Iida 2005). This analysis thus determines main routes in the region and assigns each grid cell the highest value within the cell.

b. **Built density** can be described by two main variables: Ground coverage, measured as Ground Space Index (GSI) shows the share of land covered by buildings. Built intensity can be measured as Floor Space Index (FSI), describing the total floor area in relation to a specified aggregation area, in our case the grid cell. It can be used as proxy to understand or regulate how intensively an area is used. While the building footprints required data to calculate GSI are available across Europe, the data to calculate FSI is not, as it needs information on the number of floors in a building besides the footprints. This information can be generated based on the Digital Surface Models, which require a high resolution. Unfortunately, this data set is not available for the Portuguese case study at this point. For this reason, to have a similar data set available across all four case studies, we use population density in place of FSI. Doing so has the limitation that it only accounts for places that are inhabited, excluding places with vacant buildings and non-residential buildings.

c. **Granularity of built form** helps determine how fine grained the settlement is, ranging from few larger buildings to many small ones in a specified area. This measure counts the number buildings in a grid cell.

All geodata for a, b, and c comes from OpenStreet Map, as provided by GeoFabrik (2024).

3. Differentiating peri-urban areas

A k-median cluster analysis is applied to distinguish the types of places by their demographic and spatial characteristics. Clustering methods group n observations into k clusters with the ambition to achieve groups that differ as little as possible within them and as much as possible between them (Hartigan, 1972). We use k-median clustering (Dohan et al. 2015) to account for outliers and extreme values and reduce the influence of major deviations. This clustering serves to partition observations into clusters including all observations, each belonging to only one cluster, and form clusters around real values. The previously determined territorial grid of peri-urban areas forms the aggregation unit for this analysis. Based on the determined clusters, the main types of places can be selected for more detailed analysis. This allows for a selection of locations which is:

(1) internally coherent, facilitating the choices about key challenges to focus on and the gathering of focus groups and other stakeholders.

(2) heterogeneous, ensuring that diverse, locally specific and potentially contrasting features of the peri-urban region are covered in the analysis.

(3) representative of the various conditions of the peri-urban region, ensuring transferability of the findings.

The cluster analysis distinguishes a demographic typology and a spatial typology across the four case studies, building on the characteristics explained above. The resulting typological map of the territory is coded according to the distinctive 'types' established by the variables above. This mapping provides a basis to determine a number of locations where specific questions are formulated, and the analysis can focus

4. Accessible amenities

The final step of the spatial analysis distinguishes to what degree the peri-urban types are served with amenities, considering essential needs: housing, working, basic supplies, healthcare services, education, cultural and leisure activities (Moreno et al. 2023). The 15-minute city concept introduced by Moreno builds upon the idea of hyper-proximity, and what are acceptable access times for people to reach these amenities. For the purpose of this analysis, we defined 1 km as walkable distance within approximately 15-20min. For cycling we considered a distance of 5.5 km.

The data sets used for this analysis are the Points of Interest layer from OpenStreet Map for the amenities, and the street network as provided by GeoFabrik (2024). To assess the accessibility of the amenities, the QGIS plugin PST PlaceSyntax Analysis (Ståhle et al. 2005) is used to calculate attraction reach (PST 2024). This measure calculates, for each building within a grid cell, the sum of all attractions (here the classified amenities in form of point data) that can be reached via the network within a network radius of 1 km (walking) and 5.5 km (cycling).

The amenities have been classified as follows, based on the OpenStreetMap data:

a. Leisure (LE)

- Amenity (Key): bar, café, restaurant, pub, food court, cinema, theatre, social centre, community centre
- Sport (Key)
- Leisure (Key): all values except green spaces

b. Healthcare (HE)

- Amenity (Key): clinic, dentist, doctors, hospital, pharmacy, nursing home

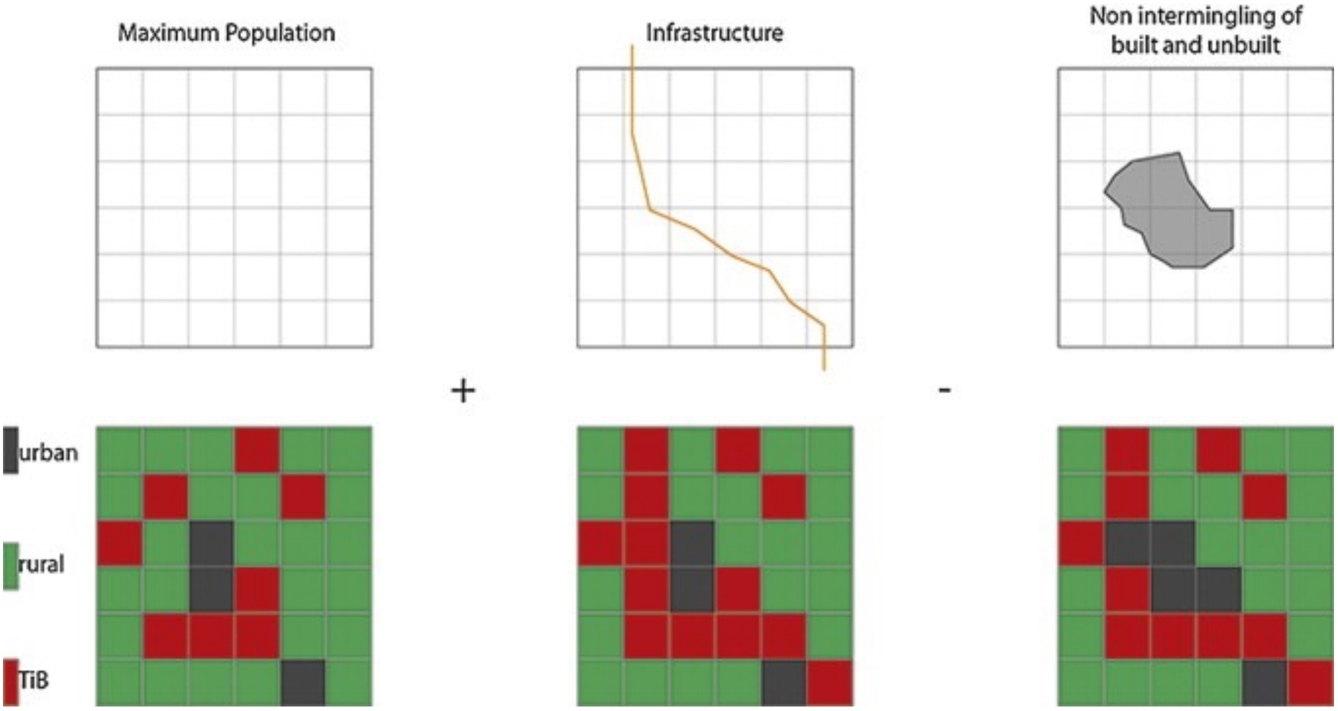
c. Religion (RG)

- Building (Key): basilica, cathedral, chapel, synagogue, mosque, church, temple
- Amenity (Key): graveyard
- Places of worship (Key)

d. Work_industrial (WI)

- Building (Key): industrial
- Landuse (Key): industrial

Figure 3: Approach to peri-urban grid definition. Source: Wandl et al., 2014.



e. Work_offices (WO)

- Building (Key): commercial
- Office (Key)
- Craft (Key)

f. Education (ED)

- Amenity (Key): school, kindergarten, college, university, library

g. Green public space (GP)

- Leisure (Key): dog park, garden, nature reserve, park, playground

h. Amenities_services (AS)

- Amenity (Key): bank, atm, payment terminal, courthouse, fire station, police, post office, town hall

i. Amenities_retail (AR)

- Shop (Key)

Governance Analysis

Goals & Purposes

The governance analysis is meant to understand the governance capacities and structures in peri-urban areas in relation to the potential to incorporate, develop and implement certain spatial planning principles of the 15-minute city. Hereby we focus on the interscalar relations between actors governing different administrative scales, between actors and initiatives/instruments related to spatial planning, and between the various policy domains, scales and aspirations of the initiatives and instruments. We understand instruments as binding plans, policies, and development and infrastructure projects, and initiatives as less formal coordination or collaborative efforts involving multiple actors.

We start by mapping the actors, instruments and initiatives to create a mutually comparable set of materials for the cross-case comparisons. Next, we focus on the internal working mechanisms of actor structures and the opportunities and challenges revealed by their respective instruments and initiatives. The relation between differences and commonalities across the countries and their specific local contexts is also investigated, guiding how we address the place-specific character of the peri-urban areas in the coming work packages.

Conceptual design

The analysis is grounded in a reflexive, interdisciplinary approach inspired by Hufty (2011), Willi et al. (2022), and Karppinen & Moe (2012). Governance is understood as extended from the traditional concept of "government" of states, encompassing acts of governing by non-state actors, among states (such as cross-border cooperation), or above states (e.g. the EU) (Hooghe and Marks, 2020). In addition, adopting a sociological institutionalist perspective allows us to understand governance as a dynamic process of interaction among actors that both shapes and is shaped by the social norms and institutions specific to each societal context (Hufty, 2011).

The methodology is based upon the criteria for governance frameworks by Hufty (2011), which is realistic (non-normative and grounded on empirical observation), interdisciplinary (integrating institutional, legislative and sociological insights), and reflexive (acknowledging the researcher's position in the analysis as a non-neutral actor, with certain focuses and interpretation). The framework also aims to support comparison and enable cross-case learning across diverse peri-urban contexts.

These features are important for several reasons. First, peri-urban spatial governance is often fragmented and strongly influenced by spatial, political, cultural and economic path dependencies. A realistic and grounded approach avoids idealising an application of normative 15-minute city principles, asking instead what is plausible in each location given existing structures and capacities. Second, both 15-minute city principles and spatial governance instruments usually integrate multiple domains, actors and sectoral logics, demanding combined insights from spatial, social, political and economic disciplines. Third, the researchers involved in the study are typically not from the peri-urban areas, which requires them to acknowledge their positionality and biases in order to build trust with local actors and produce a more transparent analysis. Finally, peri-urban spaces and societies vary greatly across countries and regions, making assumptions of singular best practices or dominant models inadequate. In the sense proposed by Robinson (2006) and others, comparability is therefore aimed at uncovering (and learning from) diverse practices, aspirations and experiments, broadening the scope of possible peri-urban futures rather than ranking them according to which areas are "closer" to a 15-minute city environment.

The instruments and initiatives included are "nodal points" of the governance analysis framework (Hufty, 2011), i.e. arenas where actors and processes converge and governance happens: they are cross-boundary cooperation or collaboration efforts, often organized in complex structures, providing an interface between multiple actors, both governmental and non-governmental. Complex projects whose delivery involves multiple actors, or inter-municipal cooperation programmes are examples of such arenas. Instruments are understood broadly, encompassing policy tools, planning frameworks, and physical projects that contribute to the development of 15-minute city components, are mobilised by various actors and sustained through a range of initiatives.

The case analysis starts with a visual diagram of the relevant actors and their aspirations, perspectives, capacities and mutual relations, particularly across scale levels. Thereafter the focus shifts towards the instruments that are mobilised and initiatives that arise between the actors. As demanded by a (critical) realist approach, the documents pertaining to the instruments and initiatives are analysed as a source (i.e. empirical evidence of broader real-world dynamics) rather than as text (i.e. to uncover how discourse and language represent reality). In other words, the documents reflect the context and interests of those who made the document, thereby revealing the intentions, priorities and strategies behind them (Karppinen & Moe, 2012). Further contextual information is gathered through interviews with the key policy actors in the fields of spatial planning and mobility, among others. The dimensions of the analysed mechanisms follow the framework of Willi et al. (2022), focusing on bindingness, formalisation, autonomy and decision-making process.

The findings are then analysed through our interpretative framework with a focus on the possibilities, synergies, blind spots and failures of governance instruments and initiatives towards materialising the 15-minute city principles (proximity, accessibility, liveability, inclusivity) in peri-urban areas. We assess their potential impacts, the opportunities and challenges stemming from the interaction between policy domains, actors, and scale levels, and alignments or discrepancies between aspirations and capacities. The practical methodological sequence is described below.

Phase 1: Scoping and interviews

In the first step, the relevant actors, initiatives, instruments relevant in the peri-urban areas in key domains (Mobility, Housing, Socioeconomic and Spatial Planning) are scoped. They are placed and visualised in a diagram and analysed according to basic characteristics, including scale level (local, municipal, regional, national and trans-national) and key aspirations. Specific aspects are also examined:

- Actor types (civil society, institutional, market), resources and capacities and their willingness to exercise them.
- Initiatives: decision-making process, formal structures, funding schemes, autonomy from higher governance levels
- Instruments: the former elements as well as the type of instrument (direct, indirect, process-oriented).

Table 1: Interview approach per country

Case	Sessions	Organisations Interviewed	Hours	Notes (interview aims)
AT	12	Province Lower Austria, Romerland-Carnuntum Reg. Association, NO Regional, private planning offices, municipal mayor, NGO Radlobby, intermunicipal KEM	13	Scoping of actors and instruments; understanding governance mechanisms and challenges with regard to 15mC goals in region.
BE	5	Kordia (City Region Turnhout), TreinTramBus, Resilient Towns	6	Scoping of actor landscape and understanding of mechanisms.
NL	7	Regio Foodvalley, Gelderland Province, Groenmetropool Arnhem-Nijmegen, Rover Gelderland, Fietsersbond Ede, ROCOV, PBL	8	Scoping policies and views of various stakeholders on questions of mobility and spatial development
PT	13	CIM Ave, Braga Municipality, Famalicao Municipality, Braga Business Association, BragaHabit, GuimaBus Transport, Institute for Mobility and Transport, Urban Quadrilateral, CEiiA.	13	Analyse how institutions perceive mobility, housing and territorial planning, and internal vs. external dynamics that shape institutional functioning, and identify specific programmes and projects, as well as current and future objectives

The scoping phase relies mainly on the policy documents of various government agencies and programmes on the four themes above. In parallel, semi-structured interviews with planners, civil society actors and other relevant experts active in the fields were conducted to identify actors and programmes that could have been neglected in the desk analysis.

Each country team specified their approach for the interviews, as seen in table 1 above.

Phase 2: Case selection for in-depth analysis

After all relevant actors and governance programmes were mapped, each country's research team selected five cases to conduct an analysis of mechanisms, challenges and opportunities, as well as two cases to discuss in depth in this report. The teams chose instruments and initiatives that cover most scale levels, mobilise both soft and hard governance, and involve various policy domains and stakeholders. The overview of selected cases per country, and where they stand on the spectrum of these criteria is visible in the figure in the following page.

Phase 3: In-depth analysis

Here, the workings and structure of two initiatives and instruments per country are analysed through further desk research on policy documents, by-laws, archival information and by conducting additional interviews with the involved actors. The following aspects of the instruments and initiatives are examined:

- Main aspiration and planning concept: either the main actor aspiration, or a synthesis of all the involved actors.
- To what degree does the case entaiil direct, indirect or process-oriented action.
- Degree of formalisation of agreements, organisational form and rules.
- Autonomy: Capability to define objectives and interventions independently from the non-involved, higher-scale actors.
- How decisions are made and access of actors to the decision-making process.
- Organisational type: Hierarchical, heterarchical, or network structure.
- Funding sources: The source and security of the financial resources.
- Incentives or penalising mechanisms to enforce actors to participate.

Phase 4: Synthesis and evaluation

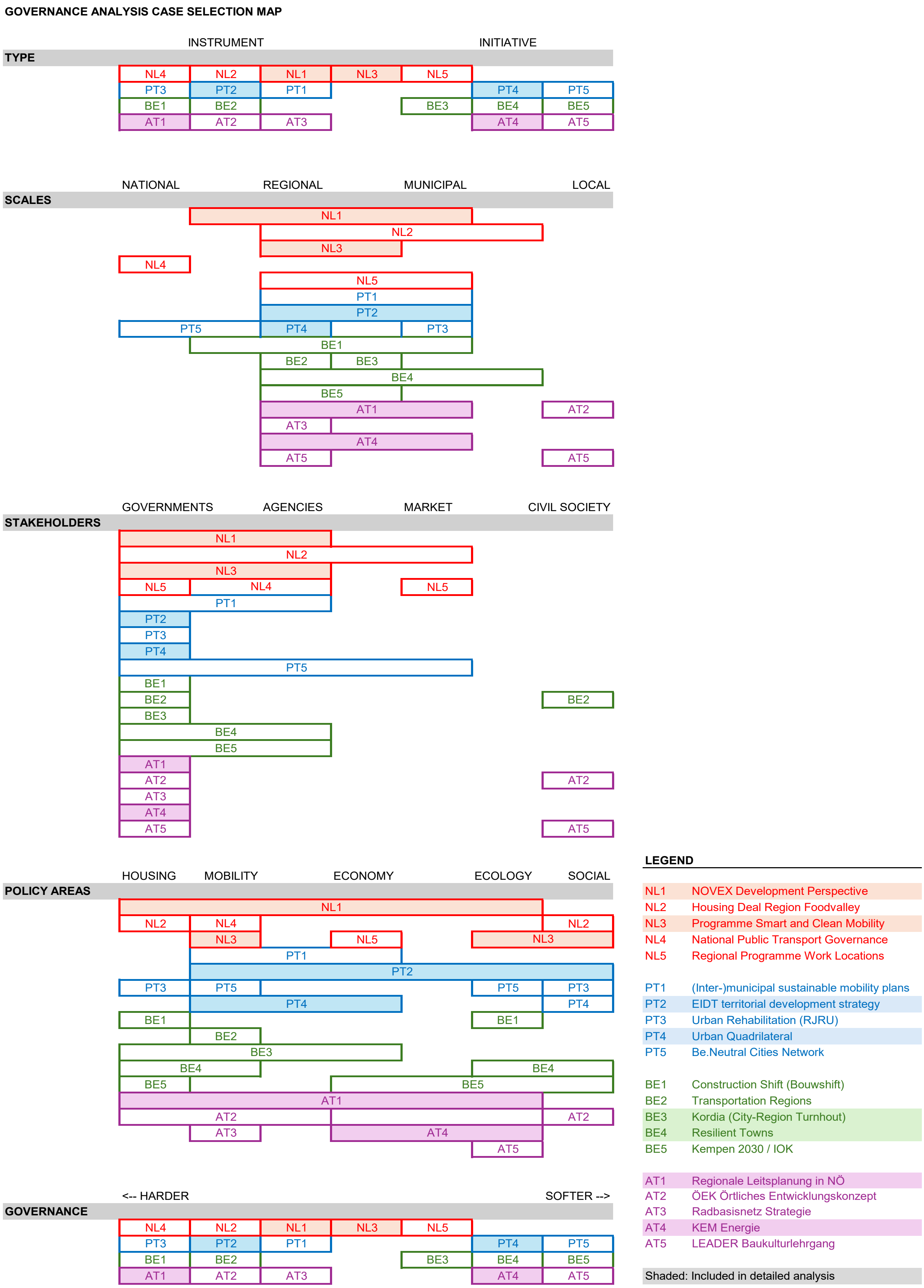
Each case is further interpreted to identify challenges, opportunities, gaps and impacts related to spatial development at multiple governance scales in peri-urban areas. We examine to what extent the selected instruments and initiatives govern and/or support peri-urban spatial development, and whether their operationalisation can potentially incorporate, enable or boost the adaptation of 15-minute city principles in these areas, or, alternatively, neglect or hamper them.

These challenges and opportunities are analysed by evaluating the relations and tensions between policy domains (e.g. lack of capacity, contradictory aims or misaligned sectoral policies affecting aspects of mobility, proximity, or accessibility) and scale levels (e.g. the representation and role of regional, municipal or local levels and how their policies influence planning across scales. Furthermore, we analyse the alignment or discrepancy between the aspirations of the instrument or initiative and the capacities of the involved actors, as well as their ability to mobilise said capacities and the potential reasons behind the discrepancies.

Phase 5: Cross-case analysis

Finally, we engage in a cross-case comparison of the results, aiming towards an exploratory and divergent approach that learns from multiple contrasts and insights and opens up a more diverse set of governance possibilities. We draw on the diversity of governance styles, planning instruments and policy priorities in the Netherlands, Portugal, Austria and Belgium cases, characterising the alignments and misalignments of governance scales and actors, discussing country-specific governance features and institutional cultures, and synthesising common challenges and opportunities related to the adaptation and adoption of 15-minute city principles. We conclude with a set of implications of the ongoing processes for future 15-minute city governance in peri-urban areas.

Figure 4: Overview of the selected cases per country



Socio-Spatial Analysis

Conceptual Background

The socio-spatial analysis aims to relate social space, the relational arena where social interactions and roles are produced, reproduced and negotiated, with its structures and processes, to the distinctive built environment of peri-urban areas. The theory of the production of social space (Lefebvre, 1991) serves as a theoretical framework, centred around the statement that (social) space is a (social) product. Lefebvre speaks of a “conceptual triad” in order to understand how social space is produced:

- **Perceived space**, which includes not only structures of production (economic sectors, forms of production) and the built environment, but also spatial practices in terms of patterns of behaviour of people. We addressed these dimensions by combining the analysis of spatial structures, socio-demographic and socio-economic configuration of peri-urban areas, with an understanding of the mobility and daily practices of people living in these areas.

- **Conceived space** basically entails the representations of space developed by planners, architects and other experts as well as policy actors. Such representations are addressed mainly in the governance analysis as concepts or visions for the development of the peri-urban areas as well as governance instruments that can be interpreted as specific representations of these areas.

- **Lived space** is the space of ‘inhabitants’ and ‘users’ (Lefebvre, 1991), dominated by representations of space and determined by structural conditions, though inhabitants make sense of these conditions by associating them with symbols or images. This can be partly addressed by questioning how inhabitants perceive or identify with their peri-urban region.

This conceptualisation of social space is complemented here by Riege und Schubert’s (2005) emphasis on the importance of the different spatial scales (whole city, district, neighbourhoods incorporating daily lives) in social space analysis. Indeed, research into everyday life requires us to understand space not as a delimited administrative area, but also to consider the behaviour and usage patterns of the people living there. This is likely to be cross-boundary and multi-scalar, especially in peri-urban areas where amenities tend to be loosely dispersed and mobility patterns tend to be fragmented. As a result, the perspectives of the users as they move across the various scales of the peri-urban region are an essential part of the analysis of social space. The perceptions of these people give peri-urban space relational meanings which are not visible on a planning-oriented structural level of analysis.

In our project, we depart from the argument that the principles of the 15-minute city cannot be materialised by the imposition of a predetermined model of spatial organisation. They need to be constructed in accordance with the spatial and functional conditions of an area as used in daily practices (perceived space), the resources, visions and capacities of policy actors responsible for spatial decisions (conceived space) and the meanings attributed by the users, translated as aspirations and manifested needs (lived space). This is a fundamental cornerstone of a spatially just approach to urban development. Indeed, conceived space (planning and design) may prioritise certain uses and communities and marginalise others. Such prioritisations are likely to be reflected in barriers to the use of amenities or infrastructure in the realm of perceived space. And, as patterns of injustice become embedded in policy and space over time, they become normalised and acquire a collective meaning that perpetuates stigmatisation and marginalisation within lived space (Newton, 2025).

These relational links between our chosen spatial trialectics makes it essential to capture the lifeworld of inhabitants - i.e. the realm of informal, everyday social interaction - based on their everyday patterns of movement and use of amenities. Therefore, in order to understand how people perceive, inhabit, use and make sense of the neighbourhoods, towns and regions they inhabit, we organized focus groups in the various peri-urban regions studied in the project.

Steps of the research process

We started by analysing (municipal) statistical data and various geographical and spatial characteristics to identify structural patterns in the peri-urban areas and selected sub-areas for a more detailed analysis. In the following step, qualitative data were collected in focus groups with various participants.

a) Analysis of quantitative data

Secondary statistical data was collected representing structural aspects of perceived space for the whole peri-urban area of each case. The publicly accessible (sub-) municipal data of the respective countries was used for this purpose, provided by Statistik Austria (Austria), Statistiek Vlaanderen(Belgium), CBS (Netherlands) and INE (Portugal). We analysed socio-demographic data (e.g. population growth, population density, shares of age groups, education), socio-economic data (e.g. unemployment rate, average income), housing data (e.g. age of buildings) and in some cases inclusion structures.

b) Selection of focus areas[1]

The focus areas were chosen so that they differ in their characteristics and mirror different types of peri-urban space, providing a relatively broad overview of the various clusters described in the spatial analysis. The following criteria were generally used, although with case-related variations.

- Relatively low/high population density
- Diverse land use / settlement structures
- Variability of age distributions
- Different levels of unemployment, education, income.

Geographical selection factors were also taken into account, such as location on a transport axis or location in different parts of the region. The selection was finalised in additional discussions among the national research teams (to ensure compatibility between cases) and with local policy partners (to ensure relevance). Results of this step are included in the case-related sections of this report.

c) Focus groups: gathering and interpreting qualitative data

A focus group is a small group of 6 to 12 people led through an semi-open discussion by a moderator. The group needs to be large enough to generate rich discussion but not too large in order to avoid that participants are left out. In an ideal focus group, all participants are comfortable with each other but do not know each other. A certain social homogeneity is key in order to maximise disclosure among participants (e.g. youth, elderly). However, the group of participants should be diverse in terms of gender, place of residence, income, migration experience, etc.

The method of focus groups is akin to a bottom-up approach that complements the empirical research of the project and aims to engage communities to share their experiences and knowledge about daily practices, challenges and potentials in the region, framed by our focus on the 15-minute city principles, namely patterns of mobility, access to amenities and perceived liveability. The interpretation of local citizens about the use, meaning, proximity and accessibility of various spatial infrastructures gave us a deeper understanding of how the relations between perceived and lived space are constructed in peri-urban areas. To achieve that, the conversations in the focus groups were analysed using three overarching questions:

- Which relations exist between the daily practices of people using and reaching certain amenities and the places/regions they live?
- Which aspects of proximity and accessibility are critically discussed within each focus group?
- How do the perceptions and uses of amenities differ between focus groups?

At least four focus groups per case were conducted between September and November 2024, with the target groups of young people, working people, the elderly and caregivers. Invitation and activation of participants was done via social media, flyers, direct contact (mail, phone) and with the help of stakeholders. In Austria, the Netherlands and Portugal the focus groups were organized separately for each target group. If possible, participants lived in different places of the peri-urban area. In Belgium focus groups were conducted in different municipalities with local people from all target groups participating each time. A jointly developed interview guide ensured comparability between the case studies (see the appendix to this report). The main topics were commonly defined in all groups and countries. Some research groups added specific questions or focus groups to address specific local developments.

[1] This step was not done in all four cases as the preconditions for the selection differed to some degree.

Table 2: Participants and possible biases of focus groups

	Youth (M/F/other/NA)	Employed (M/F/other/NA)	Elderly (M/F/other/NA)	Care (M/F/other/NA)	Care + Work (M/F/other/NA)	Newly Moved (M/F/other/NA)
Austria						
Participants	8 (4/3/1/0)	5 (2/3/0/00	11 (6/5/0)	3 (1/2/0)	7 (1/6/0/0)	-
Possible Biases	Aged 12 – 17 years. All were visitors of a youth centre.	Lived only in two villages/towns.	Big group made the discussion less detailed	Two mothers and one professional caregiver	Many more working mothers, only one father. Many of them lived in Bruck or the central area.	-
Belgium						
Participants	5 (2/3/0/0)	8 (2/6/0/0)	7 (4/3/0/0)	12 (5/7/0/0)	-	8 (2/6/0/0)
Possible Biases	Aged 18 - 30 due to local regulations regarding research involving minors	Extra condition attached (moved to the region after 2010)	In Schilde, all except one were recruited from one dance group	Majority were parents, except one	-	Extra condition attached (must be also working)
Netherlands						
Participants	10 (4/5/0/0)	4 (2/2/0/0)	10 (9/1/0/0)	3 (1/2/0/0)	-	2 (2/0/0/0)
Possible Biases	17-19 years old. half were in high school, and half were in (applied) university.	One person was looking for a job, had moved recently to the region. Working people aged 20-60 are poorly represented.	All were members of a local cycling association. Only one woman. Most had higher education.	One grandmother with caring responsibilities and mobility limitations, one advocate for disability rights with a disability, and one caregiver.	-	Only two men, one working, one retired. For the data analysis they were included respectively in the employed and retired groups.
Portugal						
Participants	46 (26/19/1/0)	11 (3/7/0/1)	5 (3/2/0/0)	4 (2/2/0/0)	-	-
Possible Biases	Students with similar backgrounds, educational influences, and experiences that may be shaped by their social relationships.	Mainly highly qualified people. Most of them are workers from municipal positions who are recognized in the community	Retired people, with active participation in the parish activities.	Three are parents and one takes care of the parents.	-	-
Total	69	28	33	22	7	10

To visualise the links between the places of residence and everyday spatial practices, some research groups used maps and aerial photographs. The participants were asked to mark the most important places they visited on the map with pins. This served as the basis for the focus group discussions. In addition, some teams asked the participants to take photos of their most important places in advance. These pictures were also used in the discussion to show what the mentioned challenges and opportunities looked like on site.

Using a jointly developed questionnaire (see appendix), we collected the key socio-demographic data as well as information on mobility behaviour and the perceived appropriateness of travel times. Belgium and the Netherlands also surveyed focus group participants on the desired distances to a diverse set of amenities (results of the questionnaires are part of the case-related analysis of this report).

Participants and possible biases

The jointly defined guidelines were implemented slightly differently depending on local possibilities. Table 3 below shows the number of participants per gender and group and possible biases.

Data processing and interpretation

The focus groups were recorded with standard recording devices. Transcripts were produced afterwards using different software tools including f4 audiotranskription, GoodTape, and Transkriptor. The transcripts were then manually checked for accuracy and supplemented.

A common coding guideline was created and applied to the respective material by all research teams. The coding process was developed inductively and deductively (Mayring, 2015). First, the main coding categories were selected in a deductive process using the six categories of the 15-minute city concept: living, working, supplying, learning, enjoying, caring. Because of its transversal nature in relation to the other categories, the topic of mobility is not explicitly isolated in the concept. However, as this is of great importance in the material, it was added as a separate category. Then, common codes were generated inductively from the content of the conversations. In addition to codes on spatial conditions and processes, the perception of places and specific habits were coded separately. Within the main categories, the codes differ slightly between focus groups and countries. Programs such as MAX QDA, Atlas.ti, and NVivo were used for coding and analysis.

The focus groups were held and analysed in the local languages. After coding, the statements per code and category were summarized. The findings were then transferred to a shared Excel-spreadsheet in English. The table structured the content based on the categories. This made it possible to compare the content between the countries and answer the overall questions.

Co-Identification Stakeholder Workshops

Cross-referencing the analysis results with stakeholder views

When building an epistemological foundation for our analysis, it becomes obvious that each method has both strengths and blind spots. Specifically, no single method provides a full picture that reflects the messy, negotiated and context-specific nature of peri-urban spatial development.

The spatial analysis – a typological classification – helps capture the spatial specificities of diverse peri-urban settings, in terms of morphology, networks and functional organization. However, it is based primarily on desk research and its level of abstraction may produce spatial categories that are unrecognized or irrelevant in local policy priorities and everyday spatial practices.

The governance analysis enables us to critically assess the formal objectives, instruments and institutional structures shaped by various actors in relation to potentials or limitations in the adoption of 15-minute city principles. But the assessment may not sufficiently convey how these instruments are interpreted and implemented and actually function in practice and how policymakers navigate a crowded landscape of complex policy frameworks.

Finally, the social analysis, based on focus groups, provides insights on how different groups experience space, namely what they value and perceive as missing in the region. However, this lacks statistical representativeness, and although we can verify whether the reported values and priorities are generally represented in policy visions, we cannot confirm how they are enacted by policymakers or align with actual institutional practice.

To help fill these crucial gaps, we include in our analysis a fourth layer, namely a policy workshop in each case study location, that directly responds to these concerns. We recruited participants from different levels of government (national, regional and local), in some cases complemented by representatives from civic associations. This initiative adds several insights to the three original analytic layers. First, it allows us to triangulate and test the resonance of the earlier findings, by scoping whether the spatial, governance and social challenges we identified are recognized by policy actors, thus enabling a distinction between structural barriers and awareness gaps, something that is not on the radar of daily practice. Second, it brings insights on feasibility, decision-making constraints and practical trade-offs, allowing a more nuanced discussion about implementation. Third, it adds a forward-looking orientation that complements our diagnosis of the current landscape, based on grounded tacit knowledge that does not appear in policy documents and plans, increasing our understanding of the aspirations and perceived transformation potentials in the region. Finally, we go beyond extracting data to create a reflective space where policy actors confront our findings, discuss and consider their own assumptions, thus bringing the research closer to the planning discourse.

While the format varied slightly across teams, each workshop was structured around the central question of whether and how 15-minute city environments could be realized in the peri-urban area. The participants were introduced to the project and its findings, and based on that, were invited to reflect on 15-minute city elements that are already present or are lacking in the region and how they link to their policy priorities. This was followed by a discussion where participants identified key policy strategies considered critical to moving towards more accessible, inclusive and liveable peri-urban environments. In this way, we created a space for dialogue and reflection, adding both practical depth and relevance to our multi-layer analysis.

Table 3: Co-identification workshops - key figures per country

	AT	BE	NL	PT
Date of Workshop	Feb 25, 2025	Apr 29, 2025	Mar 19, 2025	Jan 27, 2025
Number of Participants	16	9	11	8
Sectors Represented	Municipalities, Local and Regional Associations, Chamber of Agriculture, citizens, business actors.	Municipality, Architecture & Planning, Regional Cooperation, public transport user association, Village Team civic groups.	Municipalities, Province, Ministry, Regional cooperation, residents, cycling & public transport user associations.	Municipal authorities, regional and municipal associations, NGOs and environmental organizations.

PART III

Results

Austria - The district of Bruck/Leitha

Context

1. Historical overview

The history of the selected peri-urban region in Austria – the district of Bruck/Leitha – starts quite early but was significantly altered through the erection of the Roman military settlement 'Carnuntum' in the 1st century AD, which served as a transport node (as part of the so-called "Bernstein-street") and military center for the Roman Empire. In these times the close-by Danube was already a transport possibility and a topographic line protecting the settlement against invaders (Weithmann, 2000). The region has always been a border region located between different cultures and nations, also during the Austrian monarchy and after WWII which saw the erection of the so-called "Iron Curtain". With Austria joining the European Union in 1995 and Slovakia in 2004, the region became part of a functional metropolitan region, experiencing strong population growth.

During medieval times the spatial structure can be characterized as clearly rural, with some traditional medieval cities like Bruck/Leitha or Hainburg/Donau and smaller villages spread across the region. Typical settlement structures from these times and later in the 18th century which are still visible today are linear settlements with houses organized along one or two rows

Figure 5: Bruck an der Leitha in medieval times. Source: https://www.bruckleitha.gv.at/Historisches

(municipalities of Rohrau or Wolfsthal), “Anger-villages” (Angerdörfer in German) which are arranged around an “Anger”, a central grassed area, and larger medieval cities. Over time, single family housing areas have been added to these historically developed settlement structures, often at their edges, to react to the increasing housing demand.

2. Geographical and socio-economic context

The spatial, economic and social development of the region is strongly influenced by the development of the two big cities in the east and west of the region: Bratislava and Vienna.

Figure 6: Administrative map of Bruck/Leitha district. Source: Amt der NÖ Landesregierung 2024: Regionale Leitplanung. Region Bruck an der Leitha Zusammenfassung. St. Pölten

Figure 7: Population growth per municipality, 2013-2023. Source: own calculation and depiction, based on Statistik Austria 2023: Population at the beginning of the year from 2002 onwards. Own data query Statcube.

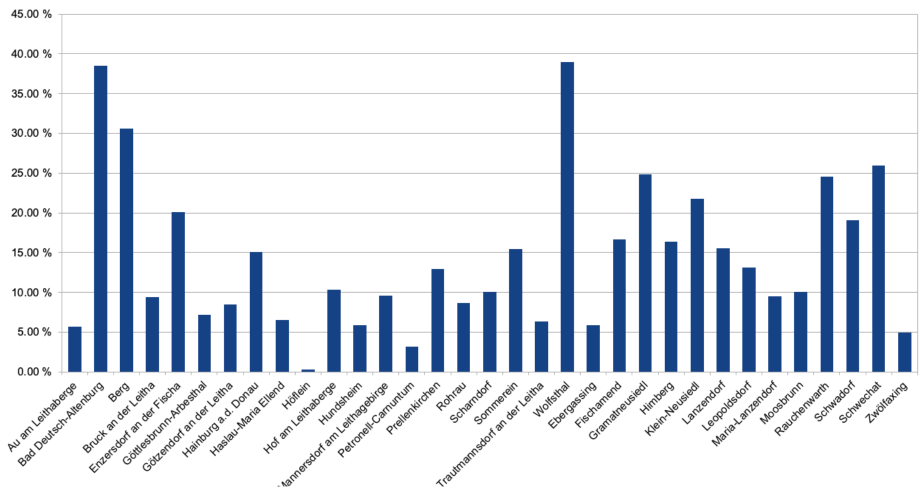


Figure 8: Population age distribution. Red: share of persons 65 years and above; blue: share of persons below 15 years. Source: Statistik Austria: Municipal results census 2021 (territorial status 2023), own depiction.

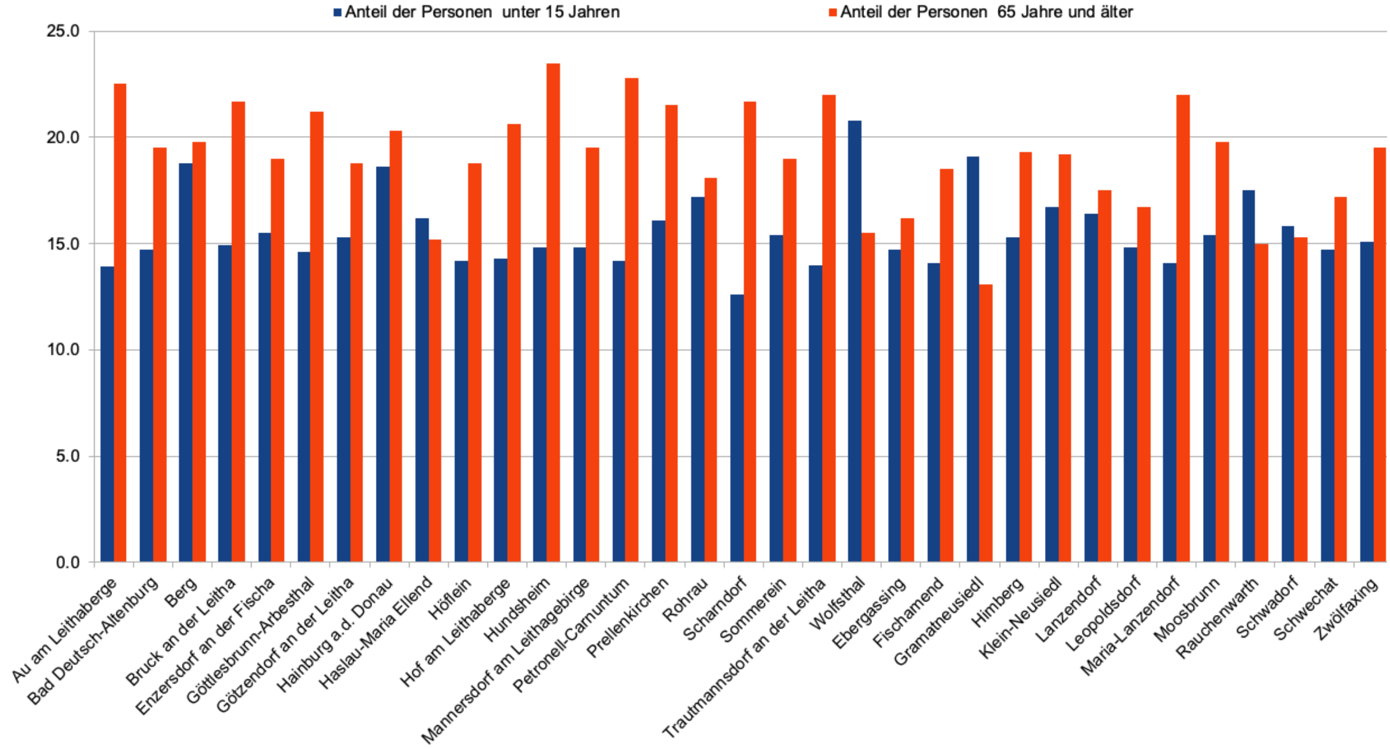


Figure 9: Data from 2018; brown: agricultural land; dark red: airport; red: traffic areas; green: forests; blue: water areas; source: BOKU Wien & TU Wien 2019: Systemanalyse Römerland Carnuntum aus dem Forschungsprojekt „Selbstermächtigung, Selbstorganisation und regionale Transformationen am Modell Club of Rome".

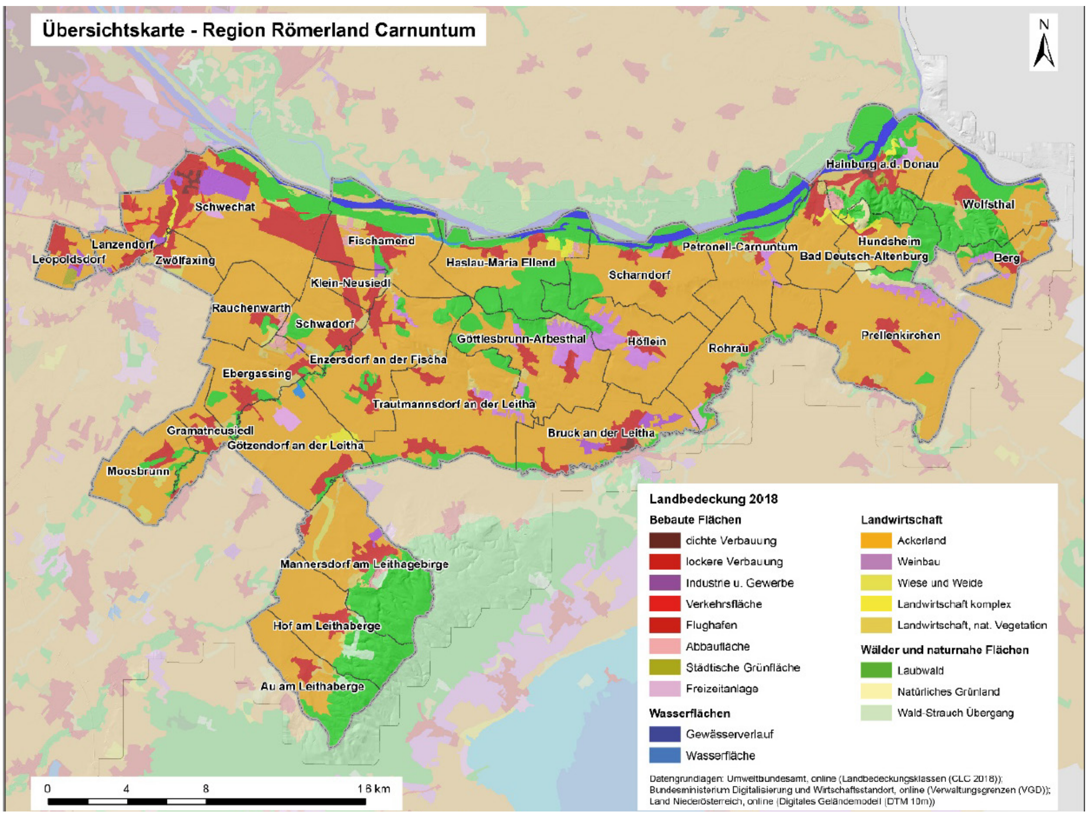
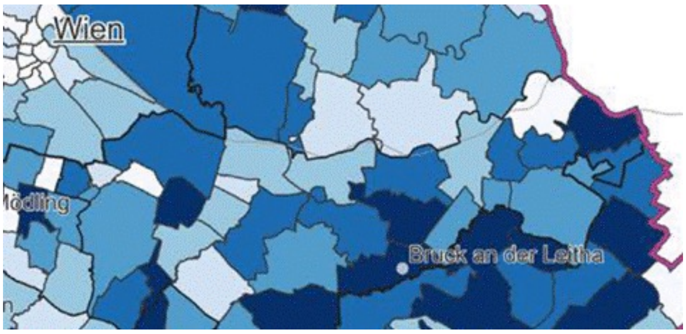


Figure 10: Share of buildings between 2016 and 2020 compared to all buildings. Source: PGO 2024



Partly due to this geographical position, the population in the region grew by 15,6% between 2013 and 2023 (Statistik Austria, 2023a) and the prognosis anticipates further growth of 21,7% between 2021 and 2050 (ÖROK, 2022). The region is one of the fastest growing areas in Austria, mainly based on a positive migration balance. The district of Bruck/Leitha includes 33 municipalities, covers an area of 703 km2 and has 108.570 inhabitants. Population growth is highest in the west near Vienna and in the east near the Slovakian border.

The population structure is heterogeneous, with larger municipalities of up to 21.000 inhabitants, like Schwechat, as well as smaller ones with only 650 inhabitants, like Hundsheim. In terms of age, there is an increasing share of persons above 75 years (BOKU Wien & TU Wien 2019); besides that, we see increases in almost all age classes between 2002 and 2018. The share with non-Austrian nationality is relatively high predominantly in the municipalities close to Bratislava. Monthly gross income lies in the average of the federal province, while the number of employed persons between 2017 and 2021 has decreased mainly due to a loss in the primary sector (AK Niederösterreich, 2024).

In terms of mobility infrastructures, the most important motorway connecting West to East is the A4 which is supplemented by important federal state streets; two important train lines connect Vienna to Bratislava and Budapest; intra-regionally, the most relevant train lines are the S7 which connects the Eastern and North parts of the region with Vienna and the S60. The region shows an above-average degree of motorization and the modal split of the region amounts to 77% motorized individual transport and 23% public transport (BOKU Wien & TU Wien 2019: 73; data from 2014). Bruck/Leitha is known as a commuter region but also has a lot of inward-commuting (mainly due to the airport). The share of commuters in the active workforce at the place of residence is 79,2% (Statistik Austria, 2023c). The city of Schwechat (with the airport) and the political capital of the region, the city of Bruck/Leitha, show comparatively higher inward-commuting.

In terms of land use the region is still characterized by a relatively high percentage of agricultural land (compared to the average of the federal province of Lower Austria), built up land including traffic areas, natural environments (forests, Danube area) and industry. The region has to cope with the increasing trend towards soil sealing which certainly has to do with the recent population and economic growth (BOKU Wien & TU Wien 2019).

The housing structure shows a relatively high diversity in the different parts of the region with regard to legal status and amount of social housing (see chapter 3.1.3). The share of recently built housing, namely between 2016 and 2020, is quite high with a concentration on Bruck/Leitha, Schwechat, Hainburg/Donau and their surrounding municipalities (PGO, 2024).

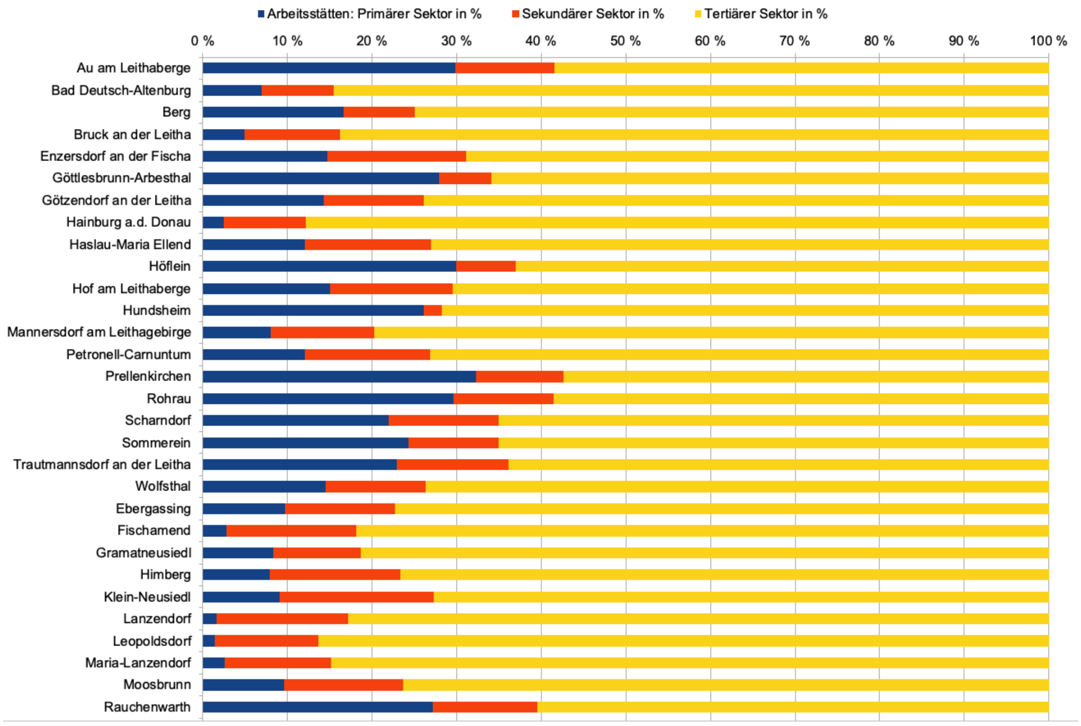
Regarding the economic profile of the region, the greatest share of work places is in the tertiary sector, and, depending on location, the primary sector is second compared to the secondary sector. A more detailed look shows that there is a strong primary sector in the centre and a strong secondary sector in the west (Statistik Austria, 2023b) (see figure 1). While the primary sector has to cope with a reduction in the number of companies (the region is well known for its winegrowers) dominant economic branches are craft, commerce and industry followed by tourism. The region has a high number of small sized companies (in terms of employed persons).

3. Administrative context

According to its federal constitution law Austria is split into nine federal provinces (in our case the province of Lower Austria) which have their own planning and land use regulations as well as mobility policies; these federal provinces are further divided into administrative districts (Bruck/Leitha). The provincial spatial, economic and social development is strongly influenced by the different policy fields of the federal state, most of all mobility, agriculture, environment, social and economic policies (such as the commuters' subsidy). Below the federal province there are relatively weakly institutionalized forms of regional cooperation which vary among the provinces. The smallest administrative and political units in Austria are the 2.098 municipalities (ÖROK 2018).

Regarding planning regulations, a current hotly debated issue is the lack of planning competences at the level of the federal state (only sectoral policy competence). The main planning competences are in the hands of the federal provinces, which are responsible for supra-local planning including regional planning (development concepts for the whole federal province, regional spatial plans), and the cities/municipalities with local planning competences (land use regulations, local development concepts).

Figure 11: Distribution of workforce per sector. Source: Kumnig, Sarah based on Statistik Austria: Municipal results workplace census 2021 (territorial status 2023), own depiction



4. Challenges connected to the 15mC principles

Mobility: although the region is quite well connected by public transport in the West-East corridor, challenges remain in the North-South connections and within some Eastern and Western parts (e.g. low bus frequency). Pedestrian paths and bicycle lanes have been developed in the last years, but they still show some deficits, e.g. concerning separation of bicycles from pedestrians, width and quality of paths, and connections within the region for daily life cycling. This results in a relatively high car dependency for both daily life and workplace commuting.

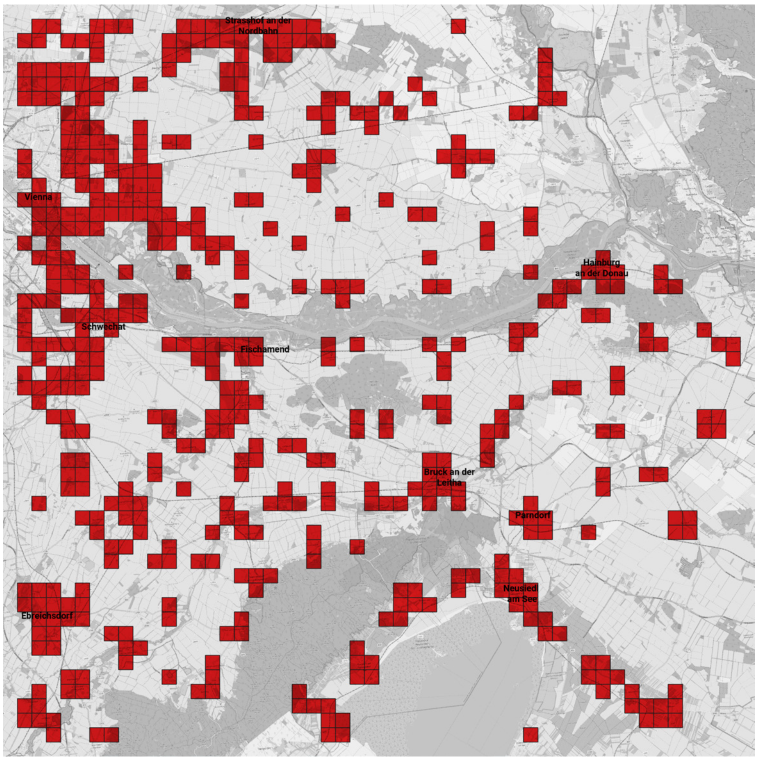
Economy: The region is called a "commuting region" which points to relatively strong functional relations within the region, but more strongly to Vienna and Bratislava which considerably shape socio-economic dynamics. The Vienna Airport has a strong economic impact on the whole district. Generally, the region is quite strong economically, with many indicators above the national average (e.g. start-up intensity, purchasing power). The opening of the labour market for Slovakia and Hungary in 2011 led to more commuting workers.

Population and social development: the demographic dynamics in the region leads to pressures on the development of settlements and housing. A major issue is the increase of people with non-Austrian nationality (Slovakians) in the Eastern parts of the region, which apparently challenges social cohesion within certain municipalities. Rising land prices, housing and energy costs are challenges for all sectors of the population, of course more considerably for low-income classes.

Spatial and settlement structures: situated between two capital cities, the regional economic dynamism is reflected by urban sprawl in some areas, which counteracts compact settlement development policies. A challenge for the 15min city principles is certainly the high vacancy rates in inner parts of villages, but also in cities like Bruck/Leitha. Vast areas (66% of total area) are used as agricultural land, and the sealed soil surface is higher than the average in Lower Austria. Increasingly, the share of agricultural land and nature is contested by the need to expand infrastructures and the provision of (affordable) housing.

Governance: Joint efforts in spatial planning on the federal province level started in 1978 in the Eastern region (PGO). In the meantime, different regional governance institutions and associations covering different areas have been created to steer developments. The governance system is multi-scalar and involves different actors in the policy fields of spatial planning, mobility and regional development, which produces challenges of communication and coordination. Additionally, cross-border governance can be hindered through different approaches of planning and regional development of the federal provinces and regions (Lower Austria, Vienna and Burgenland).

Spatial analysis

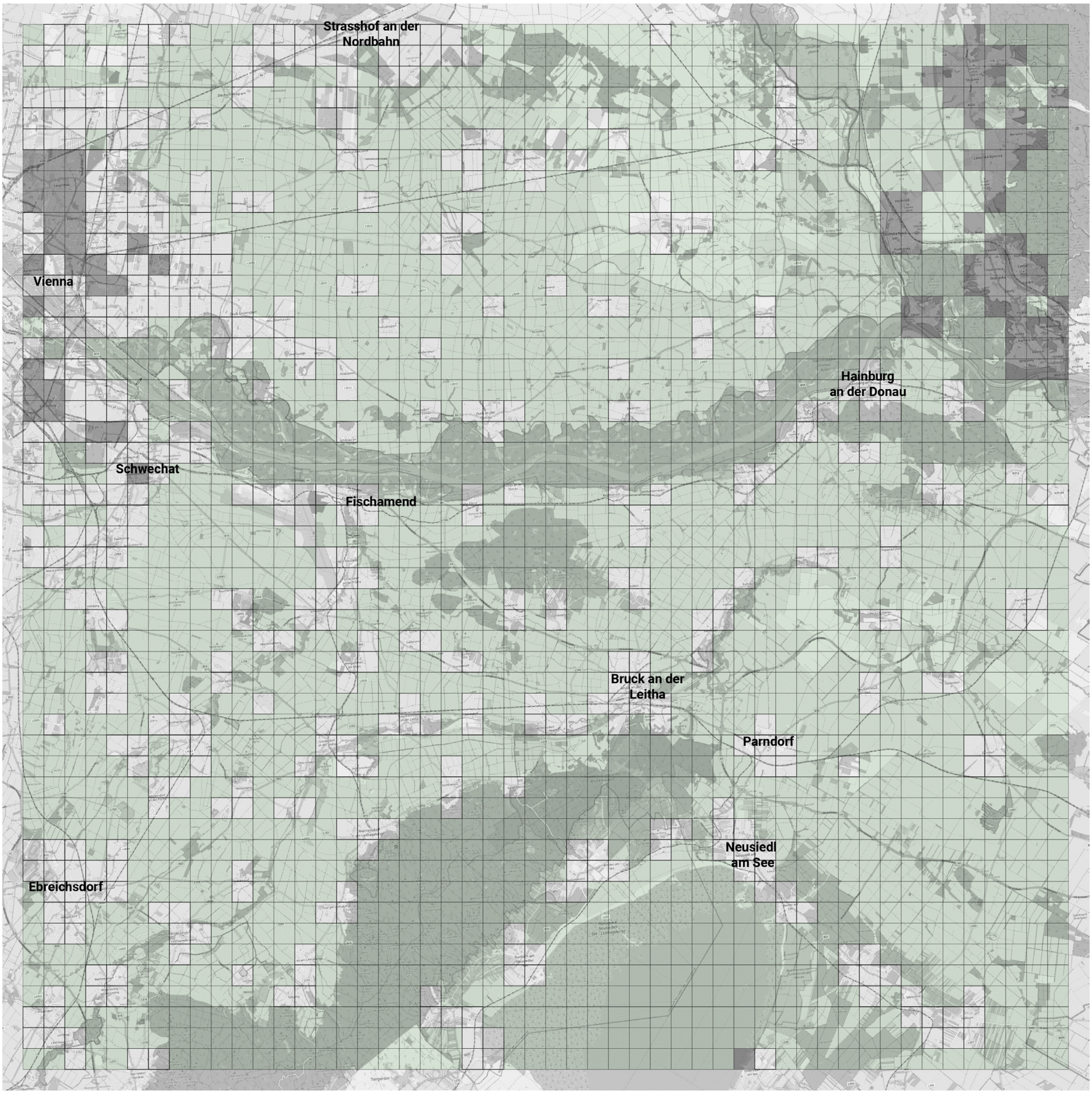


peri-urban

In the Austrian case study area 502 grid cells are defined as peri-urban. This equals 20,1% of all grid cells in the case study area. The Austrian case study thereby represents the case with the lowest share of peri-urban, and instead is predominantly classified as rural. This characteristic is likely originating in the area being dominated by agriculture and comprising two national parks, the Donau-Auen (Danube flood plains) and a part of Neusiedler See - Seewinkel.

Overall, the case study shows fragmentation of the peri-urban patches, which are internally compact at the same time. The peri-urban grid cells are more connected to each other in the Western part of the case study, which corresponds to the surrounding of Vienna. Further peri-urban cells concentrate around the smaller towns and along the shore of lake Neusiedl. In the rest of the area the peri-urban grid cells comprise very small clusters of 1-2 cells, usually with significant space between peri-urban clusters.

Austrian case study
Peri-urban places



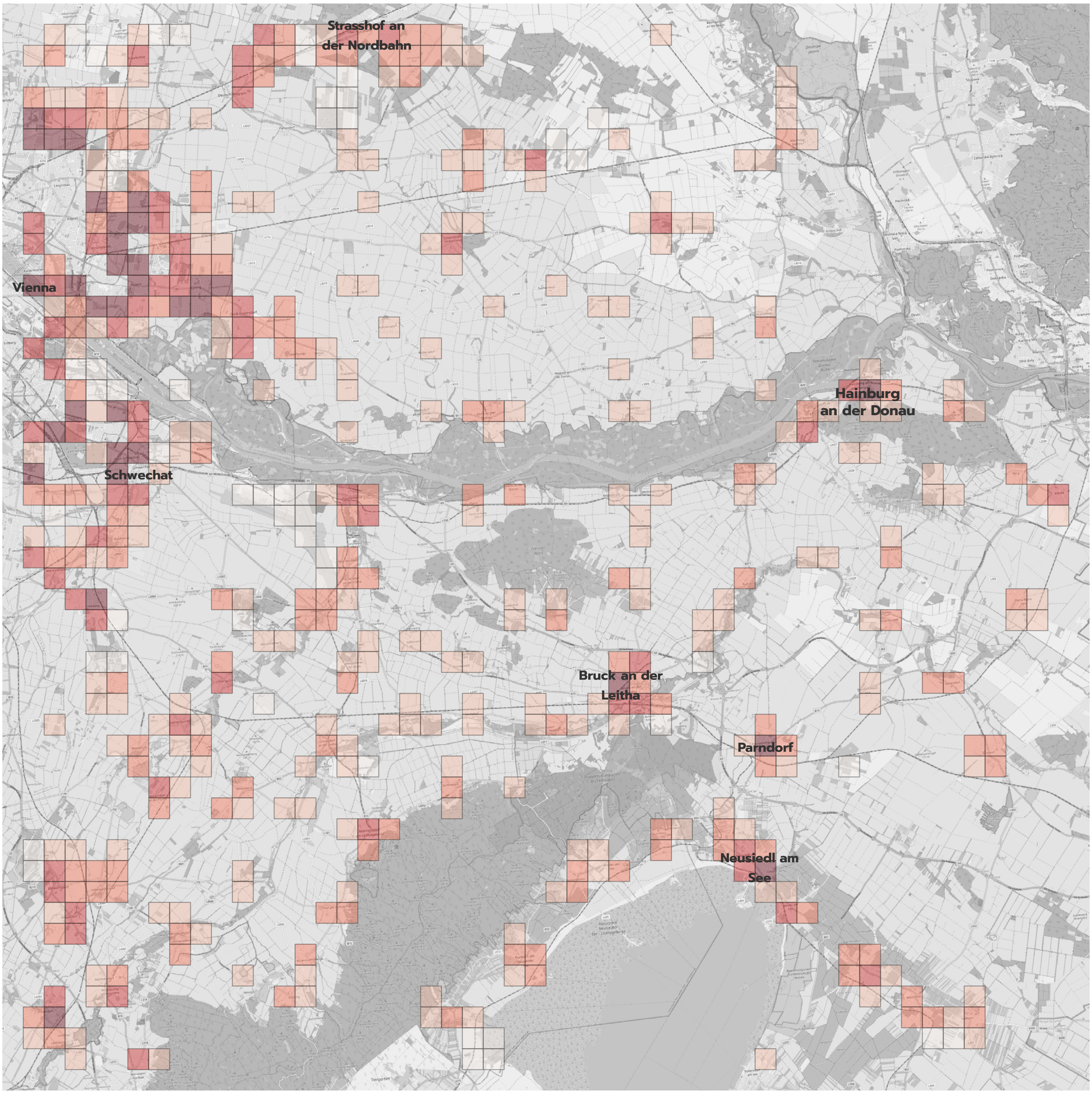
rural

peri-urban

urban

0 5 10 km

Demographic typology and distribution of types
Case Austria



	POP_DENS	AGE <15	AGE 15-64	AGE >64	% EMP
3	32	12,5%	68,8%	18,8%	50%
1	258	13,8%	66,1%	20,1%	47,7%
2	649	14,2%	66,2%	19,6%	47,9%
4	1468	15,4%	65,1%	19,5%	48,9%
5	3248	15,6%	64,3%	20,1%	48,4%

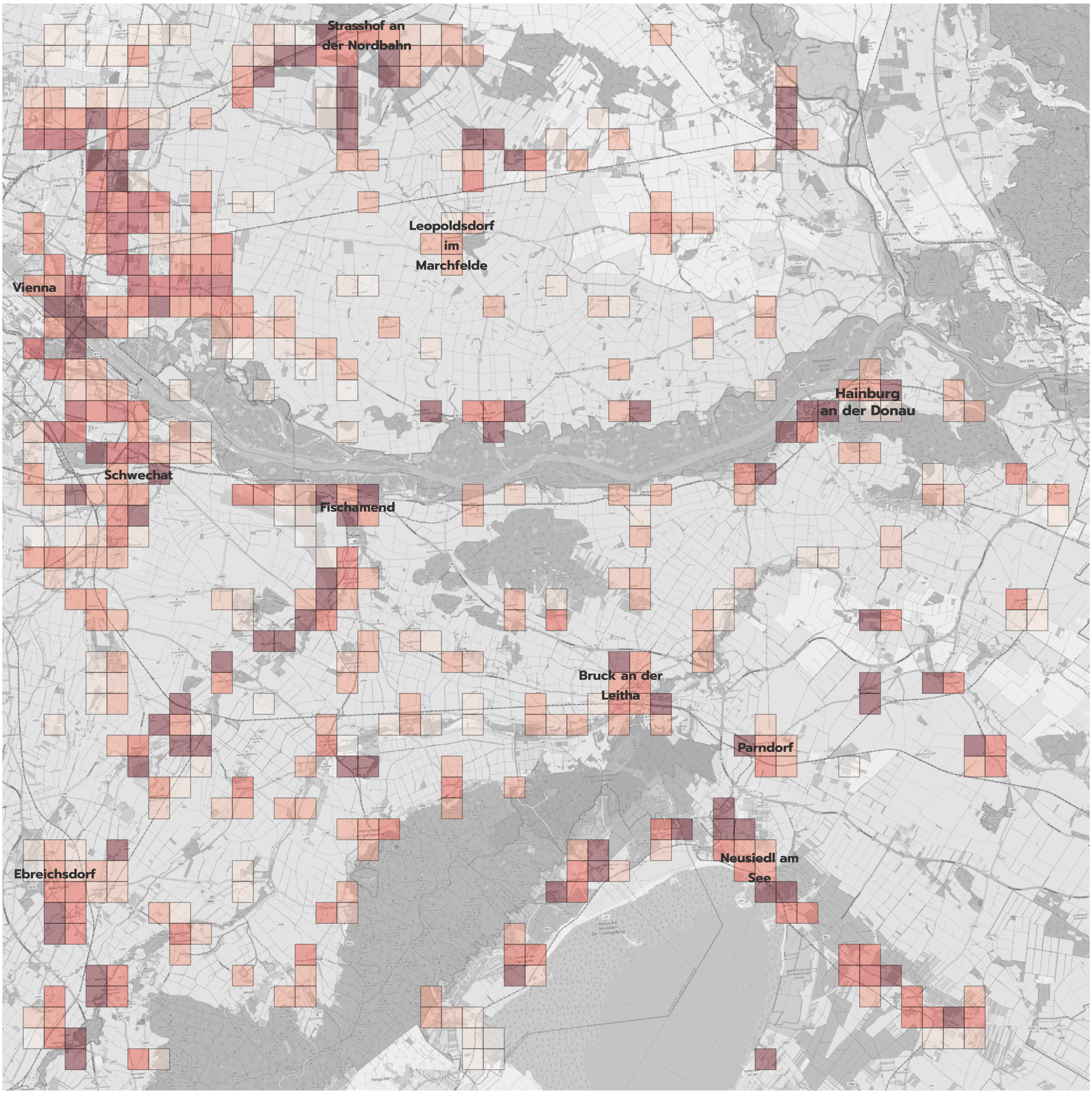
most common demographic type of peri-urban in the Austrian case study area

0 5 10 km

Characteristics Demographic typology Case AT

The Austrian case study has demographic type 1 as the most common (43%) peri-urban variety. It is characterised by low population density, one of the two types with the highest share of people older than 65 and the one with the lowest shared of employed people. Type 2 is the second most common (27%), with more than twice the population density of type 1, but a slightly younger population. The other three types together account for only 30% of all peri-urban cells, which means that the Austrian case study overall is characterised in terms of demography by low-density peri-urban.

Spatial structural typology and distribution of types
Case Austria



	centrality	POP_DENS	GSI	number of buildings
5	low	low	low	low
3	low-med	low	low	low
1	medium	low	low	low
2	med-high	low	low	low
7	med-high	medium	low-med	low-med
4	high	low	low-med	low-med
8	high	low-med	high	high
9	high	high	med-high	high
6	high	low	low	low

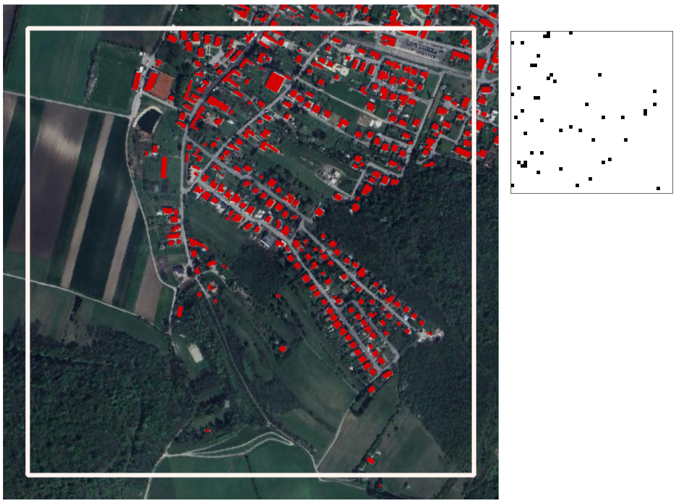
most common spatial type of peri-urban in the Austrian case study area

0 5 10 km

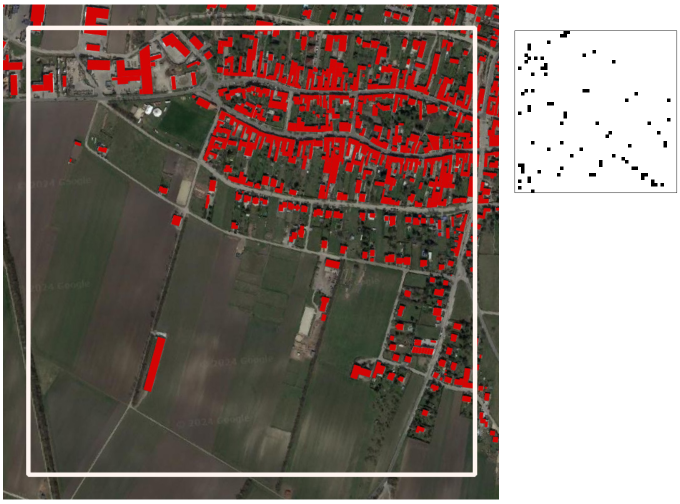
Characteristics Spatial typology Case AT

In the Austrian case study, spatial Type 2 is dominant (24,1%). Type 2 is characterised by low population density and medium-high spatial centrality, meaning that these types of places are well accessible within the region via the road network. Nevertheless, the type has a low occupation with only few buildings and related low ground coverage. The densest, 'most urban' type is rare in this case study (3,4%), appearing only at the edge of Vienna. Types 4, 5 and 7 occur in a comparable share of just above 15% each. Types 4 and 5 both have low population density, and differ mainly in their accessibility, with type 4 being highly central, while type 5 shows low centrality. Type 7 has medium population density, being relatively well accessible.

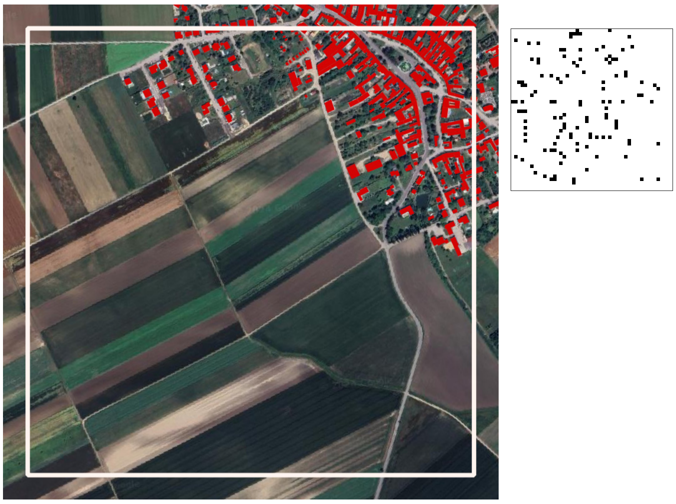
Exemplary manifestations of the spatial structural types
Case Austria



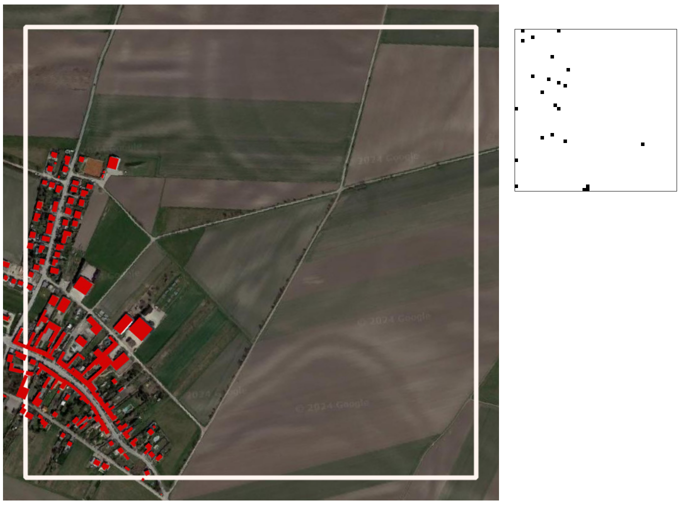
SC1 9,4%



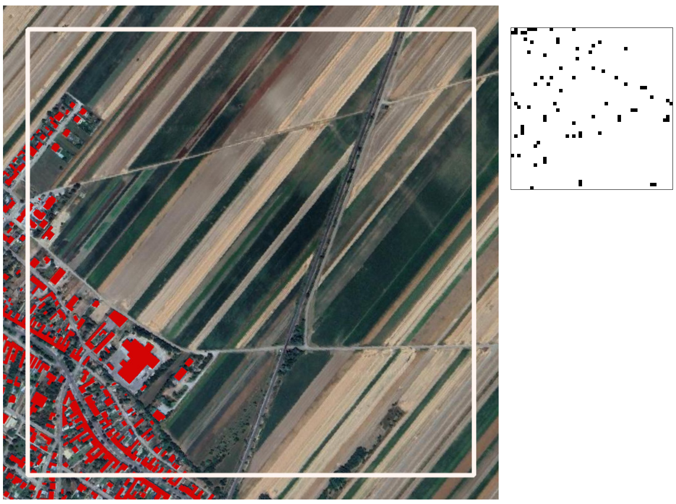
SC4 15,7%



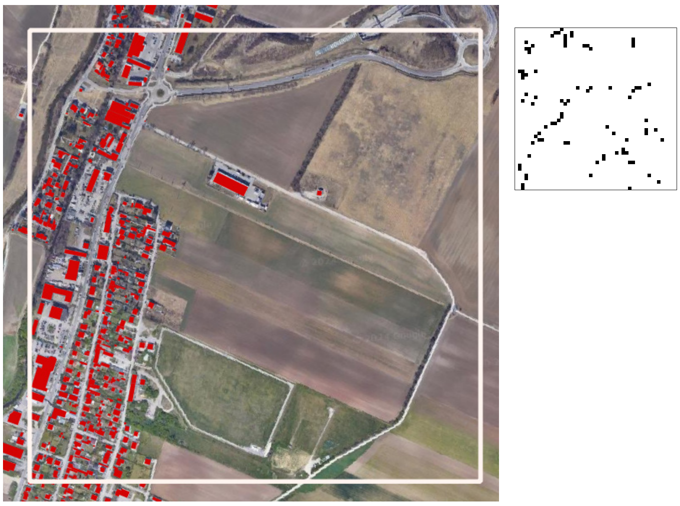
SC2 24,1%



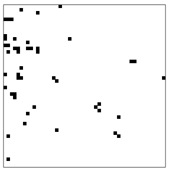
SC5 4,6%



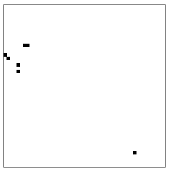
SC3 15,3%



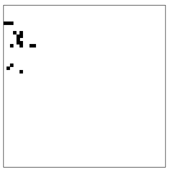
SC6 16,7%

SC7 9,4%

SC8 1,4%

SC9 3,4%

The spatial structure of the Austrian case study area shows a strong relation with the dominant land use character of the region - agricultural with natural zones. The settlements in the area are smaller compact towns and villages, which often historically started in form of ribbons. In many places, these ribbons are still visible. The settlement structures are thereby influenced by the natural landscape, its rivers, streams, fluvial terraces and related parcellation patterns. Types 1-4 appear across the whole case study area, while type 5 appears mainly in the western part, closer to Vienna. Type 6 shows a relation with the bottom lines of valleys, type 7 appears in the smaller towns and around the edges of Vienna and type 9 exclusively appears at Vienna's fringe.

Spatial type 1 shows a loose village structure, organised in relatively compact manner along a dissolving distorted street grid. It appears across the whole case study area in places of medium centrality.

Spatial type 2 consists of compact ribbon villages, developed along a main road. Its village cores are well accessible. In the hinterland of the 'main street' ribbon the village dissolves along a thinning loose street grid.

Spatial type 3 shows also a ribbon village structure, and also includes other land uses besides dwellings. This type of place appears in less central areas.

Spatial type 4 includes ribbon villages whose central main street is also one a regional main road. This places have developed along historical connections and keep a distinct pattern of highly compact village centres, with L-shaped patio-houses. In the hinterland of the main street ribbon the village dissolves along a thinning loose street grid.

Spatial type 5 is an edge situation in non-central places. This type is organised around streets that follow the preceding agricultural parcellation pattern.

Spatial type 6 corresponds to places of high centrality. Those places are more loosely built up and accommodate accessible industrial buildings in proximity to motorways.

Spatial type 7 includes historical cores of the main towns and larger villages in the region. It is well accessible, with a compact lower density and interwoven green areas. These places have a relatively high centrality in the region.

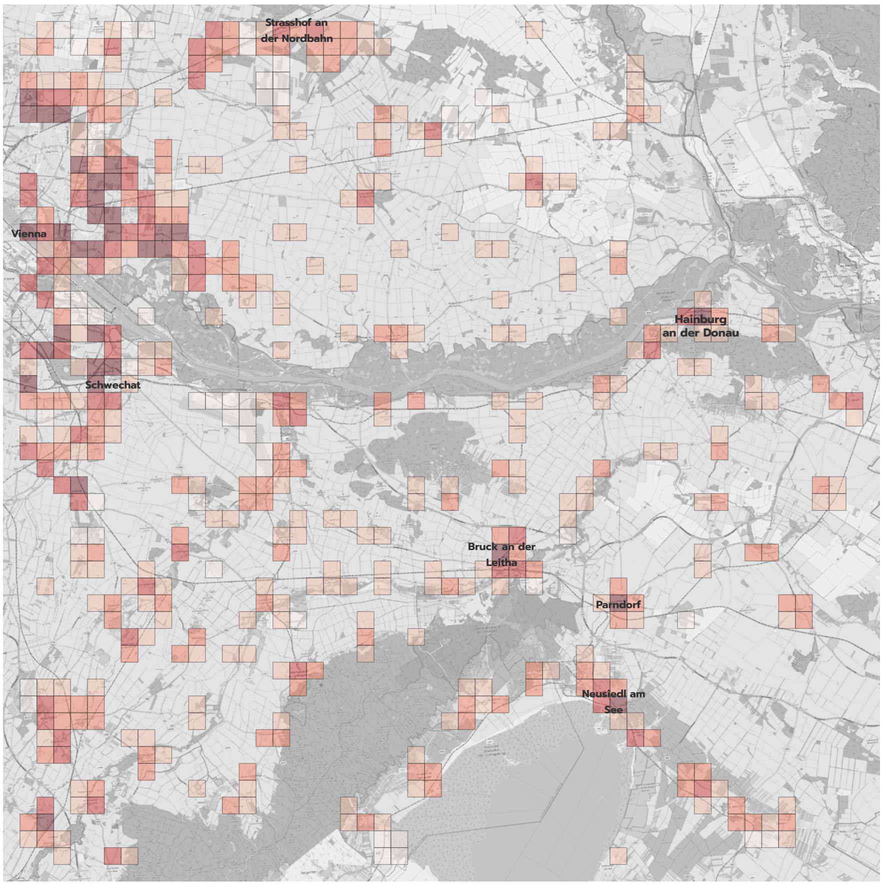
Spatial type 8 shows high ground coverage, and a fine grain low-rise built structure, with lower population density. The settlement structure includes villages along central roads, mainly along main connections west of Vienna.

Spatial type 9 has the highest population density and a very fine-grained built structure in form of free-standing villas. The ground coverage is medium to high, likely due to a large part of the grid cells being covered by buildings, but each with a garden. This type only appears in the Western fringe of Vienna.

Comparison of demographic and spatial structural typology

Case Austria

Demographic typology



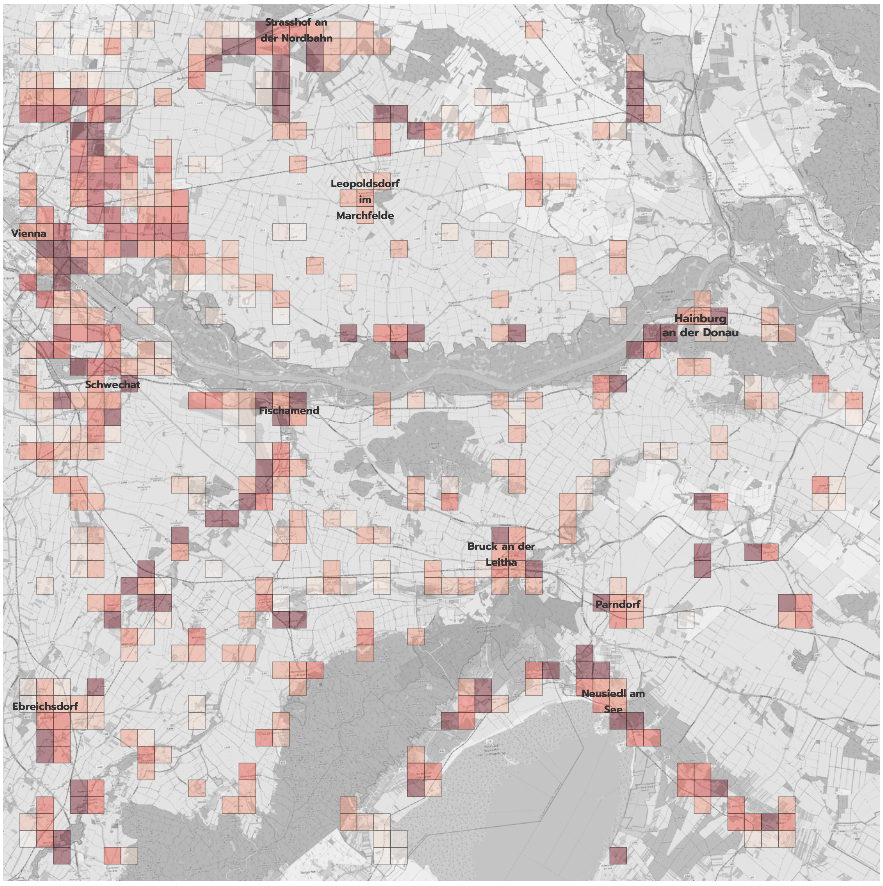
Statistics

Demographic typology

502 peri-urban grid cells

Type1	217
Type 2	139
Type 3	49
Type 4	64
Type 5	33

Spatial typology



Statistics

Spatial typology

502 peri-urban grid cells

Type1	47
Type 2	121
Type 3	77
Type 4	79
Type 5	23
Type 6	84
Type 7	47
Type 8	7
Type 9	17

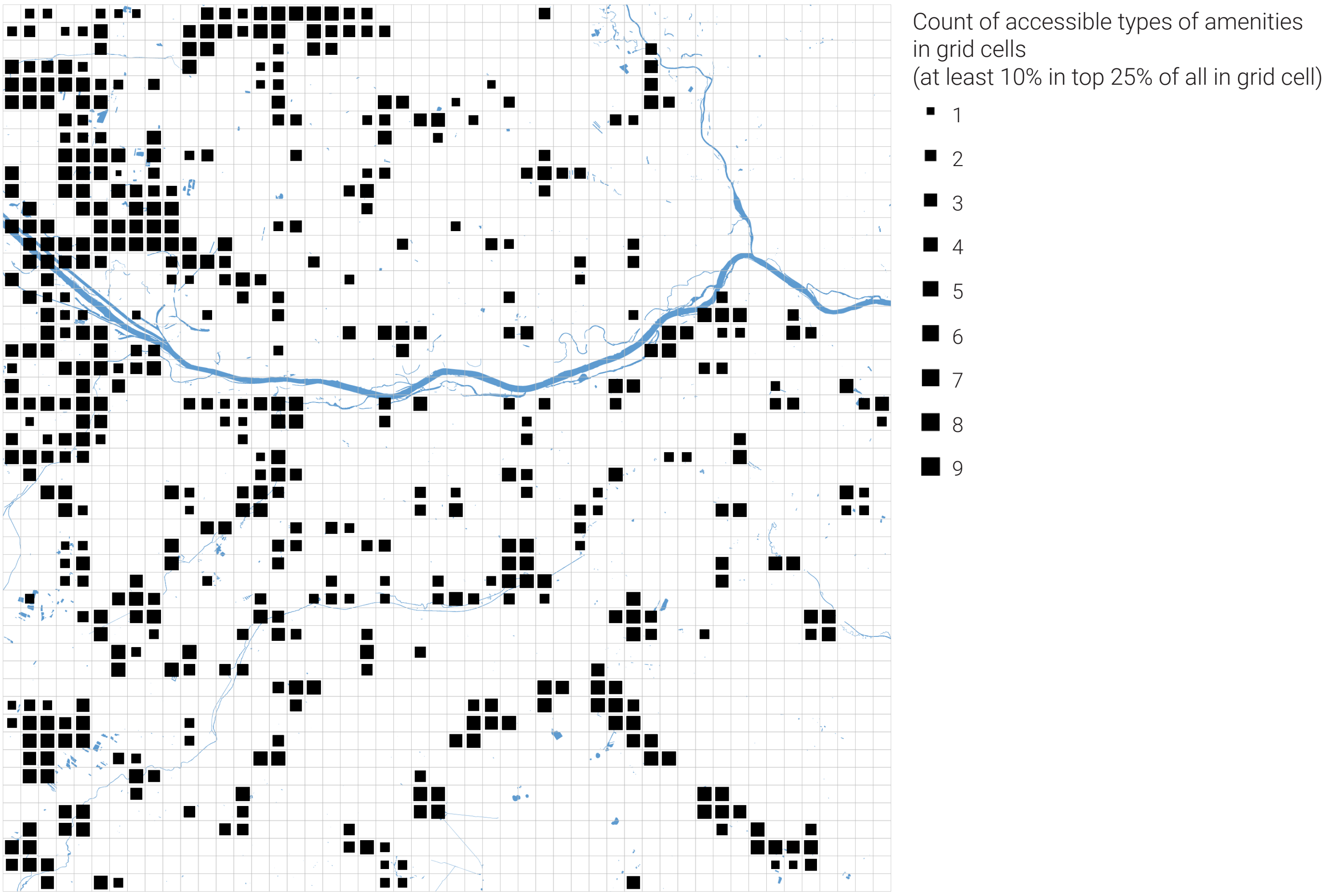
The cluster type combination that appears most frequent in the Austrian case study is demographic type 1 and spatial type 2. This combination also coincides with the two types that are most common in the Austrian case study. There are some expected combinations more frequent or do not appear, which likely is originating in (dis-)similarities of population density among the two different types. One combination that stands out is demographic type 4 and spatial type 7, which represents the most common higher density and well accessible peri-urban place in the Austrian case.

How do the demographic (DT) and spatial types (ST) relate?

DT \ ST	S1	S2	S3	S4	S5	S6	S7	S8	S9
D1	7	89	54	3	12	50	0	0	0
D2	32	19	6	56	0	26	0	0	0
D3	0	12	17	2	10	8	0	0	0
D4	6	1	0	18	1	0	33	5	0
D5	0	0	0	0	0	0	14	2	17

The ‘accessible types of amenities’ map gives an overview on the accessible amenities in each grid cell. The amenities considered draw from Moreno’s framework of 15min cities and regions, and are here interpreted in nine categories: leisure, healthcare, religion, work_industrial, work_offices, education, green public space, services and retail.

Accessible types of amenities



Governance Analysis

Introduction

Governance in the peri-urban area and the district Bruck/Leitha is determined by the federal province of Lower Austria (strong state actor in planning and mobility), by different institutions working below the province level which are differently organised but often controlled by provincial and local state actors, and by municipalities (strong state actors in planning). Other important actors who influence governance processes are the larger companies in the area, most of all the Airport with its surrounding industries; private planning offices, which support particularly smaller municipalities; the national and regional transport companies (ÖBB and VOR), which are decisive for ticketing and provision of infrastructure; quasi-governmental agencies such as Radland NÖ GmbH and NÖ Regional, relatively important for regional and mobility development; and chambers of commerce, labour and agriculture. Civil society actors and NGOs exist but have a smaller influence on governance.

Federal-level actors (ministries) are significant in setting legal and strategic development frameworks for the region (e.g. the federal transport plan) and various financial incentives. The role of actors from the federal state, particularly ministry for climate and agriculture as well as for infrastructure, is significant because they set the legal and strategic frameworks for developments in the region (e.g. through the federal transport plan), but also because they support mobility behavior to some degree e.g. through giving financial incentives like the commuters' subsidy.

The peri-urban area is also governed by dedicated regional organisations and initiatives, such as:

- Stadt-Umland Management Wien/Niederösterreich (SUM): association consisting of the city/province of Vienna, the province of Lower Austria and surrounding municipalities. It works more informally through facilitating communication and information between the involved actors.

- Bratislava Umland Management (BAUM): regional management association including the city of Bratislava, regional managements of Lower Austria and Burgenland as well as municipalities in the region.

- Planungsgemeinschaft Ost (PGO): formal cooperation between Lower Austria, Vienna and Burgenland, concerned with regional planning issues (without legal competence in that area), population, settlement and mobility development. It assigns scientific and planning studies in order to monitor and analyse regional development.

- NÖ.Regional GmbH: service-agency for all cities and municipalities in the fields of mobility and European issues.

- "Römerland-Carnuntum" region (RLC), a regional development association which is simultaneously a LEADER region covering almost the whole district of Bruck/Leitha fostering sustainable urban development and inter-municipal cooperation.

Most of the important planning and mobility instruments are in the hands of state actors working on different spatial scales. State-initiated instruments entail formal planning regulations (e.g. regional plan for Bruck/Leitha), more informal spatial development concepts (strategic plans like the strategy for active mobility by the province of Lower Austria) and financial incentives to foster change in the region (e.g. support for the construction of bicycle lanes). The regional organizations described above rely more on informal steering instruments.

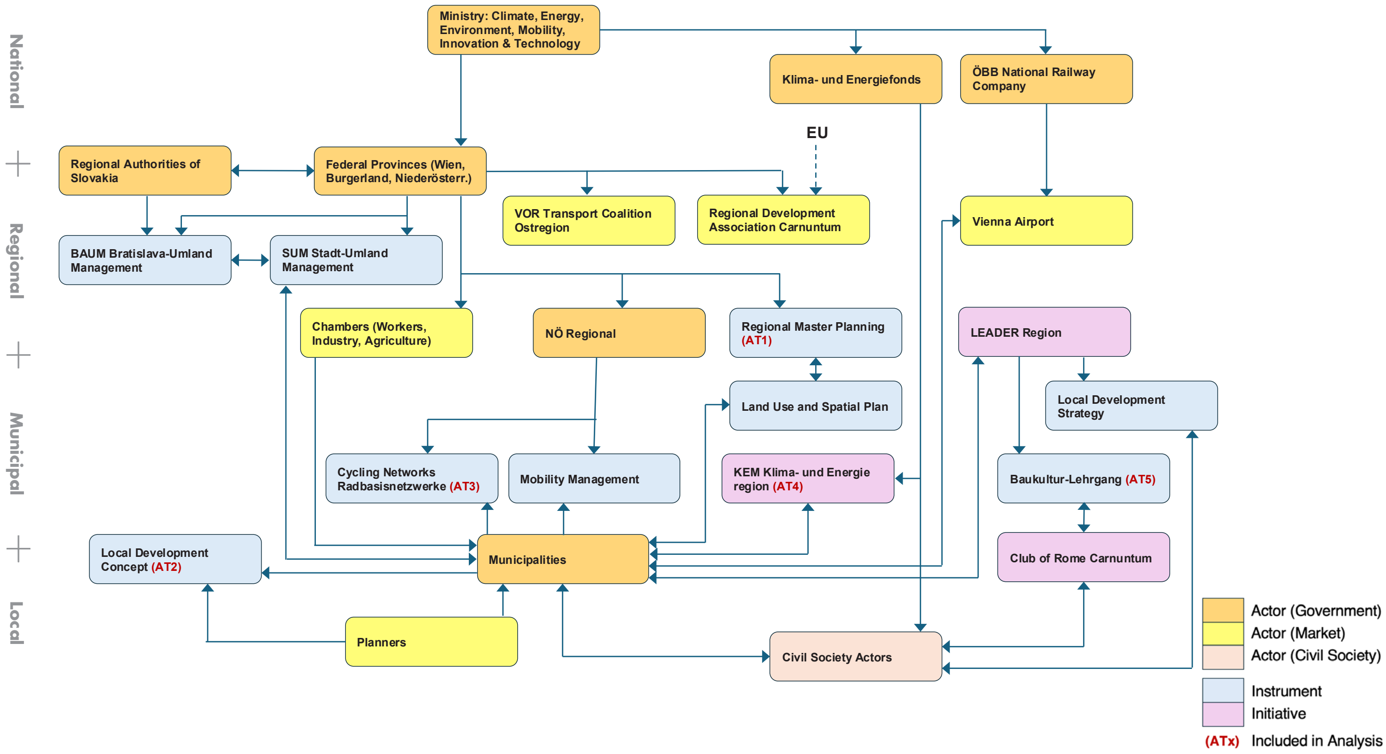
The following figure shows the action level of the most relevant actors, instruments and initiatives as well as the connections between them.

Governance cases

Choice justification

The choices of governance cases followed a strategic approach, in alignment with the other national case studies, that covered a broad variety of scales, actors, policy fields and types of governance. As a whole, the cases provide a clear picture of the diversity of instruments and initiatives that govern peri-urban development and can operationalize the spatial and strategic principles that may lead the area closer to a 15-minute city environment.

Figure 11: Connections of relevant actors, initiatives and instruments with impact on the spatial development of the district Bruck/Leitha.



The first case is the regional master planning at the province level, a relatively new policy instrument and plan mainly in the field of spatial planning but also covering ecology and economy; it involves three institutional levels; between soft and hard governance as it builds on a strong participatory process.

The second case is the strategy and financial support for the construction of bicycle lanes, also a recent policy instrument particularly aimed at active mobility; it works through giving financial incentives and mainly involves two institutional levels - municipal and provincial.

We also look at local development concepts, which are policy instruments and plans that are part of local spatial planning and touch on other policy domains like economy, ecology, and social development.

The fourth case zooms into the planning cultures course offered by the regional association Römerland-Carnuntum. This is a relatively new initiative involving actors at least on three institutional levels and integrating various policy fields such as planning, mobility, ecology, and social. Working through raising awareness, it is an example of a soft form of governance.

Finally, the fifth case is the Climate and Energy model region Bruck/Leitha, an initiative involving four institutional levels where the federal state plays a role, with implications for planning, mobility, housing, social development, and intermunicipal cooperation.

We will now dive deeper into two paradigmatic cases relevant for the dissemination and implementation of 15-minute city principles, namely the recent Bruck/Leitha regional master planning instrument and the innovative Climate and Energy model region initiative.

Case A: Regional Master Planning Bruck/Leitha

Context

This is a formal instrument of regional planning in the federal province of Lower Austria which sets the framework for regional development for the next 10 years in the administrative district of Bruck/Leitha. It is developed before the development and decision of the formal regional spatial plan and is mainly seen as a possibility to give municipalities a stronger voice in the development process before that plan is enacted. Contents of the collectively elaborated master planning can later inform the regional plan , which needs a decision by the parliament of the federal province of Lower Austria. The instrument should help implement general goals of spatial development of the province, generally steering growth and producing common ideas for future development. It comprises principles, goals and measures on the topics of services of general interest, green spaces, settlement development and areas for the location of companies (Land NÖ, 2021). The regional master planning was developed and decided

Table 4: Overview of selected governance cases

	A	B	C	D	E
Case name	Regional master planning	Strategy and support of the construction of bicycle lanes	Local development concepts	Planning cultures course	Climate and Energy region Energie3
Format/type	Policy instrument and plan	Policy instrument	Policy instrument and plan	Initiative and collaboration; awareness raising instrument	Initiative and intermunicipal cooperation
Aim/aspiration	Foster sustainable regional development	Increase percentage of bicycle lanes in the region, increase awareness in the population for using the bicycle	Concentration on resource-saving spatial development, avoidance of land use conflicts, consideration of the impact of spatial development on mobility; improve green and public spaces	Raise wareness about ecological sustainability; find solutions for climate neutrality on the local level; suggests measures towards climate neutrality	Improve energy independence of the region through development of renewable resources; foster active mobility and circular economy
Main scales/ level	Federal province; region; cities and municipalities	Federal province; cities and municipalities	Cities and municipalities	Region; cities and municipalities	Federal state; federal province; region; 3 municipalities
Challenges and opportunities	Combination of hierarchy and negotiation as opportunity; pre-conditions for the participation process as challenge	Strongly hierarchical, exceeding often capacities of cities	Realization of concepts needs willingness of private land owners; coordination between planning and mobility policies; mind-sets of people as challenge	Equal knowledge exchange and discussion between municipal actors; information about best practices; challenge: time intense, continuity of persons taking part	Good and longstanding tradition of cooperation; coordination of decisions made in different political/ institutional arenas
Relations/ tensions	Tension between mobility and planning policies; between growth and compact oriented development; between local and federal province actors regarding settlement development	Settlement and locational development without considering bicycle lanes; quite weak regional scale;	Conflicts between users of different mobility devices; locational development pushes car-dependency; cooperation with regional transport company is complex (e.g. frequency of buses)	Limited capacities of local actors to implement best practices (staff; finance); limited capacities of organizer of the course	Tensions between need to define spatial borders for cooperation and functional relations; lack of clarity with regard to responsibilities and funding possibilities

between March 2021 and June 2022 (Amt der NÖ Landesregierung, 2024). The subsequent regional plan for the South of Lower Austria was formalized in 2025. The general aims of the plan include fostering sustainable spatial development, establishing inter-municipal cooperation, strengthening functional decentralisation, developing compact settlement structures, fostering active mobility, setting limits for further settlement development within municipalities, and defining focus areas for agricultural production, regional green zones and multifunctional landscape areas.

Actors, Aspirations, Actions

The main actors involved in this planning instrument are:

- The federal province of Lower Austria, departments of spatial planning, environment and traffic: As the strongest governmental actor, its roles are initiator, provider of data, coordinator but also financial supporter. Its main aspirations are to foster sustainable regional development, articulate growth and settlement development, position the region as an attractive place to live and produce, and strengthen coordination between institutional levels in terms of spatial planning and mobility.

- 33 municipalities of the administrative district Bruck/Leitha acting as providers of data and information: They also are encouraged by the federal province to formulate wishes and interests concerning the regional plan and to become implementers at the local level. Their main aspirations are getting support through the regional plan for coping with urgent challenges of local development, most of all managing growth, strengthening social cohesion, providing services and making places more liveable.

- Private planning offices, market actors that are not as strong as state actors but play a decisive role in planning issues for some municipalities: Their roles are contractors and facilitators of the regional planning process, and providers of knowledge and data particularly for the municipalities which hired them. Regional associations (SUM, RLC) are strong actors whose roles are to bring in knowledge and data to help coordination between the involved institutional levels and support the realization of the regional master plan.

- Representatives of the chambers of commerce and agriculture act as a weak actor, bringing in views on the planning process within the mandate given to them by their members. Their main aspiration is to develop and position the region better in economic terms.

Mechanisms

The Regional master planning Bruck/Leitha can be interpreted as an indirect action instrument because it should help to steer regional development through common goals and measures which all actors should follow. On the other hand, it is strongly process-oriented as it includes a relatively strong coordination process and involvement of municipalities and other actors in the development process.

The instrument is embedded in different strategic and development instruments of the federal province of Lower Austria. The national level plays a minor role, although the plan aligns with the goals of the Austrian Spatial Development Concept 2030 (ÖREK). Regional and municipal actors cooperate relatively independently from the national scale. The federal province has developed guidelines for regional master planning development comprising three modules: analysis and basic research, strategy and development of the mission statement (Leitbild), plan and measures. Within all modules and steps of the development process, participation by local and regional actors is strongly recommended. Interestingly, from a spatial perspective, working groups in different parts of the region were established where municipalities show similar spatial development challenges (e.g. group areas around Schwechat and group areas around Bruck/Leitha with Hainburg). The instrument is not legally binding, but its contents should be taken to legally binding planning instruments like the regional spatial plan and the local spatial planning programs.

Decisions are made multi-laterally through negotiation. After discussions within the different steps of the development process, a consensus is reached to support and realize the goals in the competence sphere of all involved municipalities. The responsible department of the province leads the process and is hierarchically related to the municipalities in planning matters.

Opportunities and challenges

Some of the goals of the Regional Master Planning Bruck/Leitha overlap with the idea of the 15min city: sustainability in general, concentration of growth on compact settlement structures (density), strengthening of inner development of municipal cores (density, mixed-use), securing the provision of local amenities for the population (proximity, liveability), maintenance and development of social infrastructures (health, education, culture), and allowance for daily life systems with short distances (proximity and accessibility). Moreover, regarding action mechanisms, a real opportunity to push forward the principles of the 15-minute city – if only implicitly – lies in the cooperative and consensus-oriented planning process, although the main challenge is to give all municipalities equal voices and the institutional preconditions to take part in the process. Another potential opportunity is the mixture of negotiation and hierarchy, which combines advantages of both forms of steering.

In the aspect of policy domains, the regional master planning crosses topics of settlement development, economic development, protection of the natural environment and recreational areas, multifunctional landscapes and agriculture. The main challenge is that it entails only marginal statements about mobility planning and no guidelines for inter-municipal cooperation concerning the location of companies. It lacks direct connection to active mobility policies which could lead to spatial developments without consideration of pedestrian and bicycle lanes or public transport. In addition, the structurally produced competition between municipalities concerning the attraction of companies and population could still lead to fragmented spatial developments and an uncontrolled converting of agricultural and green land into built areas. There are conflicts between the necessity to set limits for spatial development and dynamic population development in certain municipalities, leading to more sprawl which hinders the implementation of 15-minute city models. In some actors' minds, population and economic growth is still dominant. Finally, direct connections to social and housing policies are not part of the plan. However, the process of regional master planning in Bruck/Leitha generally contributed to strengthen the regional scale in planning issues, raise regional consciousness, improve coordination between actors and scales and develop a common stock of data.

Considering the various scales involved, the regional master planning was realized as a strongly cooperative and participatory process. Representatives of the municipalities had the possibility to bring in their interests at different steps of the whole process. An issue affecting power relations in the planning system is that the distribution of competencies within the Austrian state gives the regional scale little power to steer development, which means that regional actors predominantly rely on measures to raise awareness on regional issues and building networks. Also, because planning competencies are in the hands of municipalities, the willingness to cooperate on a regional scale in certain policy domains is often low, which leads to some resistance to the regional planning process. Pushing forward common regional goals for sustainable development thus becomes quite difficult. Finally, the alignment of the planning goals of the federal provinces or municipalities with national institutions is quite complex because of the dependence on national sector policies (e.g. funding policy of the Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology). The multi-scalarity and multi-actor situation make decision-making across scales quite complex.

There are also complex challenges regarding institutional capacities, since regional master planning is a labour- and time-intensive process which not only challenges the responsible provincial departments, but also the municipalities. Larger municipalities have comparatively better staff capacity and knowledge to take part than smaller municipalities, which have to hire private planners to represent their interests. Other capacity problems concern the lack of knowledge of municipalities of this new instrument and their simultaneous involvement in different regional development processes which partially run in parallel. This often exceeds financial and staff capacities.

Case E: Climate and Energy Model Region Bruck/Leitha

Context

Climate and Energy Model Regions (KEM) are a program initiated and implemented by the national climate and energy fund (KLI.EN), funded by ministries of the federal state. Regions, consisting of municipalities, can decide to take part in the program and submit a proposal to the fund to become a climate and energy model region. The proposals are assessed by an expert panel in a two-step process. After positive evaluation the regions are co-financed mainly for the implementation of regional climate protection projects and a climate energy model manager. Since its start in 2009, many regions have been financed, and at the moment 130 KEMs are implementing climate protection projects in 1.077 municipalities in Austria. Main goals of the program are supporting the production and consumption of renewable energy, reduction of energy use, sustainable buildings and (active) mobility (Klima- und Energiefonds, 2025).

KEM^3 Bruck/Leitha started in 2018 as an inter-municipal cooperation without legal entity between the city of Bruck/Leitha and its surrounding municipalities Höflein and Göttlesbrunn-Arbesthal. KEM^3 was built on the former KEM Römerland-Carnuntum which covered formerly more than 20 municipalities. The main reason for the focus on these three actors now is their longstanding positive experience of cooperation, particularly in energy topics. The main coordinator of KEM^3 is the city of Bruck/Leitha. Currently the KEM^3 is financed in a third phase after the concept, implementation and continuation phases.

Actors, aspirations, actions

The main actors involved in this initiative are:

- The national climate and energy fund (KLI.EN) acts as funder, provider of information and administrative coordinator focusing on the main energy goals of the program.
- The Energy and Environment Agency Lower Austria acts as quality manager for KEM³.
- Village and City Renewal Lower Austria (Dorf- und Stadterneuerung NÖ) and Radland Lower Austria, two agencies providing information about funding and helping build networks for the KEM³ manager.
- RLC Römerland-Carnuntum, SUM and NÖ.Regional, whose role is to provide information on mobility and regional development. Their main aspirations are helping municipalities deal with development challenges and strengthening the regional scale.
- City of Bruck/Leitha and municipalities of Höflein and Göttlesbrunn-Arbesthal act as initiators, co-funders, providers of knowledge and data, decision-makers and implementers. They focus on energy use, developing renewable energy, and improving regional mobility, regional cooperation, and quality of life.
- The KEM-manager coordinates all communication and project implementation processes, advises municipalities, involves civil society, and supports the cooperation partners in building networks and finding funding.
- Energy Park Bruck/Leitha is a market actor and provider of expertise for the implementation of renewable energy production projects.
- Local actors from civil society are part of the development process of KEM³ and are regularly informed about the activities. They provide information and implement projects initiated by KEM³, focusing on quality of life in the region and making their energy consumption more efficient. Private households have taken part particularly in the creation of energy communities, who jointly produce and use renewable energy.
- Local business actors are informed about the activities of KEM³, bring in their interests through different communication channels and provide expertise to realize renewable energy projects.

Mechanisms

KEM³ takes explicit reference to regional development concepts and mission statements (Leiltbilder), namely the energy contract of the municipalities of Römerland-Carnuntum signed by all municipalities in 2017, the LEADER strategy Römerland-Carnuntum for 2014-2020, the Lower Austria climate and energy program 2020, and the climate protection report of the federal Environment Agency Austria (Umweltbundesamt) (Koller 2019).

KEM³ is strongly consensus-oriented and involves state and non-state actors in different activities. The development of the Leitbild was a participatory process in which representatives of the civil society, SUM, RLC and market actors were involved. Final decisions concerning strategy and projects are taken by the KEM³ core team consisting of the KEM³ manager, mayors and vice-mayors, the heads of the municipal and city administration and the KEM³ quality management. Decisions need approval by all three city/municipal parliaments beforehand. The cooperation is funded 75% by the federal fund KLI.EN and 25% by the involved municipalities and city.

As a process-oriented cooperation, KEM³ helps to steer developments on the local level, mainly through raising awareness for energy topics, through networking and information about renewable energy and mobility.

Opportunities and challenges

The mission statement of KEM³ mentions goals which go into the direction of the 15-minute city: climate protection (sustainability), increased density of the built environment, focus on the development of the inner parts of the city and municipalities (density, proximity, walkability), alternative forms of mobility such as e-car sharing and micro-public transport for daily mobility, construct bicycle lanes within and between municipalities (mobility, accessibility), increased number of e-filling stations for bicycles (accessibility, sustainability, active mobility), and improved green spaces (liveability) (Koller, 2019; KEM3, 2021).

The long-standing track record of positive cooperation experiences between Bruck/Leitha, Höflein and Göttlesbrunn-Arbesthal makes a common spatial, economic and social development approach like the 15-minute city more viable from the perspective of governance mechanisms. The spatial confines of the cooperation framework are chosen in a way that it can make sense to think of the 15-minute city, compared to other sub-parts of the whole peri-urban region that lack a comparable cooperation history, as well as sufficient density, mobility networks and provision of amenities. Challenges have to do with the necessity to receive the consent by all three local parliaments in major cooperation issues (like continuation of funding). This leads sometimes to delays, not only because of the timing of decisions made within these parliaments but also because discussions emerge about how to use local budgets.

Regarding the various scales involved, the cooperation between the institutional levels (federal state, federal province, region, city and municipalities) works quite smoothly. The main challenge lies in the complexity of this multi-actor system which sometimes hinders the work of the KEM manager who has to articulate a lot of actors and maintain the overview of different funding possibilities. Furthermore, this multi-scalar and multi-actor situation produces funding streams and logics working in parallel to each other, which is challenging from an efficiency point of view.

From the perspective on integrated policy domains, KEM[3] touches different policy areas like energy, ecology and economy but also the social. Challenges naturally emerge between its intention to strengthen small-scale regional relations and the fact that it is a commuter region, as well as between the intention to strengthen the inner city of Bruck/Leitha and the locational strategies of retail at the city edges. Another challenge is that the cooperation is not directly connected to the local policy scales of spatial planning and mobility and that the federal province of Burgenland and the Burgenland municipality of Bruckneudorf, which is part of the KEM3 region in functional terms, are not included in the cooperation.

A final challenge relates to capacities in relation to the aspirations of the initiative, as KEM3 has taken over a lot of tasks in questions of renewable energy from the local administrations but is still not well-equipped to fulfil these tasks regarding staff and other resources.

Conclusions/Reflection

Both governance cases cannot be directly compared as they work through different mechanisms and are embedded in different institutional and political environments. However, a common thread running through both cases is the difficulty to work at the regional scale on important questions of spatial planning and mobility. Mainly because of financial reasons, it makes more sense for some municipalities to look first at their own development and not at the region. Among other consequences, this has led to fragmented settlement structures around the traditional compact cores of municipalities and a sprawling development at their edges. Another commonality is that civil society only plays a minor role in almost all governance cases. A main reason is that the planning culture in Lower Austria is led mainly by state actors, their institutions and their quasi non-governmental agencies. Therefore, developments are mainly driven by governments and only partially by forms of governance like inter-municipal networks or regional cooperation. Finally, coordination between planning and mobility policies works well at the level of the federal province, but needs more efforts at the regional and local level. Having said that, it is nevertheless important to highlight that within the peri-urban region of Bruck/Leitha the trend goes into the direction of further developing and strengthening the regional scale of cooperation in questions of future sustainable development.

Socio-Spatial Analysis

Selection of focus areas

In order to shed light on the diversity within the peri-urban setting, we selected three contrasting, internally coherent cases for an in-depth analysis: (1) the west, (2) the center and (3) the east. The first case study area, the west, comprises six municipalities close to Vienna: Schwechat, Fischamend, Klein-Neusiedl, Schwadorf, Ebergassing and Gramatneusiedl. The municipalities vary in size between 974 (Klein-Neusiedl), 5.714 (Fischamend) and 21.166 (Schwechat) inhabitants. The municipality of Schwechat is directly bordering Vienna and thus lies on the border between (sub-)urban and rural areas. The second case study area, the center, comprises five municipalities in the middle of the peri-urban area including the district capital Bruck and the municipalities north of it: Scharndorf, Göttlesbrunn-Arbesthal, Höflein and Rohrau. Except for Bruck/Leitha (8.395) the municipalities are similar in size, ranging from 1.219 (Höflein) to 1.667 (Rohrau). The third case study area, the east, is located right at the border to Slovakia and includes the municipalities Bad Deutsch-Altenburg, Hainburg, Wolfsthal and Berg. The population of the municipalities varies between 982 (Berg) and 6.982 (Hainburg) inhabitants (Statistik Austria, 2023).

Focus group participants: key figures

We gathered the perspectives of 34 people in a total of five focus groups: young people, working people, people aged 65+, caregivers and people who do both care and paid work. These target groups were chosen to obtain differentiated views on various routines of local inhabitants.

The statistical results of the questionnaire show that the age of participants corresponded to the criteria given by the researcher team. It is noticeable that no young adults and adults from the age of 19 up to 39 were reached and that the working people were all over 40 years old, as shown in Figure 12. Figure 13 shows that all participating senior citizens were retired and almost all participants in the group of working people, caregivers and working caregivers are working full-time.

Figure 13: Map of chosen focus areas in the district of Bruck an der Leitha (Source: Own adaptations. Background map: NordNordWest. Licence: Creative Commons by-sa-3.0 de)

Figure 14: Age groups of participants

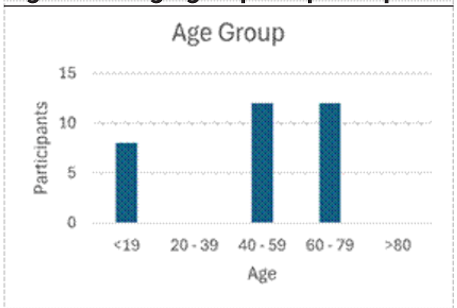


Figure 15: Employment status of participants

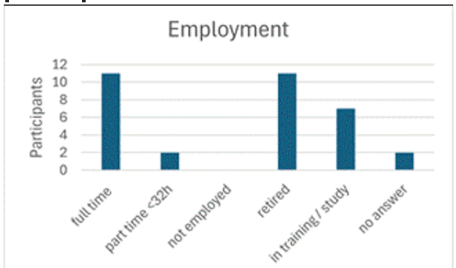
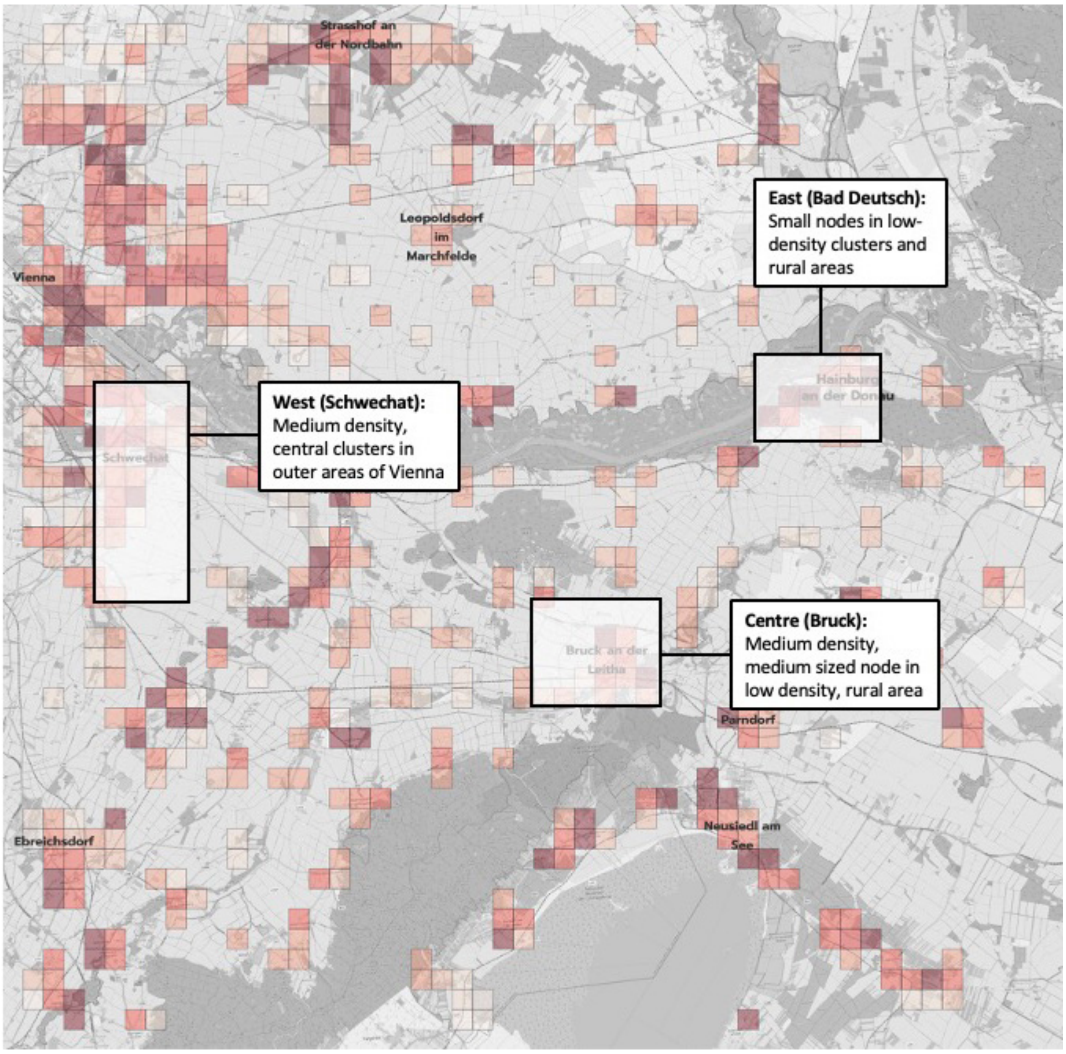


Figure 16: Spatial types considered in focus area selection (Austria)



Note: the demarcations of the areas of interest in this image depict the peri-urban context of the focus group locations and do not necessarily correspond to the exact places where the study was conducted.

Figure 17: Reasonable travel time per mobility mode

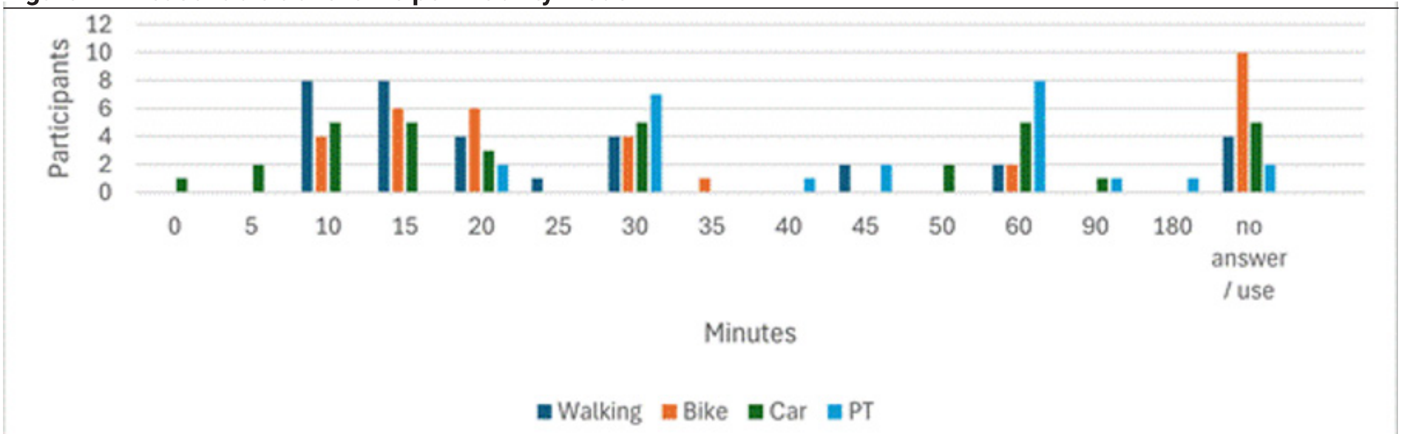


Table 5: Detailed values of focus areas

Areas/Indicators (2023)	Austria	District Bruck/ Leitha	Focus Area West	Focus Area Centre	Focus Area East
Population (2023)	9 104 772	108570	37992	14007	11188
Pop. growth (2013-2023)	7,7%	15,6%	19,0%	7,1%	30,8%
Population density	108,5	154	311	119	149
% youth <15	14,44%	15,58%	16,18%	15,19%	16,44%
% elderly >65	19,56%	18,72%	16,76%	20,47%	16,66%
unemployment rate % (2022)	6,1	5,6	5,8	4	5,9
%pop with at least Bachelors degree (2021)	16,0%	11,6%	9,6%	11,5%	12,6%
Annual gross income (2022)	46491	48947	46672	49525	46942
Cars per 1000 inhabitants	566	616	-	-	-

Figure 18: Mobility modes of the participants

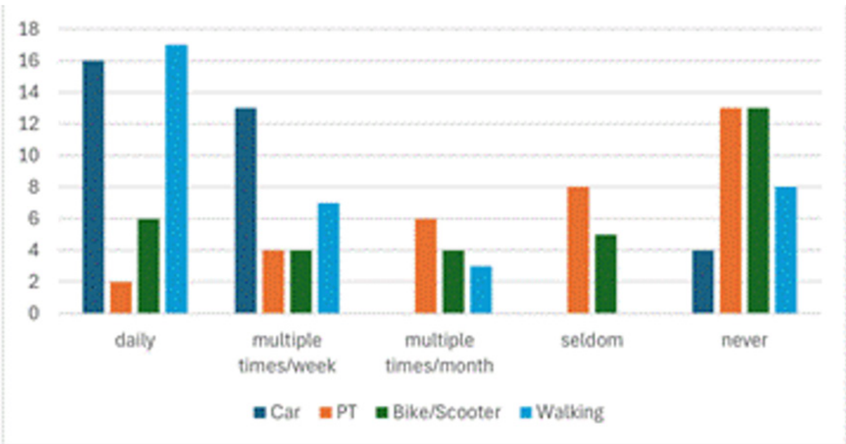
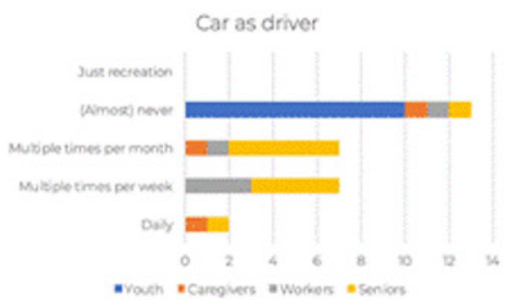


Figure 19: Car use



Main results of focus groups

The most important results of the focus groups are presented below. The main aim was to answer three overarching questions of the project:

- Which relations exist between the daily practices of people using and reaching certain amenities and the places/regions they live?
- Which challenges of proximity and accessibility have been discussed? How do different groups use mobility in the region?
- How does the use of amenities generally differ between the focus groups?

Overview of the discussion

Car dependency dominated the transport discussion. Most participants (except the youth group) describe it as a necessity without properly usable alternatives. The youth either is given a ride by their parents or has to use public transport, walking and cycling. Short distance bus shuttles and on-demand-transport are seen as possible alternatives to reach e.g. train stations or medical amenities. Multimodality is used for longer rides, but not for short distances. Concepts of sharing were not really considered in the past but could be a future idea discussed from different perspectives within the three adult groups. Cycling and walking was discussed in some groups but did not dominate the discussion. Participants are strongly aware of the need for improvements of the infrastructure for active mobility and this is one of the main tasks where political stakeholders are addressed.

The following table X shows that participants consider different amounts of time as appropriate for their daily journeys, depending on their form of mobility. Around 60% of participants consider between 10 and 20 minutes per journey appropriate when walking. This figure increases to an average of 18.5 minutes for journeys by bike. It is striking that almost 30% of all participants never use the bike. The times perceived as appropriate increase further when travelling by public transport. Half of the participants consider times of between 30 and 60 minutes appropriate for a one way journey. On average, nearly 29 minutes are considered appropriate for a single journey by car. The values for young people are particularly missing, as they do not travel by car on a daily basis. The high values of “no answer” can be explained by the fact that many participants stated in previous questions that they do not use certain kinds of mobility. This especially is noticeable for the bike.

Figure 15 shows how often participants use each mode of transport. Every second person walks every day to get to the places they use. Almost the same number use the car on a daily basis and many use it several times a week. All but one adult use the car regularly. Public transport is used significantly less often, especially by young people or commuters. The use of the bicycle is more evenly distributed between some who use it regularly and many who never cycle.

These analyses suggest that the car is the dominant form of mobility in the region. Individuals prefer other forms of mobility for various reasons. The group of young people in particular differs in their choice and mobility options. This can be seen particularly well when comparing the groups in terms of car use, as Figure 16 shows. Young people use the car much less frequently, both themselves and as passengers.

Regarding amenities, participants of all groups highlight the importance of nearby grocery shops, supermarkets and sometimes shopping centres. The reasons and needs are diverse and range from lunch breaks to essential needs and leisure activities. Grocery shops for daily goods are vanishing in small villages. This is a problem addressed especially by elderly people. There were intense discussions about restaurants and cafés, missing in many places and increasingly being closed.

Another topic of importance were cultural amenities. These seem to be well available for some offers e.g. classical music but lack to be attractive for several target groups e.g. children or people interested in modern art. On the other hand organisers complain about difficulties, that even if they try to offer a diverse range of cultural activities, local people do not visit the events. All focus groups highlighted the importance of visiting family and friends within the region as these visits make up a significant number of daily routes.

Another intensively discussed topic were modes of participation, political transparency and responsibility. These issues mostly were related to the enhancement of village centres. Participation processes were assessed positively if decisions actually led to changes or developments generated in the process. Especially in the city centre of Bruck the participatory elaborated results were not implemented several times. The municipal idea, that associations should redesign, finance and care about parts of the pedestrian zone was broadly rejected. The perception of community towards the neighbourhood was also mentioned in all focus groups. The sense of community seems to take effect at the small scale and is influenced by municipal actions like the municipality app and newspaper. In some municipalities the locals living there for decades are seen as one community and the more recent inhabitants in newly built settlements represent another group.

Which relations exist between the daily practices of people using and reaching certain amenities and the places/regions they live?

The participants’ everyday routines differ, especially when it comes to commuting to work or school. Those who live in smaller villages along a railway line or motorway often travel to larger cities for work. This applies to the sub-region in the north and east along the S7 railway and the motorway between Wolfsthal/Hainburg and Schwechat. The same can be said for the municipalities along the railway line or the A4 motorway between Bruck/Leitha and Vienna. Commuters and students often go to Vienna as part of their daily routine. The connection to Bratislava is only mentioned for supply needs during weekends or leisure activities. The district capital Bruck/Leitha plays an important role as a place that gathers not only residential functions but also work, services and amenities. Those living in Bruck often also work there and use amenities nearby such as cultural amenities. People living closer to Vienna enjoy the larger cultural offer there (e.g. the opera) while those living in or near Bruck also visit the surrounding cultural amenities. They describe their neighbourhoods in Bruck as endowed with a lot of potential, not anonymous and allowing a high quality of life. If they care for children, they mention positively that the children can reach the school and meet friends on their own. They therefore recognise some aspects of the 15-minute city concept as both present and positive in their region.

These aspects completely change in smaller villages such as Ebergassing in the west or Höflein in the centre, located nearby a city with well-developed infrastructure. In these locations, there may be basic services and amenities like a kindergarten in the neighbourhood, but for most other activities residents have to travel at least to the next larger municipality. These journeys are mainly made by car. Pupils often have the option of travelling by school bus, but this is only available at certain times. As a result, the daily lives of caregivers are dominated by shuttle journeys for the children, which they sometimes combine with their trip to work. At the same time young people see the “parent-taxi” as the best way to get around. Older people who can no longer be mobile independently find it difficult to reach daily amenities.

People living in these remote places are likely to name more familiar neighbourhoods, a more relaxed living environment and affordable properties as reasons for better liveability. If they want to visit cultural amenities or a special restaurant they go to the bigger cities. Most people living in such municipalities have issues with mobility and would prefer to have different choices of transport modes such as regularly scheduled buses or bicycle lanes. These connections influence the routines, notably in the context of supply. People without a supermarket nearby tend to do grocery shopping once a week, buying large amounts of goods and travelling by car. These routines are not mentioned by those living e.g. in Bruck as they have diverse shopping facilities nearby. As local grocery shops are increasingly closing in smaller villages, this is a challenge for the elderly. New ways of supply like delivery service or self-serviced automats with local goods are being developed.

Generational trends, such as different ways of living, cultural demands and voluntary association work are more likely to be mentioned in smaller municipalities with growing populations. Newly moved people are less likely to have a social network and feel less integrated in the community. Therefore, it may be harder for them to get support if they need it, for example in childcare. On the other hand, these people also describe that they are building up these structures among the newcomers and the village structures will simply rejuvenate in the coming years. Regardless of how long they live there, many people have friends and family in the region and visit them regularly. Occasionally, those who have moved from Vienna in recent years describe that they tend to maintain these community networks rather loosely.

Which challenges of proximity and accessibility have been discussed? How do different groups use mobility in the region?

Two main patterns were reported in the focus groups: people either live in a municipality in the region and work in another municipality in the region or they commute to Vienna. For those who organise their everyday life in the region, Bruck/Leitha is often either the place of residence or the place of work. They therefore commute between Bruck and a smaller municipality. This is usually done by car because there seem to be no alternatives. People commuting to Vienna do so by car or by train. The hurdles cited for public transport are lengthy transfer times, cancellations and delays, costs, lack of availability of Park & Ride spaces and overcrowded trains. Detailed reasons for and against the use of different modes of transport are listed in Table X.

The possibility of buying food or hot meals was discussed in all groups. Supermarkets are mainly found in the larger communities and are often located at the outskirts of towns or along main roads. Several groups emphasised that at least everyday products should be within walking distance. On one hand, this is important for people who live in small villages and are not motorised, e.g. elderly people or people without a driving licence. Similarly, it is currently almost impossible for schoolchildren or working people to reach grocery shops during their lunch break. Lunchtime catering is hardly possible even with inexpensive, fast food outlets and this is described as a problem. Longer journeys are also made for special goods or shopping trips. This is not a problem, as these journeys are not made very often.

The focus group results suggest that the biggest hurdle in the region is medical care. The importance of good accessibility to hospitals, general practitioners, specialists and pharmacies is particularly emphasised in the groups of senior citizens and (working) caregivers. Some senior citizens and parents visit medical facilities in Vienna or Burgenland and some commute to appointments every week or even more often. The fact that the district hospital in Hainburg is very difficult to reach by public transport was criticised by several groups.

Another hurdle is traveling short distances without a car, e.g. to visit friends two villages away and reach the train station, supermarkets or workplaces. Some people try to do this by bike, especially young people or parents with children, which is often difficult due to a lack of road safety and poor cycling infrastructure. Safety concerns are mainly due to the risk of accidents with another vehicle. The issue of safety also influences the motivation to walk - especially among young people, who express fear of other people, catcalling, assaults or simply feeling uncomfortable when they are alone. Concerns about assaults or other unpleasant situations were also expressed at some train stations and park & ride facilities.

How does the use of amenities generally differ between the focus groups?

The topic of village centres, namely their attractiveness and walkability, was discussed in all groups. It seems to be common sense that meeting in public spaces enhances the perceived sense of community within a neighbourhood or municipality. Especially the pedestrian zone and the main square in Bruck are considered important places which suffer from multiple vacant units and too much space for cars. In all groups the need for more liveable and attractive village centres in the region, especially in Bruck, is mentioned.

However, there were differences in the challenges and needs per focus group. The importance of nearby shopping facilities was mentioned by the young people for supplies during school hours and leisure. The groups of (working) caregivers describe the conditions as acceptable because they can easily do the shopping by car. No one describes the shopping centres as attractive places, but all use them regularly. The three groups of (working) adults do not primarily get their food from supermarkets during their lunch break, but from snack stands or restaurants. Some cook for themselves the day before or at work. Many traditional restaurants are closing or only offering meals during lunchtime. All groups, with the exception of young people, mention this as a problem.

Changes in consumer behaviour are assumed as one of the reasons for the closure of traditional restaurants. Due to remote working, perceived time pressure and higher costs, delivery services or take-away are used more frequently. Online shopping is seen by several groups as a way of providing supplies in small communities, which is particularly important for older people and working care-givers as they get things easier. However, there are hurdles and costs associated with digital tools. The problems of digitalization are mentioned by senior citizens also in other areas of everyday life, e.g. buying train tickets.

There were clear differences in the use of cultural amenities. The group of senior citizens was familiar with many different cultural venues in the region and emphasized them positively. Likewise, those in employment were aware of many amenities at their own area of residence, in the region and in Vienna. However, they expressed that the events were poorly attended and therefore difficult to keep up with. The groups of (working) caregivers find it difficult to get an overview of the offer due to lack of information. There was a particular desire for more cultural activities for children. The frequency with which these amenities are used varies. In the region, festivals organized by voluntary associations such as the fire department, the local music association or a sports club are an important cultural aspect for all generations. It is important to coordinate the clubs wisely so that they do not compete with each other. The cinema in Parndorf is highlighted positively by both caregiver groups and young people, while adults tend to attend the cinema in Vienna or do not use it at all.

Other relevant insights

Local spatial development in the core of Bruck/Leitha has been a widely discussed topic for decades within the community. However, according to the perception of the participants, the measures to revitalize the town centre have not been sufficiently implemented. The problem can be traced back to the citizens' decision to refuse a shopping outlet in Bruck, now located in a neighbouring province, and was exacerbated by the town´s establishment of a shopping center in the outskirts shopping center in the outskirts, as the multiplication of these peripheral amenities results in a perception that the city did not find an adequate solution to revitalize the centre yet. Retail units remain vacant since whatever inner city revitalization measures Bruck implements, most people keep using the joint amenities in the shopping centre. Due to this long-standing development, the attitude towards participation and local development appears to be particularly critical in Bruck.

The question about the feeling of belonging to the region is answered negatively. Rather, there is a sense of community within the municipalities. The geographical situation tends to subjectively divide the district into a northern and a southern region, along the well-developed transport routes.

Occasionally, the regional feeling is created through cooperation on an economic level, e.g. the common brand of wine production, or in the cultural sphere, e.g. through music or historical excavations. The situation in the town of Bruck/Leitha is special, as the border between the federal states separates Bruck from Bruckneudorf. In everyday life, these two municipalities, which have grown together, are regarded as one. However, it is noticeable in the administration that the border exists. For example, some infrastructures, such as the waste disposal site, can only be used in the home municipality and the information app is used differently by the municipalities.

Belgium - The Campine region

Context

Historical Overview

The Campine region (de Kempen) has been long at the margins of historical accounts of the Low Countries. Being on a sandy soil that was historically unsuited for agriculture, it remained a sparsely populated region close to Antwerp that was not deemed important. However, throughout history, people reclaimed the sandy ground to make it fertile for agricultural production. In the latter half of the 19th century, the cheaper American and Ukrainian grains could be reliably transported to the European market. This led to an agricultural crisis in the Campine region (landbouwcrisis), which, along with the accelerating industrialisation in Belgium, brought many (seasonal) agricultural workers to large cities in search of a job and income.

This trend of rural to urban migration was not fully welcomed at the time. The catholic church wanted to keep the population in the villages where the church still dominated many aspects of life, while the liberals and the urban elites were concerned about possible riots of the growing and impoverished body of working class citizens in cities. The socialists were ambiguous about urban migration, but saw potential in creating affordable housing in non-urban environments in order to provide a comfortable living environment for the working class (De Decker, 2011).

This widespread concern about rural to urban migration resulted in a particular (public) transport policy. Creating a dense railway network, combined with cheap train tickets, was promoted by the political elites as a political solution to the ‘problem’ of rural to urban migration, allowing workers to commute from their village to industrial sites and farmers to have larger market reach for their produce (De Block & Polasky, 2011). Both intercity mainline and local railways (terms vary; better known as interurbans in the Anglosphere, buurtspoorwegen in Dutch) were intensively developed, the latter predominantly under public guidance. The conventional inter-city railways formed a radial, backbone network, and local railways formed a predominantly transversal network that connected rural towns and villages with the stations in the countryside, not with large cities directly. This dense network slowed down urbanization in the big industrial centers and facilitated a dispersed settlement pattern where small villages along the (local) railways kept their size.

The transport policy mentioned above combined with the promotion of private home ownership to keep the working class ‘in their place’ and thus reduce the potential for disruptive class conflict. The government provided standardised housing plans and loans, and later the famous Law of De Taeye (wet De Taeye) of 1948, named after the catholic-democratic politician of the same name, granted subsidies for building or buying new houses, and provided guarantees for mortgages by the state. One third of the post-war building activities were realised through this subsidy. As there were conditions regarding the maximum price which included the land prices, this resulted in the rapid expansion of housing construction outside the core urban areas (Kesteloot, 2001). The lack of spatial selectivity in housing laws and the weakness of spatial planning also made non-urban land comparatively cheap and attractive, which accelerated the proliferation of the unique Belgian typology of "ribbon development" (lintbebouwing) across the country, populating once empty roads radiating from villages and cities with houses. Such a pattern of urbanisation was further accelerated by growing 'automobilisation', which the state promoted by providing a favourable tax system to provide employer-provided vehicles.

Figure 20: Soil fertility map of Flanders. Campine (bordered in thick black line) lies predominantly on infertile soil.

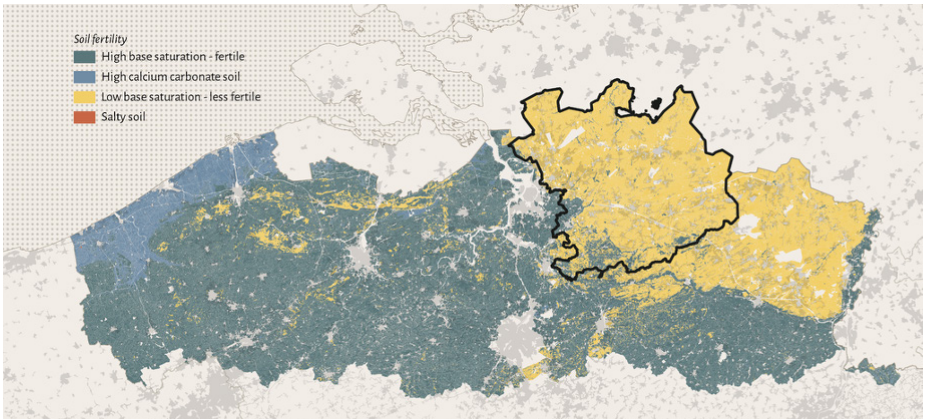


Figure 21: Railway network map of Belgium in 1931, with mainline railways in thicker lines and local railways in thin lines.

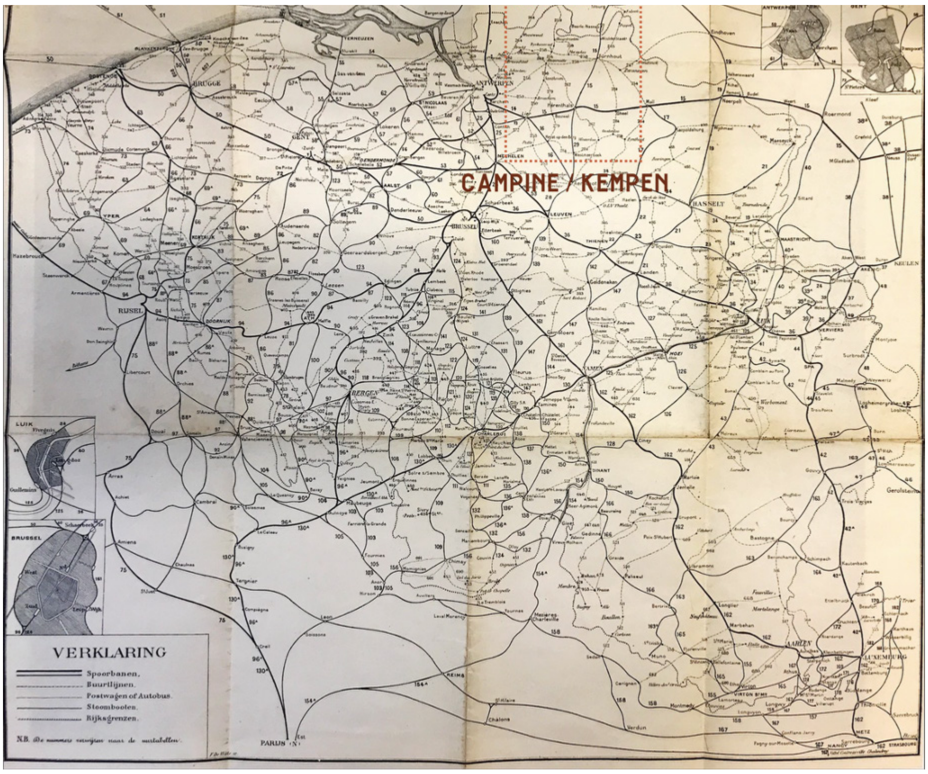


Figure 23: Campine municipalities and their borders (orange) overlaid upon sub-municipalities and their borders (blue). Sub-municipalities were independent before the massive consolidation in 1976.

Figure 22: Figure-ground map illustrating the chronological urbanisation of Pulderbos). Top left: 1771 - 1778; Top right: 1929 - 1936; Bottom left: 1962; Bottom right: 1984. The dark overlay illustrates the current built-up areas.

While the mainline railway network more or less kept its size in Campine during the post-war decades up until now, the non-electric local railways that formed the backbone of the transversal network were significantly reduced in size in the 1940s and fully discontinued in 1958, due to their slower speed and higher operational burden, which rendered them obsolete after the roadways were improved. Only the highly used, radial lines from large cities were electrified and survived until the 1960s. The contemporary road transport infrastructure came to Campine in relatively later years. The motorway A21/E34 opened in 1972, connecting Antwerp and northern Germany via Eindhoven in the Netherlands. This is relatively late compared to the neighbouring regions and countries, partly due to the Belgian engineers' preference for "accessible roads" (De Block and De Meulder, 2011), which aimed to spur linear urbanisation along the road - which the N12 did. As for modern railways, the HSL 4 high-speed rail connecting the Netherlands with France and the UK through Belgium has created a high-speed railway station in the northern Campine (Noorderkempen) in 2009. It is a rather unique station that is built in the middle of the region, not serving a specific city, but rather providing a park-and-ride multimodal service for the broader region.

Industrialisation of the Campine region started at the end of the 19th century. The industrial activities in the Campine developed were facilitated in similar ways as housing: through an interplay of railways, canals, roadways and local railways that transported materials, products and labour. This pattern of linear industrialisation is particularly visible along the canals radiating from the port of Antwerp. The Albert Canal, opened in 1939, is a prime example which runs through southern Campine, and spurred industrial estates, mid-sized settlements, and worker's housing estates linearly from Antwerp to Limburg. Along the

Figure 24: Percentage of housing built before 1946

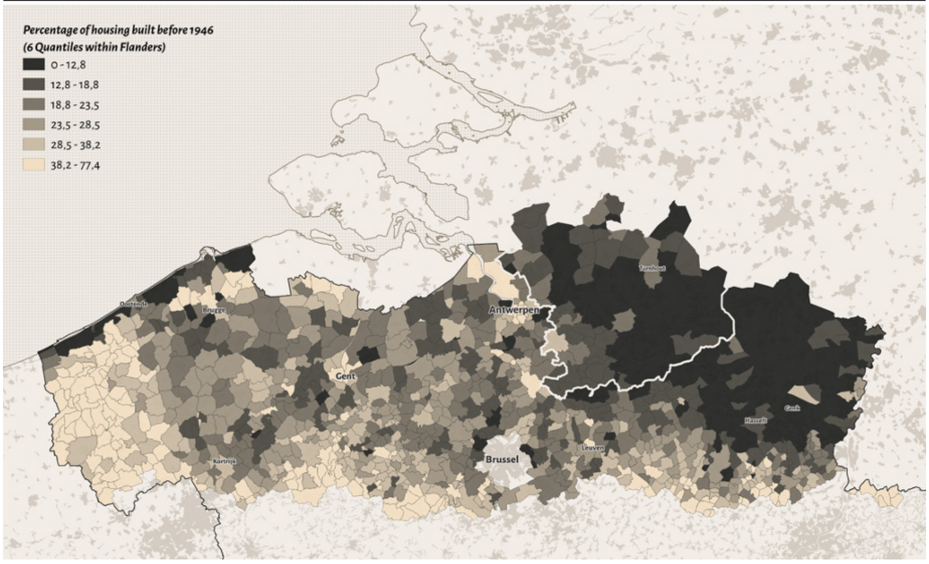


Figure 25: Median Income

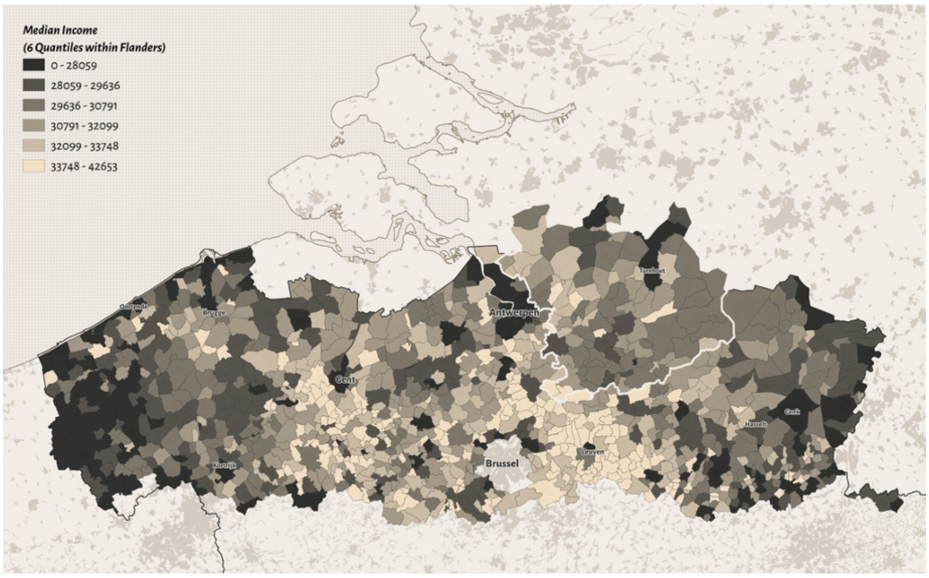
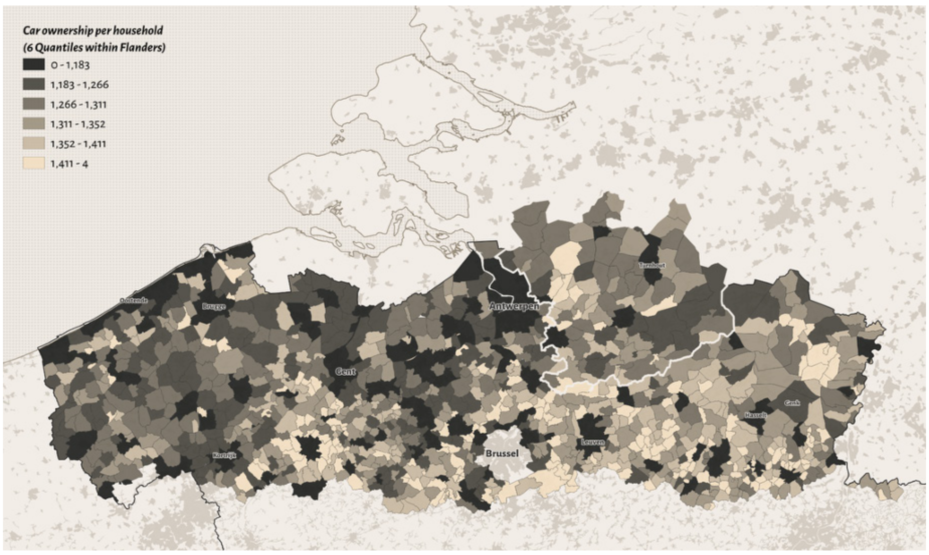


Figure 26: Car ownership per household



much older Dessel – Turnhout – Schoten canal, which connected the Albert Canal with Turnhout, smaller pockets of industrial activities are also visible, running parallel to local railways.

As the region was deemed rather underdeveloped in the 19th century, ambitious, top-down economic development plans driven by infrastructure were imposed on the Campine that were unlikely to get support elsewhere (Van Acker et al., 2017). This included polluting metal industries and military bases that were no longer welcome in more economically developed and politically organized places, such as around the port of Antwerp.

Geographic and socio-economic context

The study area lies in the eastern part of the province of Antwerp. The study follows the demarcation in the book “Kempenatlas” (Van Acker et al., 2017), in which the Campine region spans the area from Wijnegem, at the border of Antwerp’s urbanised area, to Balen, bordering Limburg. The area is situated between the central cities of Antwerp and Turnhout, with small cities, towns and villages scattered across the region. The towns and villages are predominantly sized between 2.000 and 20.000 residents and the roads between them are often built-up with ribbon developments.

Most housing units were built after the second world war (1945-1990), and the pace of expansion was significantly higher in areas nearby Antwerp and Turnhout that experienced higher urbanisation pressure.

Compared to the Flemish average, the study area has a relatively higher household income, a lower share of non-EU migrants (less than 1.5 percent), a fast-growing and relatively educated population, a higher share of post-WWII development (1945-1990) in the West, resulting from the early suburbanisation of Antwerp, and of newly built housing (after 1991) in the East, where the traditional rural villages are slowly turning into commuter towns, and a relatively higher rate of car ownership, especially in the West.

Administrative context: a federal state, with strong regional competences in planning, housing & mobility

Historically, the basis of the current spatial development and infrastructure-driven rural urbanisation has been primarily driven by the national government. They laid out the infrastructure, provided funds, and led the first nationwide land-use plan (Gewestplannen + APA/BPA). However, from the 1970 onwards, through a series of state reforms (Staatshervorming), the Belgian state was transformed from a unitary into a federal state and a number of important policy competencies, resources and instruments were consecutively decentralized and handed over to the “regional” and “language community” governments (gewesten / gemeenschappen), particularly in the third reform of 1988-1989 that moved mobility and spatial planning competencies to the regional governments. Thereafter the federal state wields little power over mobility, housing and spatial planning; the (for our purposes) only relevant exceptions are the national railways (NMBS) and the tax system that promotes employer-provided cars.

The Flemish (regional) government takes care of spatial planning, construction and maintenance of main roads (from motorways to N-roads), public transportation provision, waterways and education. The provincial government (where the whole study area falls under the province of Antwerp) takes on “softer” coordination tasks, related to nature, water, spatial planning, economy and intermunicipal cooperation.

Between the scale of provinces and municipalities, there are many forms of inter-municipal cooperation. The Decree of Local Government (Decreet Lokaal Bestuur) defines five forms of inter-municipal cooperation, with or without status as a legal person. The less binding, goal-oriented “project associations” (projectverenigingen) and intercommunal organisations that support the municipal capacities and provide actual services (e.g. waste collection, police) are two examples. Apart from this framework, separate transportation regions (Vervoerregio’s, two of which are present in the study area) govern and plan the public transportation network together with several civil society actors.

Municipalities in Belgium are burdened with drafting and implementing municipal spatial plans and policies, approving construction projects, and the provision of basic amenities such as sports and libraries.

Challenges connected to the 15-minute city principles

Several trends in the region regarding mobility, housing, spatial planning and socio-economic development priorities can be seen as challenges to the development and implementation of 15-minute city principles. The main issues to consider are:

Mobility:

The historical infrastructure-driven socio-economic development model in Belgium, which amongst others implied labourers staying in their villages of origin and commuting (often long distances) to workplaces and the reimbursement of public transport costs by the employer, hinged on the building of a dense, transversal local railway network. This could have remained as a feature of peri-urban accessibility and connectivity in the 21th century. However, starting from the 1920s and after the World War II, the policy approach to mobility gradually shifted to automobility rather than public transport as the preferred mode of transport to work, and in the recent years the priorities of public transport policy itself shifted to “demand-driven” thinking, prioritising readability and profitability instead of the social benefit of it, along with the policy goal of “budget neutrality” (i.e. the demand that a policy switch does not lead to extra costs) effectively working as budget cuts, all of which led to the further dismantling of transversal bus services. As a result, the dispersed settlement pattern that resulted from the said dense transit network increasingly relied on automobility, making affordable, financially feasible, frequent and fast public transportation difficult to provide. Car dependency was further encouraged by subsidies for private vehicles via a favourable tax system for employer-provided vehicles (at the federal level).

Housing:

The promotion of private house ownership in dispersed territories instead of social (rental) housing in the urban centres encouraged a more individualistic mindset rather than a willingness to collectivise in search of better housing conditions (Ross, 2013). The lack of spatial selectivity of this type of housing policy encouraged single-family, free-standing homes in peri-urban settings (at the regional scale), a trend further strengthened by weak regulation of the private rental market, which made the rental market less attractive, and a weak coupling of housing and spatial planning policy.

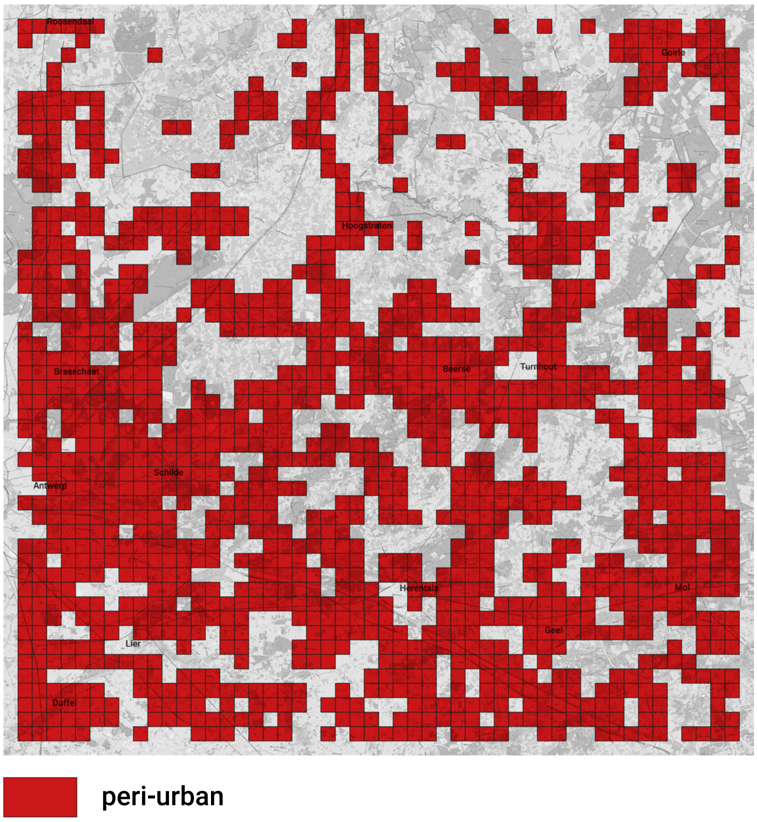
Spatial Planning:

The Flemish region is historically characterized by a mostly passive and reactive land policy, primarily focused on providing legal certainty to land owners, despite mostly failed attempts at developing strategic spatial planning capacity at the regional scale. The late introduction of spatial planning instruments (1970s), which were too lenient on designating areas for housing development and excessively complicated and extensive rules regarding exceptions for planning and building permits opened a playing field for lawyers, nepotism, corruption and NIMBY-ism from the nearby residents, leading to difficulties in well-planned new housing construction (Renard et al., 2022).

Socio-economic development:

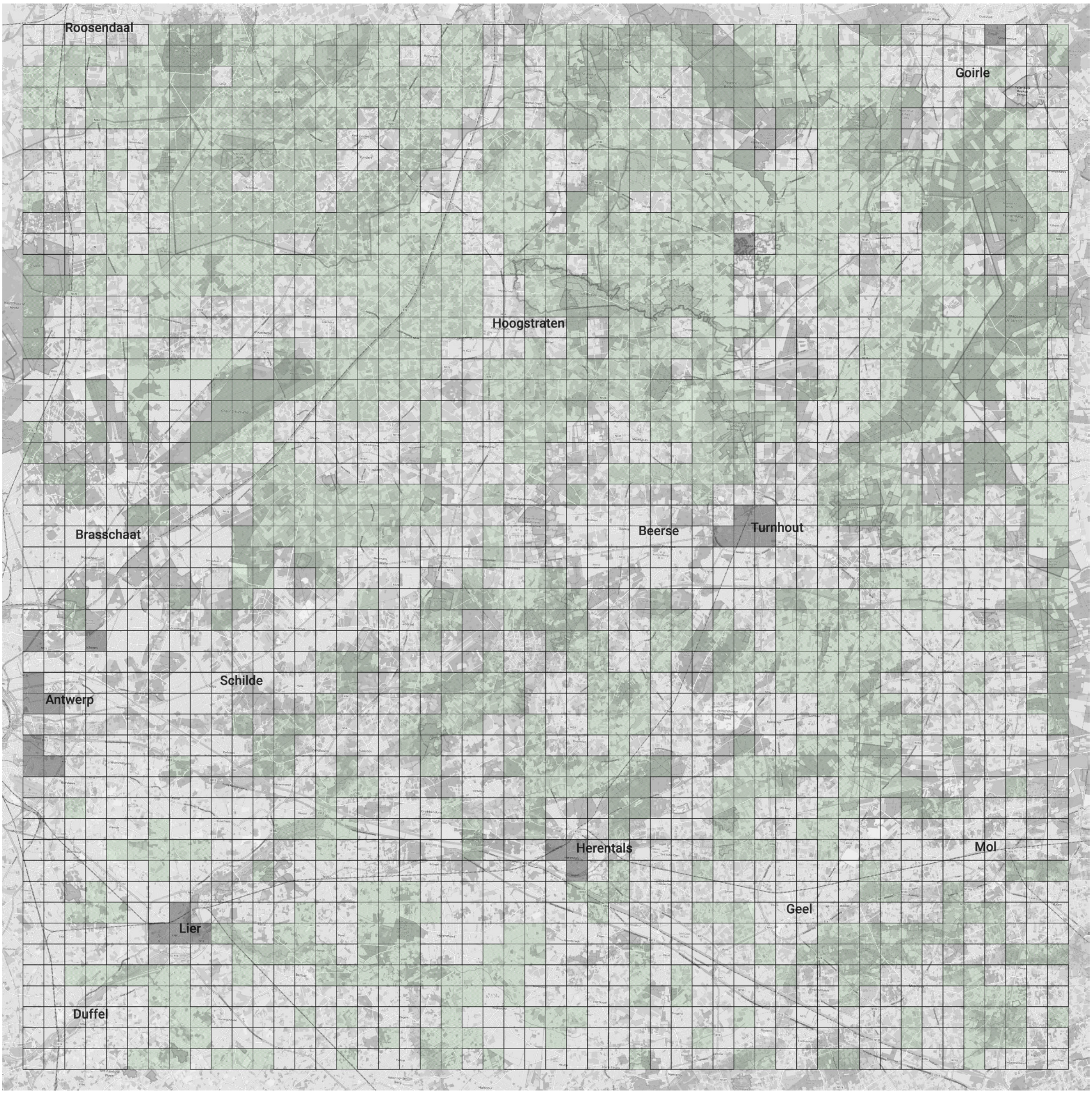
Campine is characterized by a late but strong socio-economic development, based on multinational capital embedded in networks of home-grown small and medium-sized companies. Historically, a strong secondary sector of industries was developed along the canals that link to the port of Antwerp, crossing both northern and southern Campine. This type of development helped Campine retain a strongly rural and peripheral identity with a distinct anti-urban character. At the household level, pension-building and generational wealth distribution happens mostly through home ownership (privately owned housing is kept as an asset), disencouraging other types of housing provision.

Spatial analysis
Belgium



In the Belgian case study area 1332 grid cells are defined as peri-urban. This equals 53,3% of all grid cells in the case study area. This represents the case with the second highest share of peri-urban areas. The peri-urban settlement types are quite continuous, as the cells in the map above are distribute across the terrirory, including close to the larger cities and towns. Towards the Northern and Eastern edges of the case study area the peri-urban settlement forms transition either into continous ribbons or fragmented cells.

Belgian case study
Peri-urban places



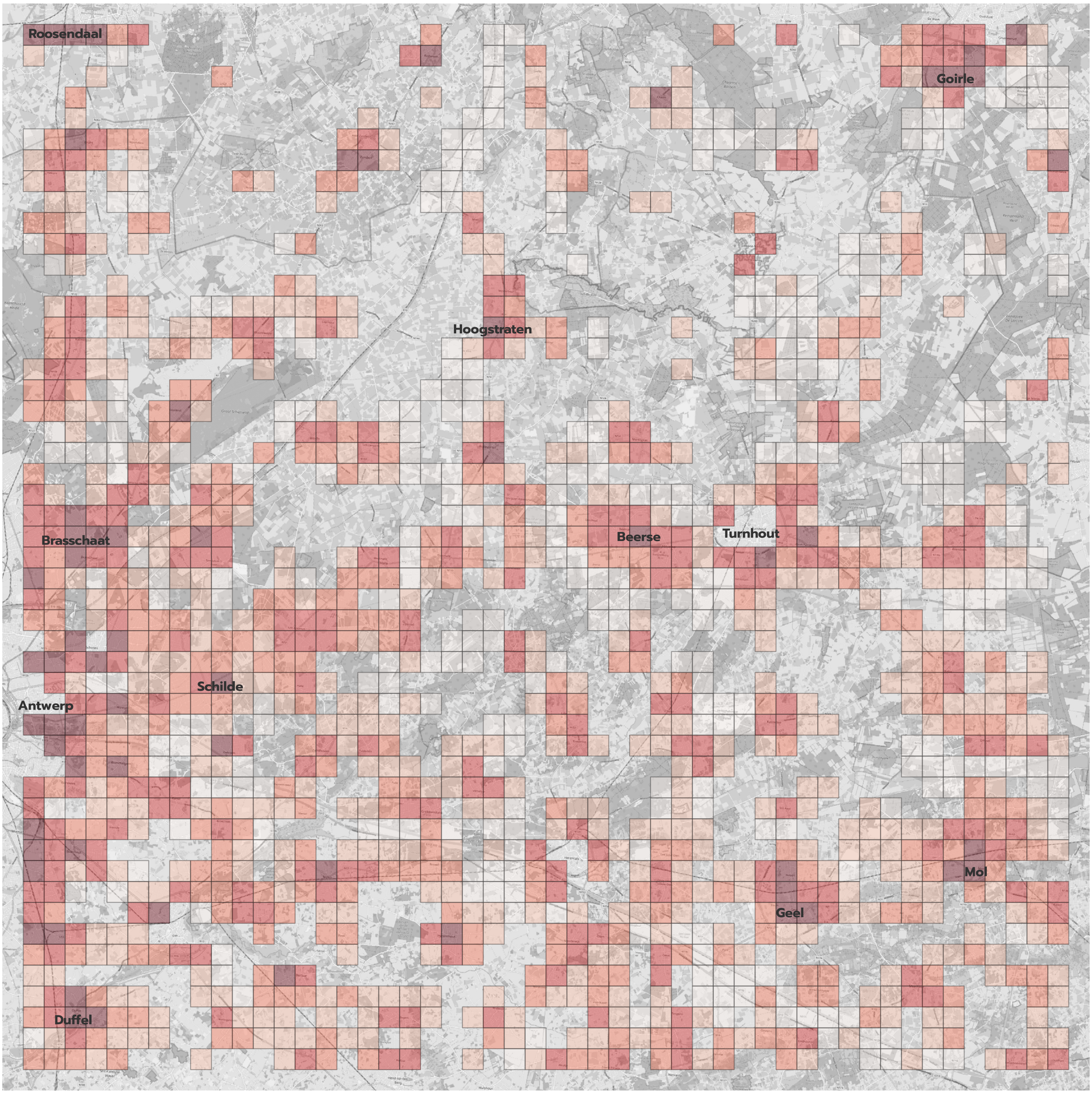
rural

peri-urban

urban

0 5 10 km

Demographic typology and distribution of types
Case Belgium



	POP_DENS	AGE <15	AGE 15-64	AGE >64	% EMP
3	32	12,5%	68,8%	18,8%	50%
1	258	13,8%	66,1%	20,1%	47,7%
2	649	14,2%	66,2%	19,6%	47,9%
4	1468	15,4%	65,1%	19,5%	48,9%
5	3248	15,6%	64,3%	20,1%	48,4%

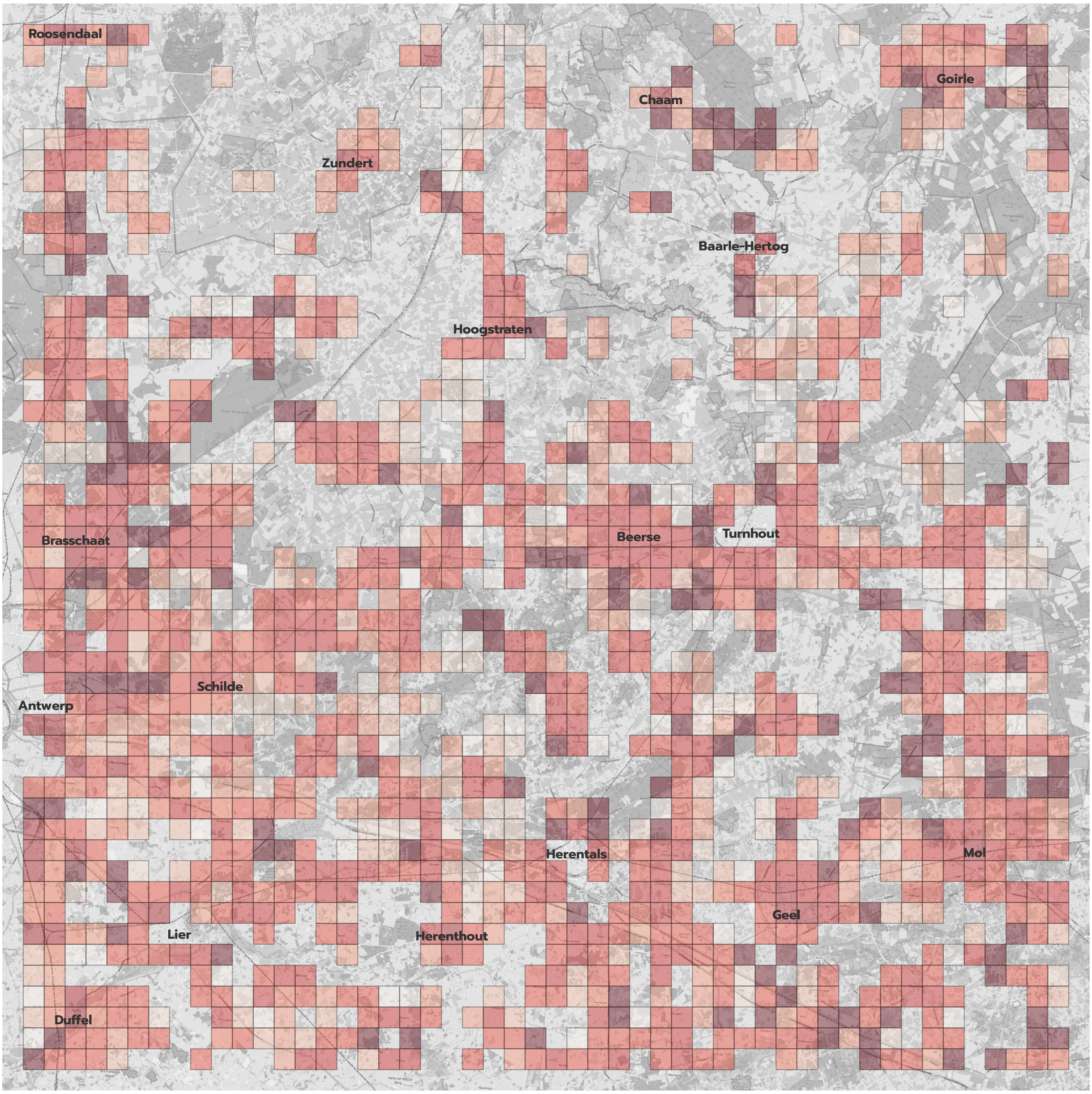
most common demographic type of peri-urban in the Belgium case study area

0 5 10 km

Characteristics Demographic typology Case BE

The Belgian case study has the demographic type 1 as the most common (32%) peri-urban variety. It is characterised by low population density, one of the two types with the highest share of people older than 65 and the one with the lowest shared of employed people. Unlike the other three case study areas, type 3 is the second most common (24%); it has the lowest population density and a higher share of ageing population. The other three types account together for 45%, with type 5 - with the highest population density - rarely occurring (5%). The Belgian case study is mostly characterised by a low-density peri-urban demography.

Spatial structural typology and distribution of types
Case Belgium



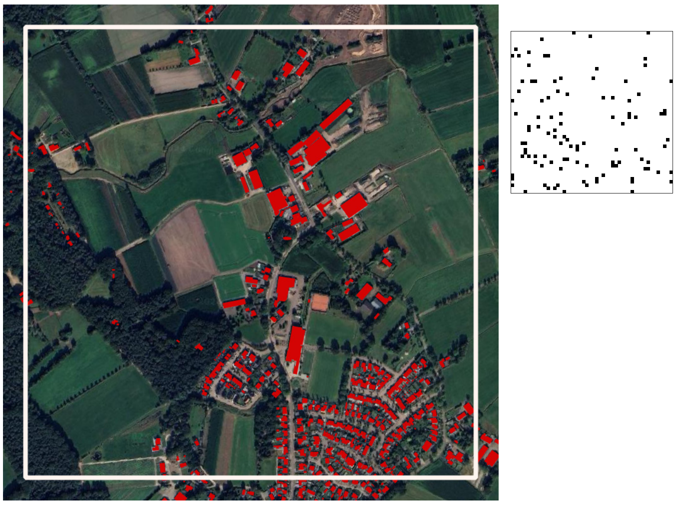
	CENTRALITY	POP_DENS	GSI	NUMBER OF BUILDINGS
5	low	low	low	low
3	low-med	low	low	low
1	medium	low	low	low
2	med-high	low	low	low
7	med-high	medium	low-med	low-med
4	high	low	low-med	low-med
8	high	low-med	high	high
9	high	high	med-high	high
6	high	low	low	low

most common spatial type of peri-urban in the Belgium case study area

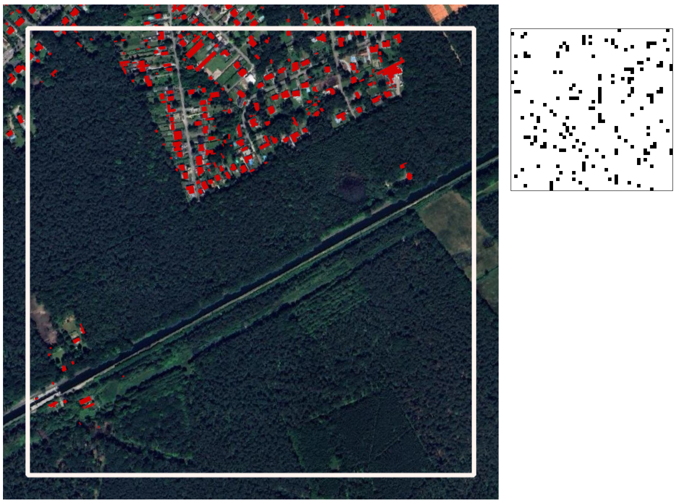
Characteristics Spatial typology Case Belgium

In the Belgian case study, spatial type 4 is most common (26%). It is characterised by its low population density and high spatial centrality, as it tends to be served by main central roads. It also relatively few buildings and a low ground coverage. The densest, 'most urban' type 9, rarely occurs (<3%) in this case study. Types 8, 2, and 6 have a share of about 10% each; all three types share higher street network centrality, meaning they are well accessible within the region. While types 2 and 6 differ mainly in the latter being more central than the former, type 8 additionally shows higher land coverage, smaller buildings, and a medium population density.

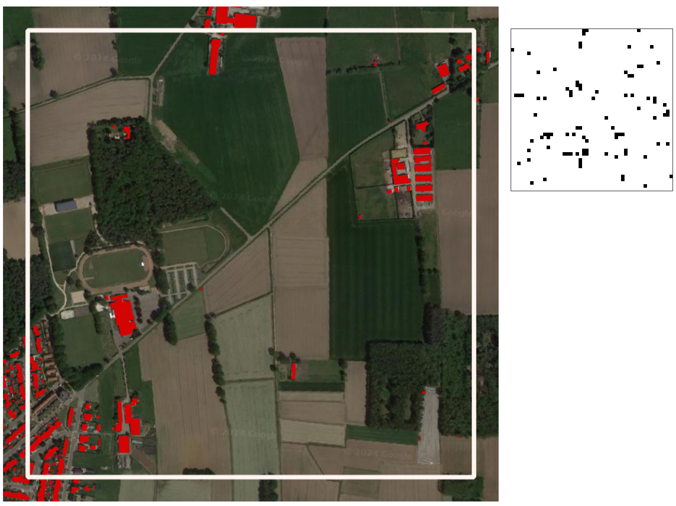
Exemplary manifestations of the spatial structural types
Case Belgium



SC1 8%

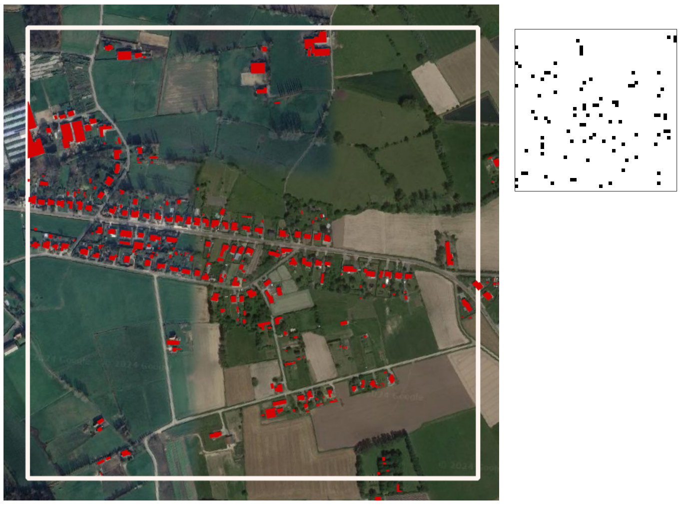


SC2 13,4%

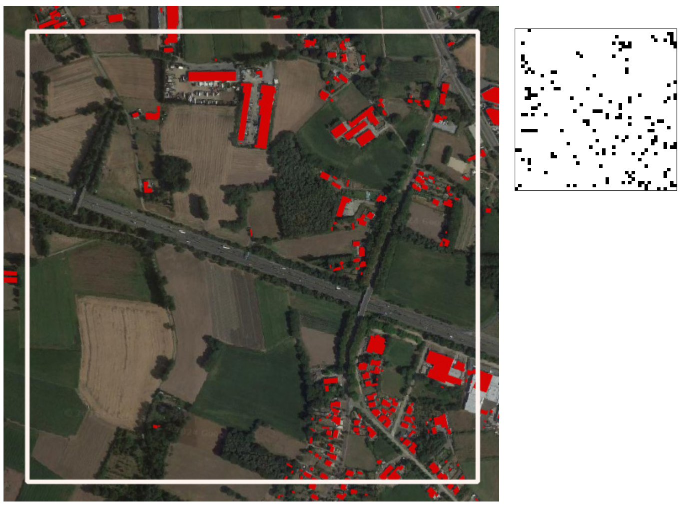


SC3 6,8%

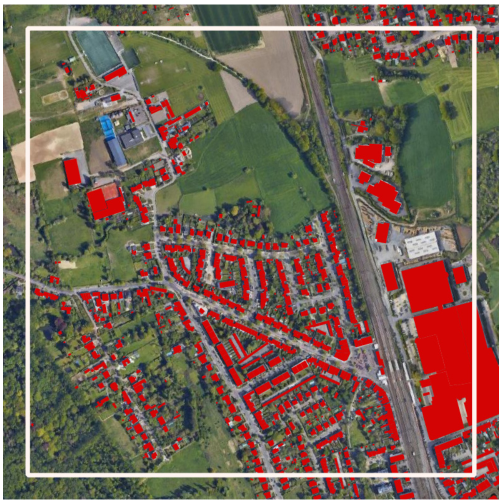
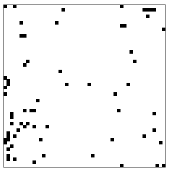
SC4 26,4%



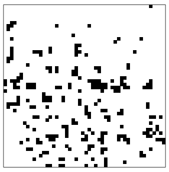
SC5 6,8%



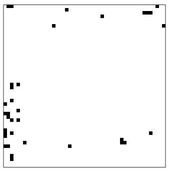
SC6 12,7%

SC7 5%

SC8 18,5%

SC9 2,6%

The Belgian case study area is characterised by a dispersed pattern of villages and towns with ribbon developments between them. Around some settlements, industrial areas and large villa neighbourhoods appear, interspersed with agriculture and forest plots. The region's spatial history is shaped by political decisions to create public transport corridors (rail and tram) and subsidise housing construction across the region, which limited the exodus to the city.

Spatial type 1 includes places at the edge of villages and smaller towns. It has a loose built structure and usually comprises individual industrial buildings or clusters. It appears more frequently in the south and west of the area, towards Antwerp, in places of medium centrality.

Spatial type 2 is characterised by its medium to high centrality, and strong accessibility. It shows diverse patterns of built form, from free-standing villas to small industrial clusters, and occasionally agricultural land. As one of the more frequent types, it appears across the whole study area.

Spatial type 3 has a very low-density structure, with few buildings in places of low to medium centrality. It includes mostly non-residential land uses.

Spatial type 4 shows a looser building pattern, characterised by proximity to a main road. These places have frequently developed along historical regional connections and keep a denser pattern of buildings along those links, lined predominantly with dwellings, and often a more industrial hinterland.

Spatial type 5 corresponds to non-central, very low-density places, organised around streets that follow the preceding agricultural parcellation pattern, but also occasionally include small industrial clusters.

Spatial type 6 includes places of high centrality. These areas are very loosely built up and frequently accommodate industrial buildings in proximity to main roads or highways. They have therefore high regional accessibility.

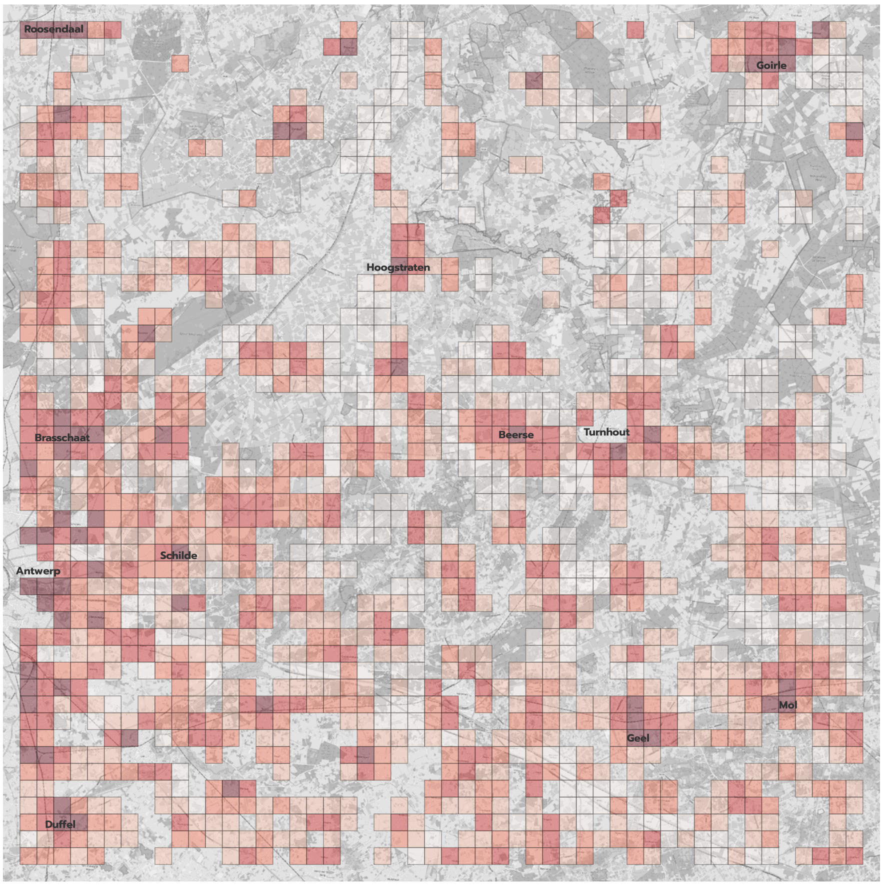
Spatial type 7 has compact residential areas of low density and interwoven green with medium centrality. It appears mainly in the surroundings of Antwerp and dispersed around more compact towns and larger villages in the region.

Spatial type 8 shows relatively high ground coverage, and a fine-grained low-rise built structure, with low population density. The settlement structure includes villages close to or built around an historical central road. Some also comprise historic village cores.

Spatial type 9 has the highest population density in a very fine-grained built structure in form of free-standing houses with gardens at the fringes of Antwerp and Turnhout. It has medium to high ground coverage across the whole area and still includes a substantial amount of open space.

Comparison of demographic and spatial structural typology
Case Belgium

Demographic typology

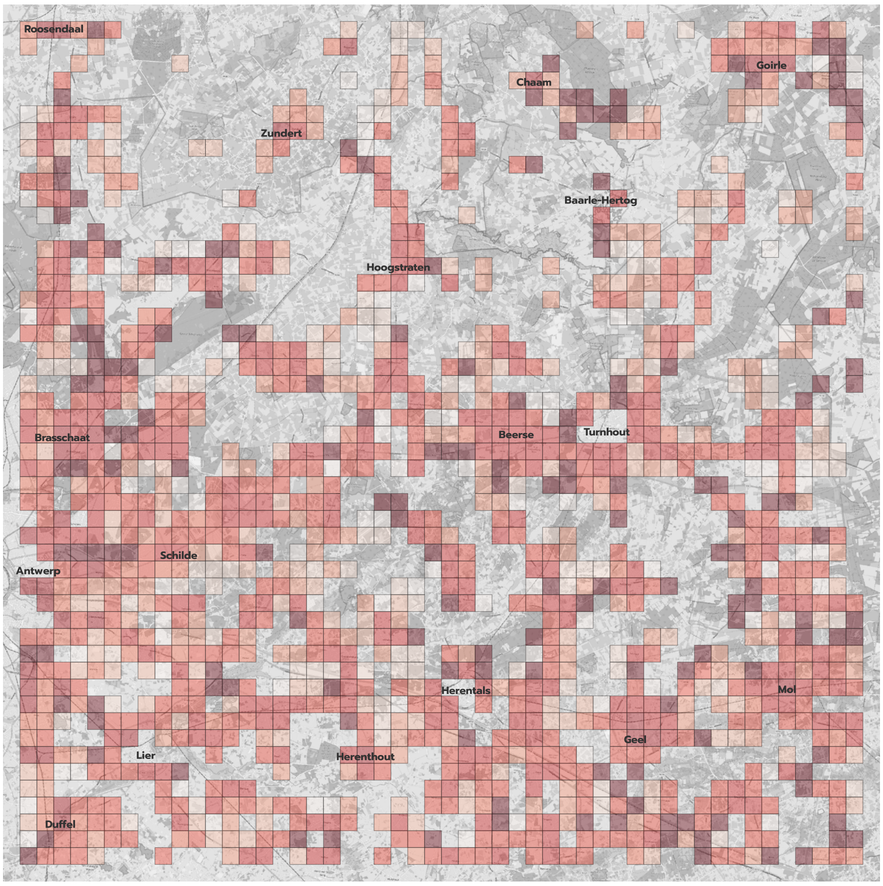


Statistics
Demographic typology

1332 peri-urban grid cells

Type1	426
Type 2	298
Type 3	314
Type 4	232
Type 5	62

Spatial typology



Statistics
Spatial typology

1332 peri-urban grid cells

Type1	106
Type 2	178
Type 3	90
Type 4	351
Type 5	90
Type 6	169
Type 7	67
Type 8	246
Type 9	35

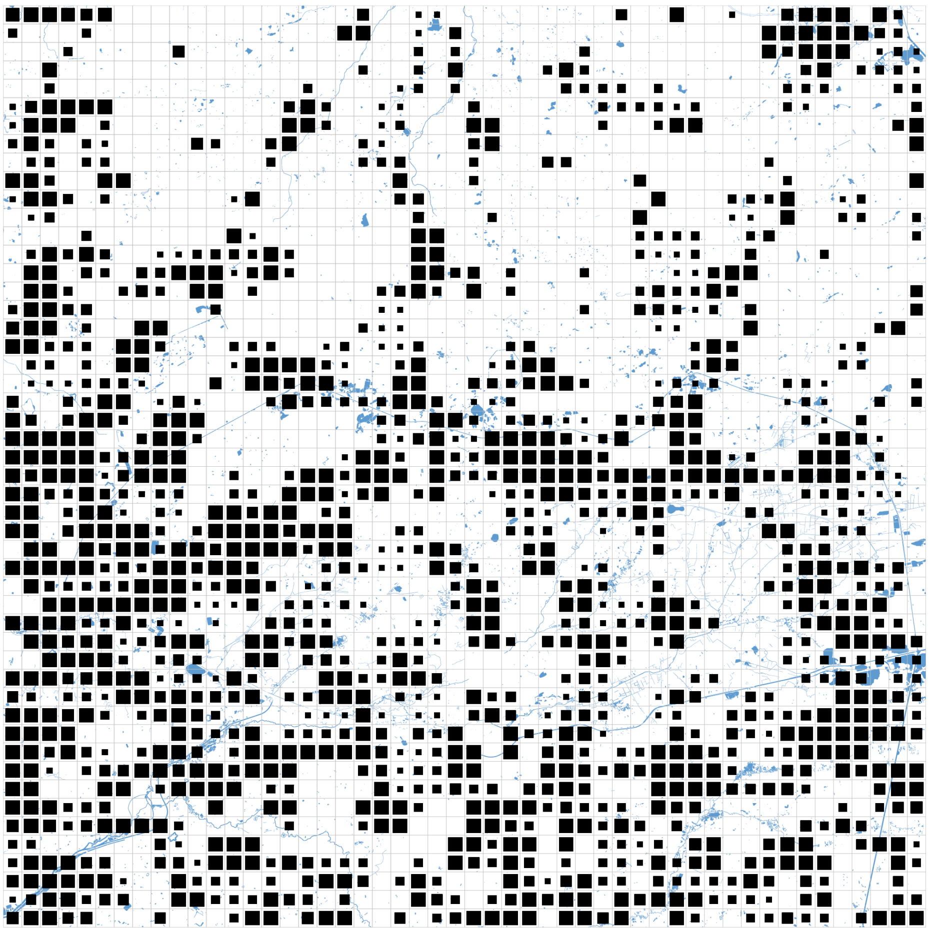
The cluster type combinations that appear most frequently in the Belgian case study are demographic type 4 / spatial type 8 and demographic type 2 / spatial type 4. Both combinations are characteristic for the Belgian case, and show fine-grained settlements in highly central places ranging in population and built density from low to lower-medium.

How do the demographic (DT) and spatial types (ST) relate?

DT \ ST	S1	S2	S3	S4	S5	S6	S7	S8	S9
D1	59	84	16	141	36	90	0	0	0
D2	40	4	0	179	4	5	28	38	0
D3	7	90	74	20	50	73	0	0	0
D4	0	0	0	11	0	1	34	186	0
D5	0	0	0	0	0	0	5	22	35

The 'accessible types of amenities' map gives an overview on the accessible amenities in each grid cell. The amenities considered draw from Moreno's framework of 15min cities and regions, and are here interpreted in nine categories: leisure, healthcare, religion, work_industrial, work_offices, education, green public space, services and retail.

Accessible types of amenities



Count of accessible types of amenities in grid cells
(at least 10% in top 25% of all in grid cell)

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

Governance Analysis

Introduction: Governance context in the Campine region

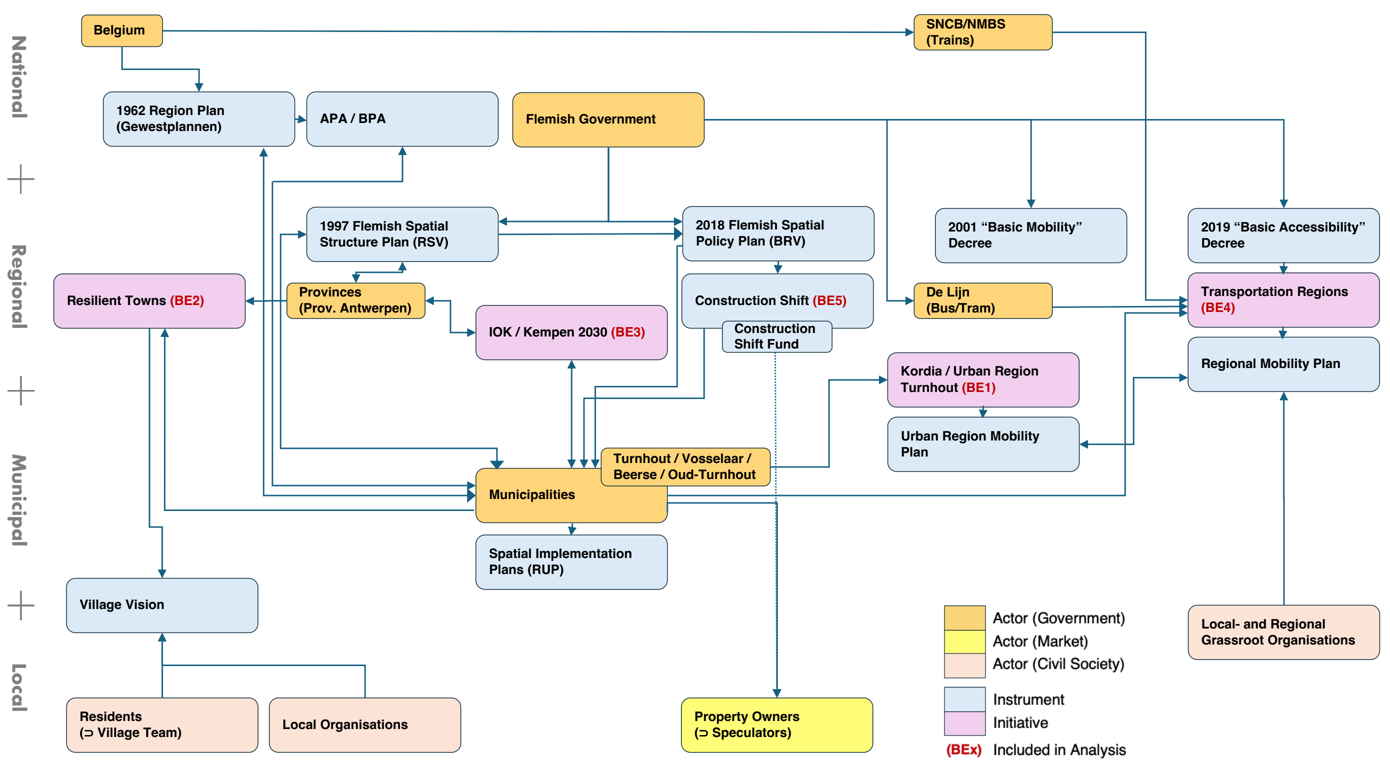
The diagram below illustrates the relations between the surveyed actors, instruments and initiatives governing peri-urban spatial development in the Campine region. The complexity of the governance structure is partly due to the federal state structure of Belgium and the subsequent concentration of power in the Flemish-regional and intermunicipal scale. In general, most actors, instruments and initiatives regarding spatial planning and mobility operate at the Flemish, provincial, inter-municipal and municipal scale. Given the limited competences of the federal government in the themes of this analysis (predominantly related to the federal competency of taxation), the national scale remains relatively absent from our governance map.

Most legislative and funding powers are held by the Flemish government, with lesser capacities available at the municipal and provincial scales. A problem arises when the instruments and initiatives are conceived at the Flemish level, while their execution is left at the responsibility of municipalities without sufficient capacities, such as the recent debacle around the Construction Shift (Bouwshift) (Renard et al., 2022). The municipalities wield significant responsibility to work out spatial plans for their administrative area, such as municipal Spatial Policy Plans, Spatial Implementation Plans (RUPs) and compensating property owners for ‘planning damages’ (i.e. reductions in the value of the land) incurred by zoning changes related to the goals set at the Flemish level.

Governance cases: choice justification

Next to the three sub-municipal areas that we chose for the focus groups, we have selected five cases for governance analysis. They are all regional initiatives or instruments that impact spatial planning, mobility and housing in the Campine. The actors involved in these programmes range from the local to the regional scale, combine market, governmental and civil society roles, and concern diverse policy domains (mobility, housing, economy, ecology, social).

Figure 27: Connections of relevant actors, initiatives and instruments with impact on the spatial development of the Campine region.



The cases are the following:

- Kordia (City Region Turnhout, Stadsregio Turnhout): an inter-municipal cooperation initiative in the city-region of Turnhout, which consists of six municipalities and is active in the domains of energy, housing, social economy, retail and mobility (Kordia, n.d.; Regio in Transitie, 2022).

- Resilient Towns (Veerkrachtige Dorpen): an initiative of the province of Antwerp and the civil society organization RURANT to support municipalities and their citizens in addressing pressing challenges such as declining amenities.

- Transportation Regions (Vervoersregio's): part of the "demand-driven" mobility policy shift of the Flemish government, Transportation Regions are regional platforms of neighbouring municipalities that cooperate to address mobility challenges. They also engage Flemish governing bodies involved in mobility policies.The study area has two Transportation Regions, namely for Antwerp and its hinterland (Vervoerregio Antwerpen) and for the rest of the Campine region (Vervoerregio Kempen).

- IOK/Kempen 2030: an intermunicipal corporation that supports member municipalities in policy-making and delivery in a wide variety of policy domains,

Table 6: Overview of Cases

Focus	YES	YES	NO	NO	NO
Case name	Kordia (City Region Turnhout)	Resilient Towns	IOK/Kempen 2030	Transportation Regions	Construction Shift
Format / Type	Initiative	Instrument (as transition trajectory)	Initiative	Instrument	Instrument
Aim / Aspiration	Create a coherent "Regional City" in the Turnhout region; partly based upon the "compact city" and urban-rural viewpoints of RSV	Make towns and villages resilient by addressing their unique local challenges	Support municipalities in terms of spatial planning, social and climate policy and service provision	Along with the policy shift towards "Basic Accessibility", aims to make the public transportation network more "demand-oriented" instead of supply oriented	No net new land consumption by 2040; core-strengthening related to compact city model
Main scale levels	Municipal - City-regional	Sub-municipal - Municipal	Municipal - Inter-municipal	Municipal - Intermunicipal - Flemish- Regional	Flemish- Regional - Municipal
Challenges / Opportunities	Urban focus with compact city/ concentration ideal; flexible in terms of setting aspirations; delicate balance of power between city and smaller municipalities	Effective in identifying local perspectives and creating locally endorsed solutions, can be used to democratise and promote 15-minute city	Only an advisory role, yet highly stable in terms of formality and participation	Budget neutrality - thus budget cut in practice; further promoting the radial network structure	Too much resources needed for compensating landowners
Relations / Tensions	Certain challenges, like mobility, are on regional scale, but need decisions from higher scale levels	No spatial dimension, fragmented actions and vision making is ineffective and hard to feedback into planning on higher scale levels, focus on local identity and community may be exclusionary (e.g. towards non-established or less well-resourced groups)	Mainly providing highly practical, enforcement or implementational tasks; not a governmental body itself	Loss of local agency on transportation planning	Higher burden on the municipal level, incentivising municipalities to not enforce the rules

including spatial planning, sustainability, housing, land, infrastructure, resources and energy.
- Construction Shift (Bouwshift): a policy aim and program of the Flemish government to reduce net land intake to zero by 2040. It includes among other instruments, provisions to financially compensate owners when their (unbuilt) land can no longer be developed due to regulation changes.

This report will focus on Kordia and Resilient Towns, because these two cases show an interesting contrast in terms of their views towards peri-urban qualities, approach and capabilities. Kordia aims to create a coherent “urban” region around the biggest city in the Campine region (Turnhout), while Resilient Towns aims to address challenges village by village. Kordia coordinates municipal institutions and keeps their actions and goals aligned at the regional scale, while Resilient Towns starts from the perspectives of the residents and couples them with the municipalities to develop further actions.

Case A: Kordia (City Region Turnhout)

Kordia, until recently called ‘City-Region Turnhout’, is an organisation for inter-municipal coordination between Turnhout and five surrounding municipalities. The creation of Kordia sparked from the “Central City Area” demarcation of Spatial Structure Plan of Flanders (RSV) in 1997, which designated large parts of surrounding municipalities as a “City Area”. In the RSV, Turnhout was selected as a “regional city”, a level of ‘urban centrality’ below the large cities of Antwerp and Ghent but higher than “smaller cities”. Kordia therefore began in 1998 as a non-profit organisation called Regional Urban Area Turnhout (vzw Regionaalstedelijk gebied Turnhout) to guide the demarcation process in the urban region of Turnhout at the time. As the need for intermunicipal coordination grew, the organisation gained the “Project Union” status (projectvereniging), which is a form of intermunicipal cooperation that is not long-term or intensive, but nevertheless serves a clearly defined role in supporting spatial planning in municipalities, implementing and checking their (small-scaled) projects (VVSG, n.d.). Over time, several other policy domains other than spatial planning were added, such as mobility, housing and socio-economic development. The geographic scope of the organisation also grew, adding the two peri-urban municipalities of Lille and Kasterlee.

Actors, Aspirations, Actions

The key actors of Kordia are the participating municipalities: Turnhout, Beerse, Vosselaar, Oud-Turnhout, Lille and Kasterlee. The municipal administrations and governing municipal council members take part in the organization (Regio in Transitie, 2022), and each municipal council appoints two council members into the governing board (Stadsregio Turnhout, 2019). As for the resulting small projects that fall under each municipality, different actors are involved per case, including consultancies, local residents and grassroot/interest organisations.

The key objective of Kordia is to increase the governing capacity of the municipalities, through setting common policy goals and help realise them by finding suitable forms of collaboration. Kordia is explicitly not a form of ‘regional government’, but rather takes different roles in the planning process, such as facilitator, guiding the project realisation process; initiator, triggering new projects and perspectives; and coordinator, supporting municipal agencies, articulating different interests within the region with other partners and governments and directing policy processes (Stadsregio Turnhout, 2019). In other words, Kordia supports the capacities of the participating municipalities, aligns their goals and efforts at the regional scale, and coordinates their voices in broader, regional or national planning domains, so that they can effectively act on their regional vision.

In practice, as its origin from RSV suggests, Kordia aims to create a coherent “urban” region surrounding Turnhout. Its “Compact City” perspective, concentration aspirations and focus on urbanised areas are illustrated in its regional mobility plan and interviews with Kordia policymakers, namely through its “layered” transportation network that furthers the radial network structure and increases reliance on demand-responsive buses outside of the key corridors (Kordia, n.d.).

Mechanisms

As a “project association” under Flemish law, Kordia’s mechanisms regarding its establishment, goals, the amount of meetings and key persons are legally established in written form, made into a by-law (statuut) approved by all participating municipal councils.The decision-making structure is heterarchical; for the regional matters that concern the region as whole, decisions require consensus of all municipalities, and in principle all municipalities exert the same decision-making power. Decisions made for small, executional projects that fall within the responsibilities of an individual municipality do not require this consensus. Certain decisions made within Kordia require the participating municipalities to assert their position in the decision-making process for the binding plans at higher levels, such as the Mobility Plans of the Transportation Region Kempen (Regio in Transitie, 2022).

The funding relies fully on the participating municipalities and must be approved by each municipal council. In case the budget is not approved, the administration of Kordia must come up with an alternative. In case one of the participating municipalities wishes to prematurely end its participation, other municipalities must agree to this, and the departing municipality may have to compensate for the damages to others (VVSG, n.d.). This is less stronger form of commitment than other “service-providing union” (dienstverlenende vereniging) or “task-keeping union” (opdrachthoudende vereniging) like IOK, where ending participation from the municipality is not allowed in principle. (Ibid.)

Opportunities and challenges

Compared to the other key case (Resilient Towns), Kordia has a highly institutional character with the municipal governments as main stakeholders. While this entails a risk that the sub-municipal level is neglected, nevertheless the municipal coordination and consensus-building aspect of the initiative is relatively bottom-up compared to Flemish policy-making in the same policy domain. Another notable difference with Resilient Towns is its strong “urban” aspirations. This is a reflection of the type of peri-urban area in which the organization is active, which, according to the previously developed spatial clustering, is already densely urbanised, and has a relatively high population density and accessibility.

While it requires consensus decisions to approve its plans, the coordination capacities of Kordia provide solid opportunities both for coordinating different interests and realising projects across municipal boundaries. Still, its capacity to act is limited by its reliance on municipal scale, since its funding, capacities and power come predominantly from municipalities, which already suffer from limited resources. While Kordia aims to support their city-regional-scale capacities and improve efficiency, as it is stated in their by-law, it does not create additional operational power or resources for municipalities. Moreover, some large-scale, fundamental decisions like investments for regional projects and the configuration of the bus network, would still require further integration with higher levels of planning to be properly addressed.

Another limitation from the perspective of realising the 15 minute city in peri-urban areas is the strong inclination towards the “urban” region and its spatial concentration-oriented vision. This is illustrated in the plans where smaller cores merged with relatively urbanised municipalities like Vlimmeren being neglected or deemed unsuitable for further intervention, while they are often already less accessible and suffering from lack of amenities, with growth only permitted in exceptional cases. The same applies to local and regional amenities, where this hierarchical approach to urban density makes smaller cores only suitable for local supermarkets and primary schools, limiting the possibilities in amenities provision in the peri-urban area. The envisioned transport network is also based on the radial network, with investment and service improvements in the key corridors and reduced services in non-central areas.

Overall, while this approach can improve the realisation of 15-minute city principles in larger cores, it may hinder the same aspirations for the smaller towns that arguably need the intervention the most. Densification in such areas is not prioritised, the limitation of amenities deemed suitable for peri-urban areas affects mixed land use and proximity, and the transport network structure proposed further hinders non-radial accessibility. On the other hand, and despite the origin of Kordia, the formalised goal of the organisation does not explicitly state compact city concentration nor “urban” aspirations; it leaves enough flexibility about its goals and norms. This means that the structure and aspirations of Kordia can be potentially adapted to better address the needs of peri-urban areas in the region.

Case B: Resilient Towns (Veerkrachtige Dorpen)

Note: At the time of publication, the Resilient Towns programme has been discontinued and replaced with a different department within the province with no specific peri-urban focus: Local Administration Services (Dienst Lokale Besturen).

Resilient Towns (Veerkrachtige Dorpen) is a participatory instrument of the province of Antwerp (Provincie Antwerpen) that helps small towns and villages address their local challenges, such as diminishing amenities, aging, mobility and climate, among others - to make them more resilient against the challenges they face. A municipal government (not the village, which are mostly sub-municipal entities without formal government of its own) can choose to start the participatory transition trajectory in certain villages, in which the village residents, together with the province and the municipality, can create a village vision for resilience.

The need for village-specific transition trajectories stems from the massive municipal consolidation of 1977, where 2.359 municipalities of Belgium were consolidated into 581. Small villages lost administrative power and autonomy, and it became clear that the new municipal scale often could not address the needs of these sub-municipal areas.

The trajectory consists of:

- Initiation from the municipal administration to which the village belongs.

- Analysis of the current problems in Social Cohesion, Local Administration, Poverty, Job Market, Climate, Housing, Mobility, Basic Amenities, Youth and Aging. The process includes statistics and reports, along with interviews with key figures in the village.

- A starting moment when all residents are invited to share ideas and insights on the problems faced in the village.

- Further participation consists of four participatory sessions to create the Village Vision, focused on identifying opportunities, weaknesses and challenges, envisioning future directions, setting goals and action lists, and elaborating concrete interventions.

- The resulting “Village Vision” (dorpsvisie) document is then taken over by the municipality, which evaluates the contents of the vision according to its capacities and existing plans, and translates it into a concrete action plan containing roles, tasks and priorities.

- Finally, the results of the participatory trajectory are publicly exhibited and the municipality explains which actions to take will provide, and introduces the “quick wins” from the village vision. (Provincie Antwerpen, n.d.; Adriaenssens et al., 2023)

Actors, Aspirations, Actions

The key actor of Resilient Towns is the province of Antwerp (Provincie Antwerpen). The instrument falls under the village policy (dorpenbeleid) within countryside services (Dienst Platteland), part of the provincial department of Economy, Regional Policy and Europe (Economie, Streekbeleid en Europa). The participatory activities are implemented by the non-profit organisation RURANT that specialises in civil participation in rural areas (Adriaenssens et al., 2023). Given their organisational structure and origins, their aspirations do not resonate with compact city nor concentration ideals like Kordia, but recognise the spatial reality (i.e. existing settlement structure) of the rural areas. Some initial partners, such as the Farmer’s Union (Boerenbond), Rural Guild (Landelijke Gilde), bank KBC and financial cooperation CERA were involved in establishing the method but currently do not play a significant role in the programme. The Flemish government funds the programme together with the province, via the Countryside Plus (Platteland Plus) funding scheme, which also funds projects that are not explicitly related to agriculture in the rural areas (Vlaamse Landmaatschappij, 2021).

The local residents and representatives of local organisations then take part in the participatory trajectory, facilitated by RURANT and eventually recognised and realised by the municipality. The aspirations of the residents vary per case, and the programme is designed to recognise, prioritise and adapt those aspirations.

Mechanisms

The process of the transition trajectory, as an instrument of the province, is available in written form. The rules regarding the funding and further subsidising of realisation projects are also laid out in written documents and approved by the provincial council. The actions proposed in the village visions are subject to an evaluation by the municipality, which includes checking their compatibility with larger scale visions (municipality, region, province, Flanders). The municipality shall then present the short-term results and plans to address the long-term issues to the residents (Adriaenssens et al., 2023). The funding comes mainly from a mix of Provincial and Flemish funds, through the Platteland Plus programme. The Province of Antwerp also provides a maximum of 25.000 Euros for projects that resulted from the Resilient Villages trajectory (Provincie Antwerpen, 2024), which gives agency to local organisations and provides an incentive for villages to realise the actions proposed in the vision. Each municipality also provides funds for services and projects that can be realised within their capacity. The decision-making process during the participatory trajectory until the creation of the Village vision is mainly based on consensus building and negotiations between residents and municipal administrations.

Resilient Towns: Opportunities and challenges

Compared to Kordia, Resilient Towns have a relatively citizen-driven and rural focus. They cover a wide variety of spatial clustering types, from relatively central and dense (Mol-Centrum/Ginderbroek) to rural types (Emblem, Heidehuizen).

The biggest challenge of Resilient Towns is its limited capacity to address large-scale issues, particularly those requiring spatial or regional interventions. The realisation of the visions lies largely in the hands of municipalities, which, as mentioned earlier, have limited capabilities and are not able to deal with complex, regional-scale challenges. For example, public transportation, particularly non-radial lines to other peri-urban destinations, is consistently mentioned both as a problem and as a future action in multiple village visions (see Oelegem, Ranst, Zandhoven…), yet a single municipality cannot sufficiently tackle this issue. Since the programme is not designed to turn common challenges of villages into coordinated, larger scale actions, such as the agendas of the different municipalities and actors in regional planning fields remain fragmented.

Another challenge is the lack of explicit spatial dimension of the resulting plans. The design of the village trajectory does not guarantee that the needs and desires identified by local inhabitants are spatially articulated at a regional scale. This makes the programme very capable of identifying and responding to small-scale and social needs and perspectives, but although nothing prevents inhabitants from doing so, it does not specifically push for these needs and perspectives to be discussed in spatial terms (e.g. location, distance, physical design, connections and networks) and linked to the broader spatial challenges.

As a result, the resulting projects are small-scaled, non-spatial and limited in scope, with a limited budget for realisation and minimal connection with other measures. While small-scale measures may suffice in many simple challenges in villages, domains such as public transit demand a larger and strongly coordinated spatial approach based upon the insights of several smaller transition trajectories. Without such changes, the wider and more permanent efficacy of the bottom-up realisation efforts will be limited and eventually may hamper the implementation of certain principles of the 15-minute city, especially since mobility policy and dynamics and the policies and for or non-profit organizational strategies regarding amenities are determined on supra-local spatial scales.

The formality of the programme poses a further realisation problem: while most of its process and status is set in formalised funding schemes, the realisation schemes for municipalities and local organisations remain a “black box”, with no “hard” incentivising or penalising mechanisms to encourage them to push towards realisation. The role of the village vision remains rather suggestive, and is reliant on the willingness of the municipality towards the goals set in the vision. Furthermore, the initiation of the transition trajectory is not within the capacity of each village; in absence of the will from the municipal level, it cannot start. While this ensures a level of commitment from the municipal administration throughout the process, the system may potentially neglect villages that are underrepresented in the municipal politics.

Finally, questions may also be asked about the social inclusiveness of the village trajectories. Small, tight-knit communities often have established social hierarchies that may be exclusionary towards particular social groups, e.g. social housing residents or external migrants. The hyperlocalised identities reported on before sometimes resulted in experienced lines of exclusion between those who were born in the village and those who moved in at a later stage of life.

Nevertheless, Resilient Towns is a promising instrument to identify the local perspectives and come up with appropriate, locally endorsed small-scale solutions for the specific local context and needs. Certain key principles of the 15-minute city (proximity, accessibility, diversity) appear to be already accepted as a norm, as seen in the problem statement of every village vision (Adriaenssens et al., 2023). However, the weak articulation with vision, processes and actors on the higher spatial scales at which decision-making regarding mobility and amenities are often made and the lack of reflection on the linkages to city-regional dynamics in the wider region suggest this instrument should be linked to initiatives like Kordia to be sufficiently effective.

Conclusions/Reflection

The comparison between the two cases, Kordia and Resilient Towns, illustrates two somewhat contrasting approaches of peri-urban governance: Kordia represents quintessentially city-regional aspirations, and Resilient Towns focuses on recognising the peri-urban/rural qualities and realities; Kordia is a vector of concentration on ”compact city” imaginaries that is radiating from Turnhout into surrounding municipalities, while Resilient Towns conveys the rural/peri-urban wishes directly into the municipal agendas. Highlighting this contrast serves not only to identify or even further the dichotomies, but rather to suggest a potential path towards hybridisation: what is urgently needed is coordinated action and voices from the peri-urban areas, where the insights and priorities of each locality can be coordinated as systematised actions and a clear voice that articulates the specifically peri-urban logics of spatial and transportation planning with planning decisions at larger scales.

Socio-spatial Analysis

Selection of focus group locations

For the selection of the focus group areas, the sub-municipal level was chosen, as these were independent municipalities before the large-scale municipal mergers of 1976 and also better represents the spatial scale of a 'village' or 'settlement'. Within the Campine municipalities, the candidates for the study were narrowed down to areas along the traditionally high-frequent, "radial" public transportation corridor of N12 and N18, where local railways connected Antwerp and Turnhout until the 1960s, along with the "new" Antwerp - Turnhout corridor that makes use of E34 motorway, served by "fast buses" (snelbussen). This choice of places with a relatively adequate bus service prevents the discussions from being overwhelmed by the single aspect of lacklustre public transportation services, so that a more varied set of obstacles and perspectives on 15-minute cities can be identified. To keep the cases strictly peri-urban, sub-municipalities that are designated as metropolitan peripheral municipalities (grootstedelijke randgemeenten) on the Spatial Structure Plan Flanders (Ruimtelijk Structuurplan Vlaanderen, RSV) are excluded.

Among the eligible 11 sub-municipalities, three contrasting locations were selected for conducting focus groups based on statistical parameters. The statistical data of Statbel were available either on hectare-grid level or at the statistical sector level, which were aggregated into sub-municipality scale. This was necessary in order to realistically be able to recruit participants, and compare the realities of each location that roughly correspond to the sub-municipality level.

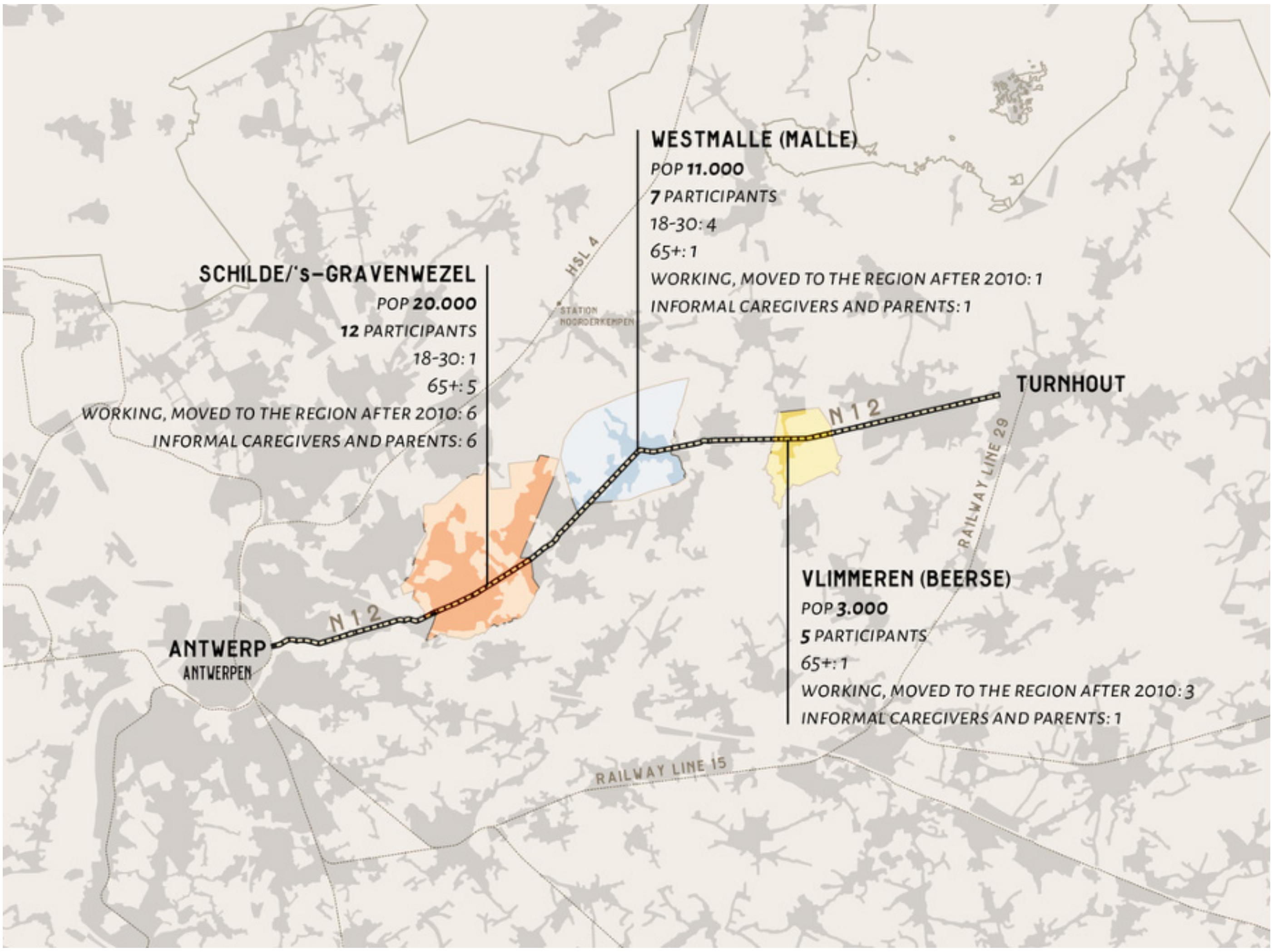
The comparative parameters are as follows:

- Amenity levels, aimed to understand current amenity levels and proximity to it.
  - VITO regional amenity level, 2022, calculated based on the number of accessible amenities and the travel time required to access them.

Figure 28: Comparative parameters

Low 1 - 6 High	(motorway) Corridor Municipality										
Case / Criteria	Schilde	's-Gravenwezel	Halle	Zoersel	Westmalle	Oostmalle	Vlimmeren	Wechelderzande	Beerse	Vosselaar	Oud-Turnhout
VITO regional amenity level (1-4)	3	3	3	3	3	3	2	2	3	3	3
Percentage 15-	2	1	2	2	2	5	6	4	4	4	4
	14,01	13,35	14,93	14,57	14,44	17,17	19,06	16,13	15,83	15,93	15,84
Percentage built '90 - 11	2	1	3	5	3	5	6	5	5	4	4
	23,09	21,36	26,03	31,73	27,22	32,33	35,51	29,97	31,08	27,44	27,89
Percentage 65+	6	6	6	5	5	2	2	2	3	3	6
	23,00	26,23	23,69	21,00	20,72	16,91	15,69	16,89	17,50	17,72	21,43
Percentage built '46 - '90	6	6	6	5	2	3	2	5	2	6	5
	66,09	68,79	68,27	58,21	54,18	55,38	54,06	58,67	54,58	63,74	60,93
Pop. Growth % 11-22	3	3	5	2	4	6	5	4	5	6	6
	3,53	3,00	9,94	1,86	6,12	12,92	7,80	6,99	8,74	11,76	13,54
Pop. Aging % 11-19	4	3	5	6	4	4	4	5	5	4	6
	2,98	1,67	3,61	5,99	2,71	2,79	2,93	3,55	3,10	2,89	4,25
Type 1	●	●	●	●	●	●	●	●	●	●	●
Car per household	6	6	6	5	2	3	3	4	3	3	4
	1,45	1,59	1,46	1,36	1,22	1,29	1,31	1,32	1,29	1,29	1,33
Median income	5	6	5	4	4	4	5	4	4	6	5
	30340,72	33483,56	31526,99	30152,95	29144,50	29820,94	30577,17	29466,87	30209,29	31991,37	31484,08
Unemployment %	6	6	4	5	5	3	4	5	4	4	5
	15,25	15,00	12,65	14,08	13,28	11,55	12,51	14,03	12,92	11,82	14,37
Stay-at-home pop. %	6	6	5	6	5	4	4	5	4	3	6
	13,47	13,91	11,38	12,57	11,58	10,17	10,75	11,85	10,47	9,86	12,50
Bachelor degree or + %	6	6	6	5	4	4	3	4	3	5	4
	33,33	39,83	32,72	30,26	26,66	25,72	23,66	24,65	22,83	26,70	24,09
Type 2	●	●	●	●	●	●	●	●	●	●	●
% Non-EU	5	4	2	5	5	5	5	2	4	4	3
	1,11	0,99	0,48	1,14	1,13	1,16	1,17	0,39	0,83	0,89	0,73
% EU	6,92	9,45	3,27	2,69	3,17	2,27	4,13	2,59	4,33	4,24	11,23

Figure 29: Characteristics of focus group locations



The definition of “regional amenities” includes relatively higher-level amenities such as secondary schools and larger supermarkets over 400 square meters (Crols et al., 2024).

- Urbanisation, aimed to understand the built environment in each case
  - Share of housing stock built between 1946 and 1990, and between 1991 and 2011.

- Population structure and urbanisation, aimed to understand the demographic context of each case
  - Share of population aged 0 - 15 and above 65, 2018.
  - Population growth between 2011 and 2022.
  - Changes in share of population aged 65 or older between 2011 and 2019.
  - Share of population with non-EU / EU nationality, 2011.

- Wealth, work and income: aimed to understand the socioeconomic profile of the study area.
  - Average number of cars per household, 2018.
  - Median net taxable income per income receiver, 2019.
  - Unemployment, excluding pensioners, students and people younger than 15; including housewives and househusbands, 2011.
  - Share of population with bachelor’s degree or higher, 2011.

The four selected sub-municipalities are Schilde and ’s-Gravenwezel (both in municipality Schilde - treated as single case), Westmalle (municipality Malle) and Vlimmeren (municipality Beerse). In general, Schilde is a relatively wealthy city that developed after WWII, with a high level of car ownership, share of highly educated residents and senior citizens; Vlimmeren, on the other hand, is comparatively speaking less affluent, less educated with strong population growth after the 1990s, and more residents under the age of 15 than over 65. Westmalle lies more or less in the middle of all parameters, being the “average” case among the three.

The regional amenities level was also a determinant factor deciding the cases, where Vlimmeren was classified as 2, while the rest were at 3. This aligns well with the reality of Vlimmeren, where only a neighbourhood supermarket (buurtsuper), a pub, chip shop (frituur), restaurant and a primary school are present in the village.

The share of non-EU migrants was not taken into account, as it remained around 1% or lower in all cases. Higher shares of wealthy Dutch business/asset owners were noticeable in Schilde-'s-Gravenwezel through increased share of EU migrants.

Selection and description of focus group participants

The focus groups were conducted per municipality (hence three in total, because we took two sub-municipalities in Schilde together). We aimed to select the most contrasting cases based on the statistical parameters above. This way, peri-urban areas with different characteristics could be represented, allowing for mutual comparison and cross-check.

Participants meeting one of the criteria below were recruited.

- Young adults, between 18 and 30 (5)
  - Because involving minors requires additional ethical clearance and safeguards, we opted to involve young adults instead of schoolchildren.

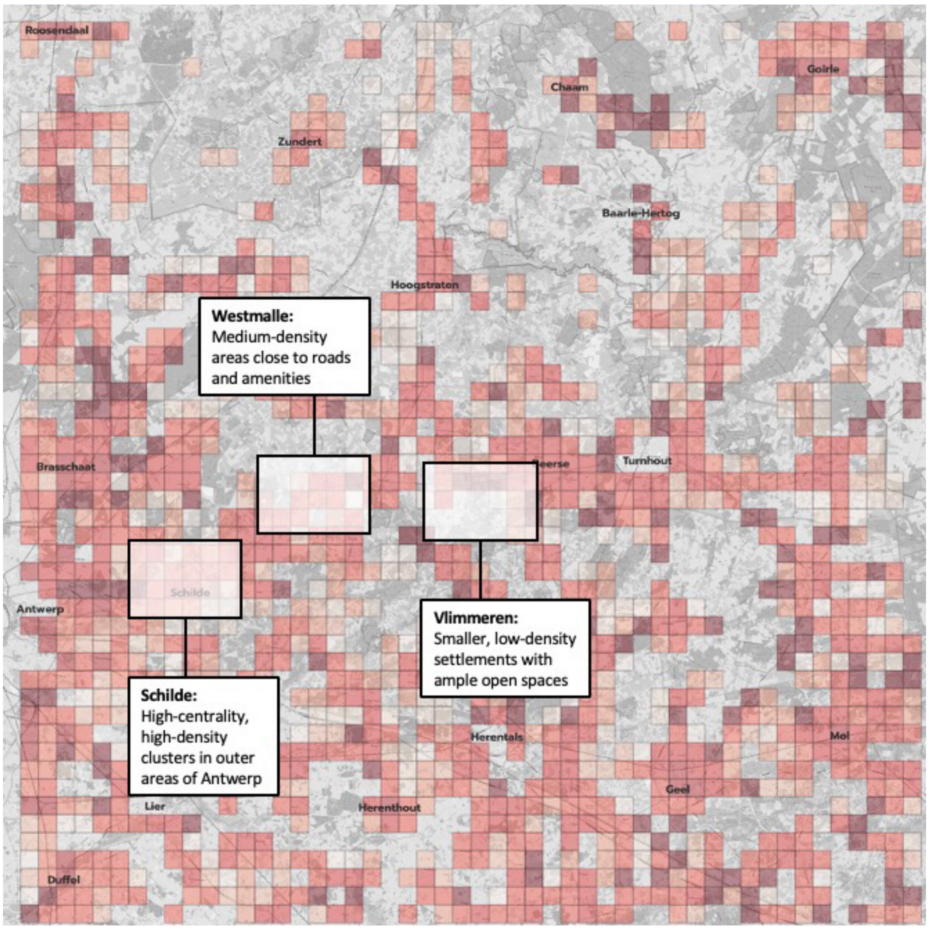
- Elderly people, older than 65 (6)

- Working people who moved to the region after 2010 (8)
  - The period requirement is to look for participants who consciously chose to move to the region later in life, so that their motivations for migration can be examined

- Informal caregivers, including parents who take primary care of (a) child(ren). (12)

thesis are the number of participants from that group. Some participants met multiple criteria, particularly those who are working and recently moved to the area tend to be also parents. In total there were 24 participants: 12 in Schilde, 7 in Westmalle and 5 in Vlimmeren. The overall gender share was 50:50, and balanced within each focus group. In Schilde, two separate groups were formed between older and younger participants. Most participants - 17 out of 24 - were working, 15 of which

Figure 30: Spatial types considered in focus area selection in Belgium



Note: the demarcations of the areas of interest in this image depict the peri-urban context of the focus group locations and do not necessarily correspond to the exact places where the study was conducted.

Figure 31: Transport Mode Use Frequency

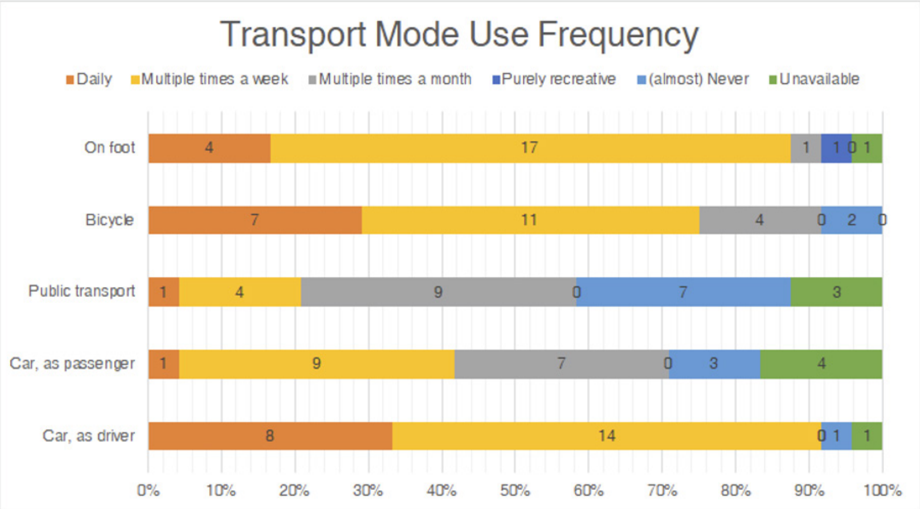
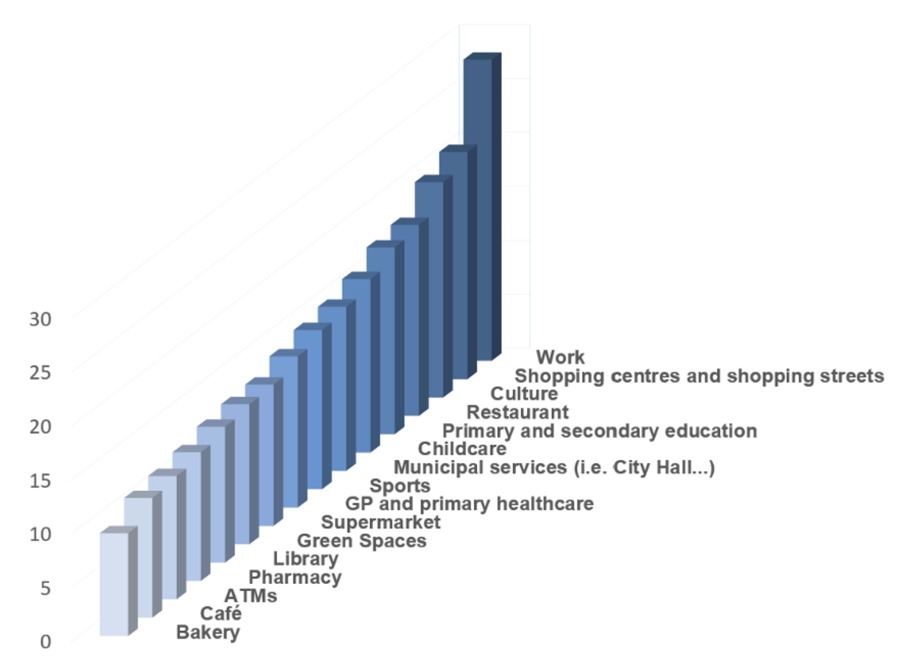


Figure 32: Average of maximum acceptable distance to reach certain amenities, in minutes



full-time (32 or more hours per week). The rest were retired, of which three participated in volunteer work.

While these focus groups are not representative of the population of the sub-municipalities, we made an effort to have participants which vary on a number of relevant criteria in each focus group in order to stimulate discussion and deeper reflection. The results should hence be read as an exploration of relevant themes associated with the 15 minute city in peri-urban areas, not as a representative survey of how inhabitants in peri-urban areas feel about this. Our aim is to gather diverse perspectives from various groups of peri-urban residents.

Main results of focus groups

The most important results of the focus groups are presented below. The main aim was to answer the three questions, which were common to the four country cases in this report:

- Which relations exist between the daily practices of people using and reaching certain amenities and the places/regions they live?
- Which challenges of proximity and accessibility have been discussed? How do different groups use mobility in the region?

- How does the use of amenities generally differ between the focus groups?

Overview of the discussion

In terms of mobility, the participants mainly discussed their travel experiences, destinations, factors influencing their modal choice, frustrations (immobility/commute) and wishes regarding mobility in the Campine. The prevalence of cycling made this mode take a larger focus in the discussions, along with the perceived deficiencies in public transportation. Participants suggested the provision of better transit connections outside of the radial corridor (N12), and better cycling safety and infrastructures. At the same time, the desire for more parking and keeping urban destinations accessible by car was also expressed.

All but one participant had access to a car, and all but two used it daily or multiple times a week. Bicycles were also available for all but one participant. The frequency of bicycle use is slightly lower, with a large majority of participants using it more than multiple times a week. On the other hand, slightly less than half of the participants could not, or almost never used public transport. More than half of these non-users were parents and informal caregivers obliged to travel together with a less mobile person.

The participants have also discussed how they access daily amenities. In general, most were happy with the living environment of their village, which is described as "green" and calm, and were also content with amenities that are accessible within their travel capacity, although many reported declining amenity levels and problems with travelling further to other villages. In order to get a more nuanced, spatialised understanding of amenities, the sense of identity of the people regarding their place of residence as a "village" unit was also discussed, in relation to the available public services and their participation in social life. For the same reason, the factors for choosing their place of living and workplace have also been discussed.

In terms of maximum acceptable distance, bakeries, cafés (bars), ATMs, pharmacies, libraries and green spaces required the most proximity, while work and shopping centres were not considered necessary nearby.

Which relations exist between the daily practices of people using and reaching certain amenities and the places/regions they live?

The question of local identity played a significant role in the Campine. Many smaller villages that were merged into larger municipalities feel little connection, if not slight resentment, towards the municipality they belong to. This was visible in all locations except Schilde itself; 's-Gravenwezel (merged with Schilde), Westmalle (merged with Oostmalle), and Vlimmeren (merged with Beerse) reported a feeling of different identity and separate daily lives, while the latter two felt disadvantaged in terms of municipal services. However, due to their relatively low frequency of visits, municipal services were deemed less relevant by the residents. A sedentary mentality also plays a role in choosing destinations, as those who have roots in specific parts of the region would generally choose to socialise and use amenities there instead of where they live.

Westmalle, being at the "crossroad" of the Northern Campine, is the most content with the current offer of amenities within the village. Vlimmeren residents, which objectively have access to the least amount of amenities within their own village, were also relatively content, but the reliance on other villages for basic needs was noticeable, and travelling to other villages for daily amenities, like restaurants and daily shopping, were much more normalised. In Schilde, people were relatively less satisfied and reported a lack of "affordable" amenities and amenities for the youth in the village. The proximity to the large city (Antwerp) and a large shopping centre was pointed out as a factor for declining amenities in Schilde.

The fear of the municipality becoming "urbanised" and "busy" was most prominent in Schilde, where residents wished to keep the green character of the village, and while understanding the need for densification, were sceptical towards the dense living environment it provides. A proposal to extend the tramway of Antwerp to Schilde illustrates this perspective. The extension was seen as an invasive measure bringing "undesired" people from the city, and the nearby Wijnegem where Antwerp's tramway was extended in 2012 was cited as an example of that effect. Practical reasons, such as road works and pressure on surrounding shops and businesses, were also cited as the reason.

Participants from Schilde also presented their local society as less close-knit compared to the other two; a participant from 's-Gravenwezel mentioned the lack of rural "Campine" identity for Schilde, as the characteristics of Schilde are closer to a residential, commuter town than a typical, "autonomous" Campine village. Therefore, people perceived the town to be insular, where everything is enclosed within the protected boundary of one's own house; while at the same time, the desire for communal spaces and concern over lack of amenities for the youth were reported. This "residential town" (woondorp) identity is also reflected in indirect wishes towards practical benefits of peri-urban qualities, such as more accessible green spaces and easier access to amenities by car.

On the other hand, Vlimmeren, being a smaller, close-knit village, the local clubs, sports, and events organised within the village are deemed more important. The priorities in Vlimmeren were more tangible and primary compared to the other two, illustrated by desires for more activities in the village and a specialised secondary school nearby. In terms of mobility, due to the village relatively having fewer cars per household, focus group participants had a less negative image of buses and addressed issues that actual transit users tend to experience, such as poor reliability, poor passenger communications and overcrowding on buses using the motorways, rather than simple presence of a public transportation service.

Being a smaller village, amenities in Vlimmeren have been adapting to the limited scale by consolidating uses that are normally not expected for their given function. For example, the tearoom in Vlimmeren functions also as a chip shop (frituur), candy store and a parcel point, and the local pharmacy has been organising an informal care system by bringing medication and checking the wellbeing of vulnerable residents living alone.

Which challenges of proximity and accessibility have been discussed? How do different groups use mobility in the region?

As Belgium has historically promoted longer commutes from the countryside, long distance commuting is considered acceptable by participants in the focus groups: for example students cycling 10+ kilometres on a bicycle for secondary education, or commuting 135 kilometres instead of moving closer to the workplace. These "super commuters" cope with it by shortening their work hours, but some also report eventually having switched to a job nearby that pays less. Having a specialised skill that is not demanded in nearby workplaces and being required to visit customers across the country, such as contractors or consultants, were the main reasons for accepting longer commutes.

In smaller villages like Vlimmeren, many children had to travel long distances for secondary schools with specific courses. The limited opening hours for local amenities were also problematic in these villages. The tendency for commuting extremely long distances instead of moving for the job was more normalised for the elderly and those with cars; those who rely on public transportation, on the other hand, reported considering getting a second residence (such as student housing in the city; kot in Flemish) or even moving closer to locations with better transit connections to their destination.

Large cities are primarily seen as places for work and (occasional) leisure, not as desirable residential areas, including by those who had previously lived there. Trips to large cities were limited to certain purposes (work, bigger shopping, and partly for cultural activities and nightlife). Most daily trips happen within the peri-urban area, and the daily urban system generally consists of other villages of similar characters in the region, and is also not limited to settlements along the N12 corridor. This was particularly prominent for "regional" amenities such as sport facilities and secondary schools, and personal leisure activities such as associations, clubs, and leisure activities in open green space, which is highly appreciated by the residents. People tend to combine car trips with leisure cycling/walking to be able to explore the region further.

Indeed, even for the well-served villages along the key Antwerp - Turnhout corridor (N12) that were selected for the focus groups, poor public transport still took a large part of the discussion. This stems from the mismatch between the network and the daily destinations of the residents: the current network, based on the policy shift towards "demand-driven" transit that prioritises connections for which there is most demand, is highly "radial", focusing solely on serving commuting traffic between the periphery and the large cities and neglecting the less profitable transversal services, while the real travel patterns of peri-urban residents outside of work and occasional trips are rather dispersed. Therefore, the quality of the public transport network is perceived to be unreliable and inefficient, particularly for younger people. The complexity to navigate multi-modal commutes and the unreliability of the experiences push the younger participants towards cars. People generally take public transportation when traveling to large cities, but rarely to other peri-urban locations. Extra issues were identified when traveling by bus, namely a feeling of lack of safety particularly at night, and the fact that people cannot use the time productively like they do in trains.

Located on relatively flat land with villages located in close proximity to each other, cycling has been widely adopted in the region. Cycling infrastructure was generally deemed available across the region, despite often lacking in quality. The use was particularly widespread for trips within the peri-urban areas, where the current public transportation network does not serve properly and the distance is not too great. The main N12 corridor where most traffic is present for both cars and bicycles, was the biggest source of cycling problems in the region, including safety issues, overcrowding during the school rush and poor pavement quality in Schilde. Cyclists therefore avoid the N12 and took parallel, alternative routes.

For automobilists, traffic congestion was deemed to be worsening, and they preferred to improve accessibility rather than locating amenities in proximity. The N12 has also been perceived negatively. The through traffic impacting the liveability of the village was cited as the biggest challenge related to roads, particularly in Westmalle. In Schilde, the delays for automobilists caused by stopping buses without bus bays were cited as a problem. This can be due to Schilde's relatively limited bus attractiveness and use, higher automobile penetration, and the fact that the N12 is the primary thoroughfare to Antwerp in Schilde unlike the other two locations, which rely on both N12 and motorways.

The car remains the primary mode of transport for many, especially when they have to combine multiple destinations and activities. Many also reported working outside of large cities which are poorly served by other modes, and even having multiple daily destinations, either as a job requirement or as a result of a frequent change of jobs. The tax system that offers financial benefits for receiving a leased company car in lieu of more salary is also a factor promoting car use. One of the deterrents of car use in this group are the congestion and policy restrictions, which makes alternatives more attractive also non-financially, especially when travelling to large cities. Some make use of park-and-ride facilities.

In terms of amenity access, while it is assumed in many studies on the 15-minute city that proximity is the determining factor behind individual choices, people nevertheless select certain amenities, such as restaurants, schools, clothing shops and bakeries, based on quality and personal preferences, not proximity. Other specialised services, such as pharmacies and butchers, whose qualities users are generally less knowledgeable or familiar with, are selected more on the basis of proximity than perceived quality. In general, a short additional drive for the sake of quality is widely accepted, but a 20-minute trip is considered excessive. Sports was also mentioned as a quality-over-distance amenity, due to preferences for a specific type of sport, such as swimming. Overall, the amenity level is widely seen as steadily declining, particularly for specialised retail. This leads to longer commutes for these goods, or using online shopping for mass-produced, specialised goods like electronics.

How does the use of amenities generally differ between the focus groups?

The elderly group were less sensitive about access time, as they are retired with enough time to travel. They were also more likely to have endured longer commutes, which they perceived as more common in the past. The elderly also tend to use more electric bikes, and were relatively happier about the current offer of public transportation. They were also more willing to keep the neighbourhood "green" and keep the undesired influence associated with Antwerp away from the city. They also had negative perceptions about traffic calming measures in big cities.

The parents and caregivers, most of whom were working, were the most mobile groups. All owned their own car, and were generally happy with using it. They were obliged to bring children to activities, impacting their evening schedules. Although many certainly wanted to let their kids travel by public transportation, they could not due to problems and limitations of the public transportation network, especially the mismatch between the network configuration and the actual desired destinations of users.

The perception of a local identity was much less prominent in the group aged 18 - 30. Young adults did perceive a distinctive identity of their village of residence compared to other nearby villages and were fairly positive towards the close-knit community, but were less concerned about questions of local identity, such as the perception of a different urban-rural mentality. Their motives of moving to the peri-urban area were primarily linked to practical benefits like green spaces and good connectivity to potential work locations, or personal ties to family. Cultural or identity reasons, such as expressing dislike for large-city living, were not present in this group.

Other relevant insights

The perceptions regarding identity in the region, particularly towards the cities and nearby villages, were highly complex. At the broader scale, a strong distinction was made between Campine villages and nearby cities, sometimes with negative connotations, such as urban residents having a different mentality or generally perceiving cities as unsafe. However, some participants acknowledged the liveliness of some cities as a positive aspect. At the smaller scale, the participants are highly attached to their own village, often accompanied by sentiments and attitudes ranging from somewhat "differing" to slightly hostile, even towards villages a couple of kilometers away. These dynamics make it difficult to consider the whole peri-urban area as one entity, making the universal application of principles such as proximity across the region quite inadequate. When expressing preferences and needs, strong local attachments intersect with considering amenities and mobility issues purely from an efficiency perspective. As a result, policymakers are under pressure to take the existing village dynamics of the local population into account when providing services, particularly social activities, and developing new housing locations. About the latter, it is notable how this loyalty to place affects housing policies that primarily rely on "residential mobility", expecting people to move throughout their life course to the logically most suited location. The results have shown consistently that people prefer to remain in their sub-municipal community, and even neighbouring, accessible towns with comparable qualities experience a perceived territorial stigmatisation.

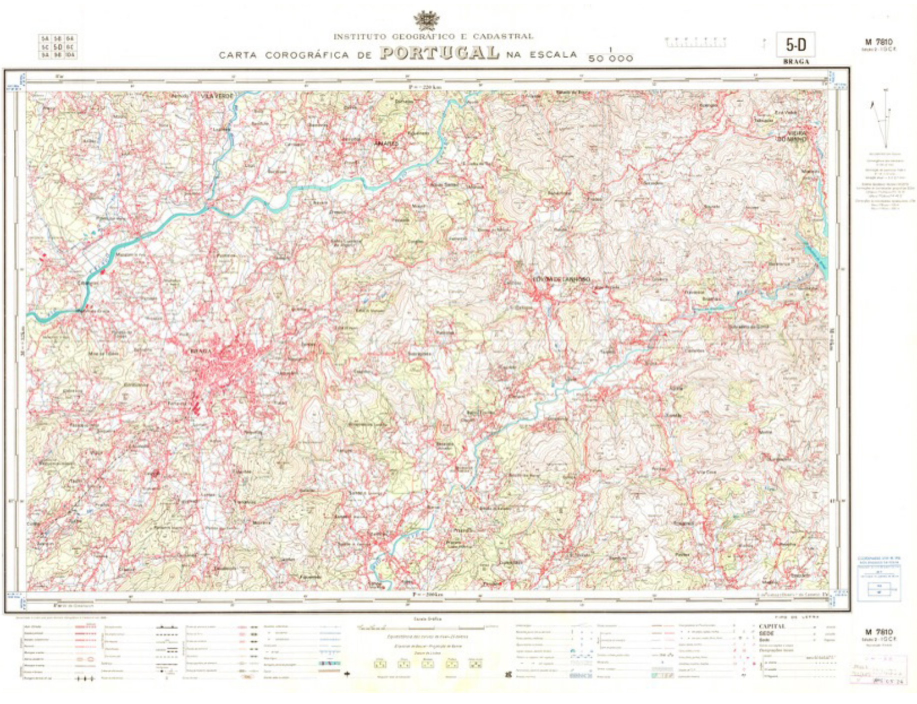
Portugal - Braga, Guimarães and Vila Nova de Famalicão

Context

Historical Overview

Braga, Guimarães and Vila Nova de Famalicão are located in the Northwest of Portugal. Originally a Roman city (Bracara Augusta), Braga grew as a religious and political center and is today the largest medium-sized city in Portugal outside the two main metropolitan areas, with a focus on technology, education and services. Guimarães, historically associated with the birth of Portuguese independence (1143), has a well-preserved historical centre (classified as UNESCO World Heritage) and a strong presence of cultural activities, tourism and light manufacturing. Vila Nova de Famalicão, officially a city since 1985, moved from a rural and industrial basis to an important regional economic node, namely in textile and agri-food industries and logistics. Since the second half of the twentieth century, the three cities experienced accelerated urbanisation processes, first triggered by industrialisation and, more recently, by the emergence of the service and digital economies. Their geographical proximity, commuting flows and transport networks contributed to an increasing spatial and functional integration. Today, these cities are part of a polycentric urban system in permanent reconfiguration, which faces relevant spatial planning and development challenges, particularly regarding territorial cohesion, sustainability and innovation.

Figure 33: . Military Map of Portugal (1:50,000). Source: Centro de Informação Geoespacial do Exército



Geographical and socio-economic context

The three municipalities are part of the Ave and Cávado Intermunicipal Communities. They stand out for their proximity to Porto, the country's second most important metropolitan area, and their strong economic and social dynamics, with a public university and proximity to an international airport.

Their spatial structures and morphologies share relevant common characteristics of internal organization but also exhibit some interesting specificities. The city of Braga is characterized by a compact urban structure, with a dense historic center and peripheral residential and commercial expansion. Guimarães combines an historic urban core with scattered industrial and suburban areas. Famalicão has a more polycentric structure, with several urbanized parishes and a strong industrial presence.

The three municipalities display diverse land use patterns, alternating between urbanized areas and natural spaces. Industry plays a significant role in this region, both in terms of employment and infrastructures.

Regarding accessibility, the area is crossed by two highways (A3 and A7) and several national roads, ensuring efficient regional connections. They also have a direct railway connection to Porto. Nevertheless, despite the average duration of commuter movements being shorter than in Portugal as a whole, the use of public transportation is lower than the national or northern region average.

Key demographic and social indicators follow national trends, although the region stands out for having a higher concentration of young people, qualified workers (Braga) and population growth (Cávado). Real estate prices are generally lower than the national and metropolitan averages.

Figure 36: Inhabitants' age structure. Source: own elaboration, using data from INE (2025)

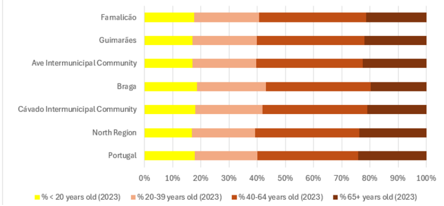


Figure 37: Inhabitants' qualifications. Source: own elaboration, using data from INE (2025)

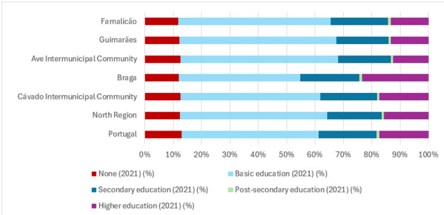


Figure 38: Type of daily commuting. Source: own elaboration, using data from INE (2025)

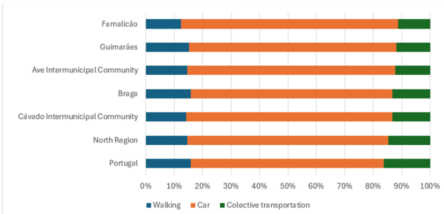


Figure 34: Road network map. Source: Own elaboration, using data from ESRI

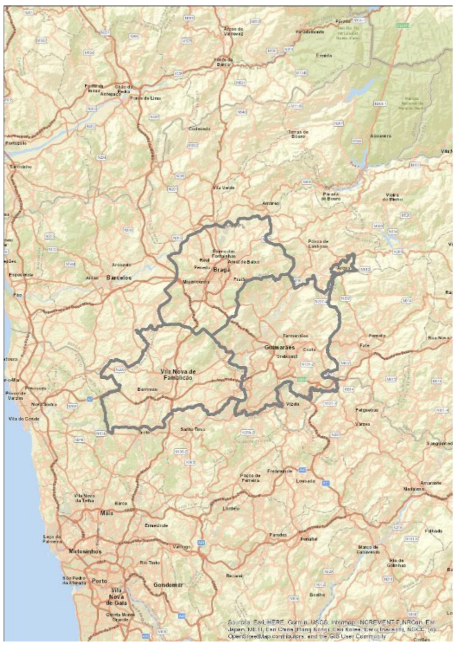


Figure 35: . Land use in 2018. Source: Own elaboration, using data from DGT-COS

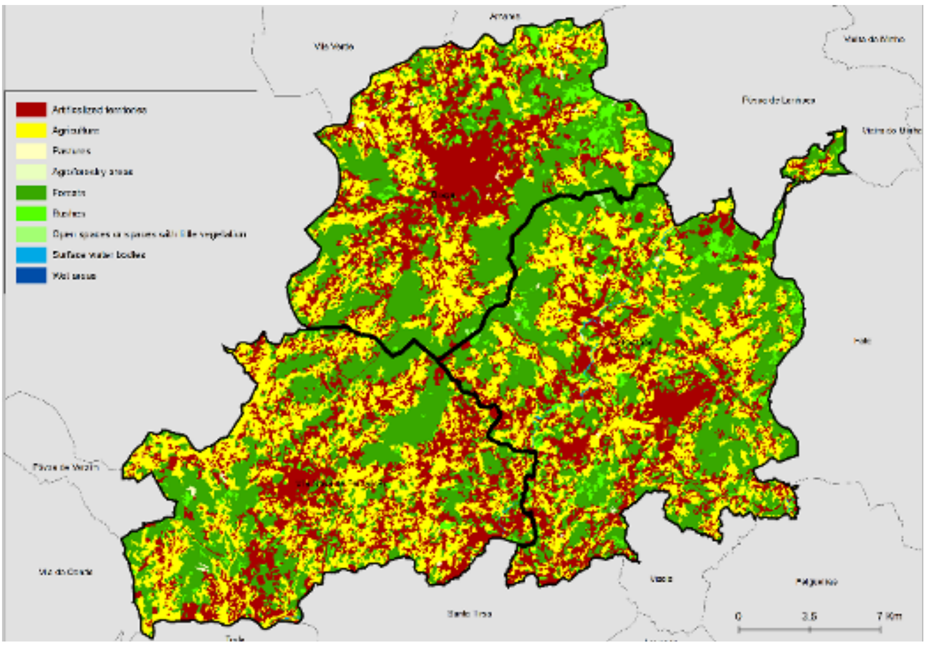


Table 7: Demographic indicators (own elaboration, data from INE (2025))

Territorial unit	Inhabitants (2023)	Average age (2021 Census)	Variation of resident popul. (2011 - 2021) (%)
Portugal	10639726	45,44	-2,07
North Region	3673861	45,4	-2,79
Cávado Intermunicipal Community	429833	43,57	1,57
Braga	201583	42,82	6,52
Ave Intermunicipal Community	422464	44,55	-1,64
Guimarães	156789	44,22	-0,8
Famalicão	135994	43,9	-0,22

Table 8: Commuting characteristics (own elaboration, data from INE (2025))

Territorial unit	Inhabitants that commute daily to study/work in another territory (2021) (%)	Inhabitants that commute daily from outside to study/work here (2021) (%)	Average duration daily commuting flows
Portugal	0	0,86	19,9
North Region	0,76	2,43	18,62
Cávado Intermunicipal Community	6,64	8,96	17,54
Braga	18,16	12,72	17,6
Ave Intermunicipal Community	7,1	11,03	16,49
Guimarães	14,28	14,25	16,04
Famalicão	15,14	18,83	16,78

Table 9: Real estate prices (own elaboration, using data from INE (2025)

Territorial unit	Average price of real estate sales per sq/m (2023)	Real estate prices sales variation (2019-2023)	Average price of real estate rentals per sq/m (2024)	Real estate rental prices variation (2020-2024)
Portugal	1611	47,3	7,97	42,1
North Region	1394	47,0	6,94	43,1
Cávado Interm. Community	1385	52,2	6,98	44,8
Braga	1524	60,6	7,69	46,2
Ave Interm. Community	1150	40,1	5,34	49,6
Guimarães	1219	42,2	5,75	53,3
Famalicão	1264	45,8	5,71	42,8

Administration

Portugal has been a unitary nation-state since its formation and is generally considered very centralized in the way it is governed. Reflecting this unity – the same language, ethnicity, a dominant religion, and significant cultural cohesion – regions do not have a strong identity or political autonomy, apart from the two Atlantic archipelagos of Azores and Madeira, the only regions where there is an elected government.

The North of Portugal is one of the country's most important regions, with 35% of the national population and one of the two national metropolitan areas. The regional planning body (CCDR-N) is a decentralized agency of the national government, without political or financial autonomy. The same applies to intermunicipal communities – created in 2008 and reinforced in 2013 – as they have no direct elections and act mainly as a sum of municipal interests, rather than a strategic entity (Silva Peneda, 2019). Thus, despite some recent legal changes, such as the intermunicipal management of several European Union (EU) funding programs, the most important political representation lies in the municipality with executive and legislative bodies directly elected, considerable autonomy, and normally considered as the dedicated local government in the eyes of the common resident (Lourenço et al., 2023). Each municipality is divided into parishes with limited power and very diverse spatial and demographic dimensions. This creates a framework of double centralism, with spatial planning and management highly concentrated at the national (State) or local (municipalities) government, with low stakeholder coordination or strategic articulation. Recently, this became clear both at the Ave and Cávado Intermunicipal Communities, where Braga, Guimarães and Famalicão refused to be part of sub-regional Mobility Authorities, and decided to plan mobility infrastructure and lines individually.

Challenges connected to the 15mC principles

The implementation of the 15-Minute City model faces several challenges across key domains essential for territorial organization and urban quality of life, namely:

a. Mobility – The public transport network has significant limitations, with insufficient coverage and a service offer that does not adequately meet the population needs. Additionally, infrastructure for soft mobility modes is often inadequate. Despite an increase in the number of passengers and positive initiatives such as fleet electrification and fare reductions, the quality and quantity of public transport remain deficient. The private car is the dominant mode of transport in the dispersed territory, and although an intermunicipal Bus Rapid Transit system is planned, its implementation and effectiveness remain uncertain.

b. Housing – Access to housing has become increasingly difficult, particularly in densely populated urban areas. The housing crisis, characterized by high demand and insufficient supply, has led to soaring prices, making homeownership and renting unattainable for many households. Although there has been an increase in the number of housing

Figure 39: Housing use characteristics. Source: own elaboration, using data from INE (2025)

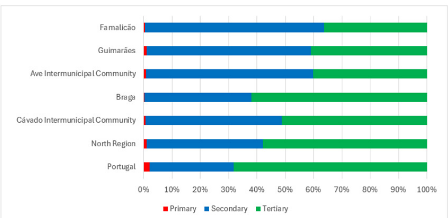


Figure 40: Employment by economic sector. Source: own elaboration, using data from INE (2025)

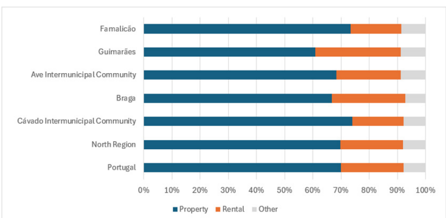
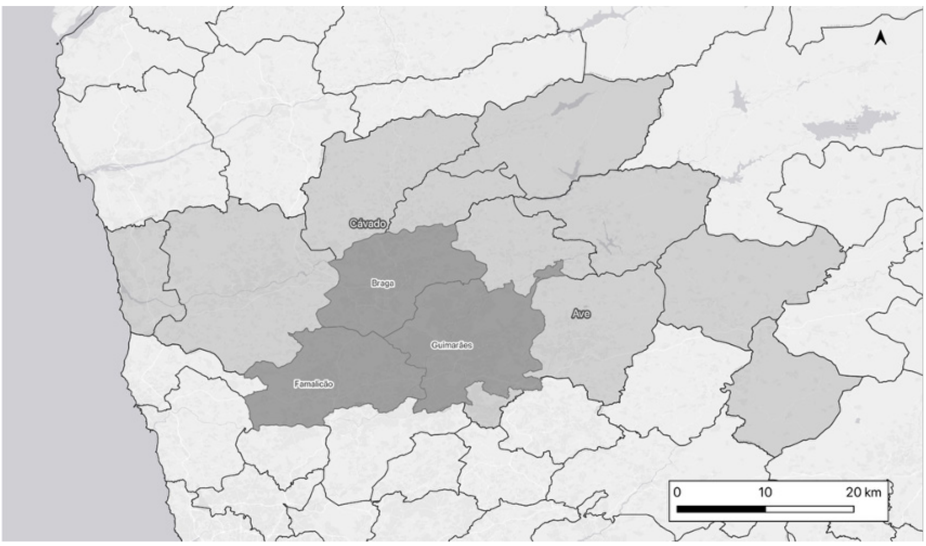


Figure 41: Northwest of Portugal – NUTS 3 (Cávado and Ave) and municipalities (Bragra, Famalicão and Guimarães). Source: Own elaboration, using data from ESRI and DGT-CAOP



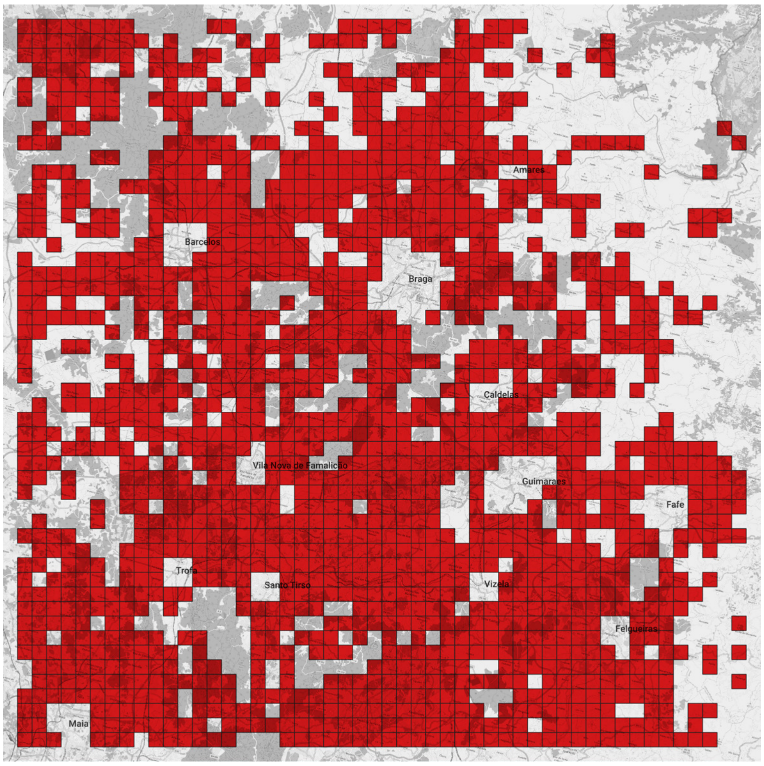
units, this does not keep pace with the growth in the number of households, which has become more diverse due to the rise of single-parent families and immigrants. Housing prices increase much more than income, further exacerbating housing accessibility challenges even where an adequate offer exists.

c. Spatial planning – There are challenges stemming from a long history of urban sprawl, often associated with a strong capacity of private actors to transform their land, not only to build their own house but also to develop real estate for sale or rental, including industrial units in unsuitable locations. Generally, the absence of an integrated vision and the misalignment between planning instruments and the legal and financial systems governing land use have resulted in spatial fragmentation and an apparently chaotic landscape. The territory is characterized by a disorderly mix of residential buildings, industrial units, and agricultural land, with inadequate functional connections, increased pressure on urban centers, and poor environmental conditions.

d. Socio-Economic dynamics – The region has historically benefited from strong economic dynamism, driven by small, labor-intensive, export-oriented businesses. However, in recent decades, significant changes have occurred, with the decline in attractiveness of traditional industries and increasing innovation in production and distribution processes. Alongside the outmigration of skilled workers, there are also inflows of immigrants seeking employment and access to higher education institutions such as the University of Minho. The growth of the tourism sector has also played an important role, generating new economic opportunities, particularly in hospitality and catering services.

These difficulties reflect a complex framework of limitations to the implementation of the 15-Minute City model. Additionally, weak coordination between different sectors and levels of government and the difficulty in fostering collaboration between municipalities, and between them and other players, hinder the implementation of integrated strategies. Civic engagement and the involvement of local actors are also critical challenges in a context where change requires a coordinated and sustained approach to ensure a more balanced and inclusive development.

Spatial analysis
Case Portugal

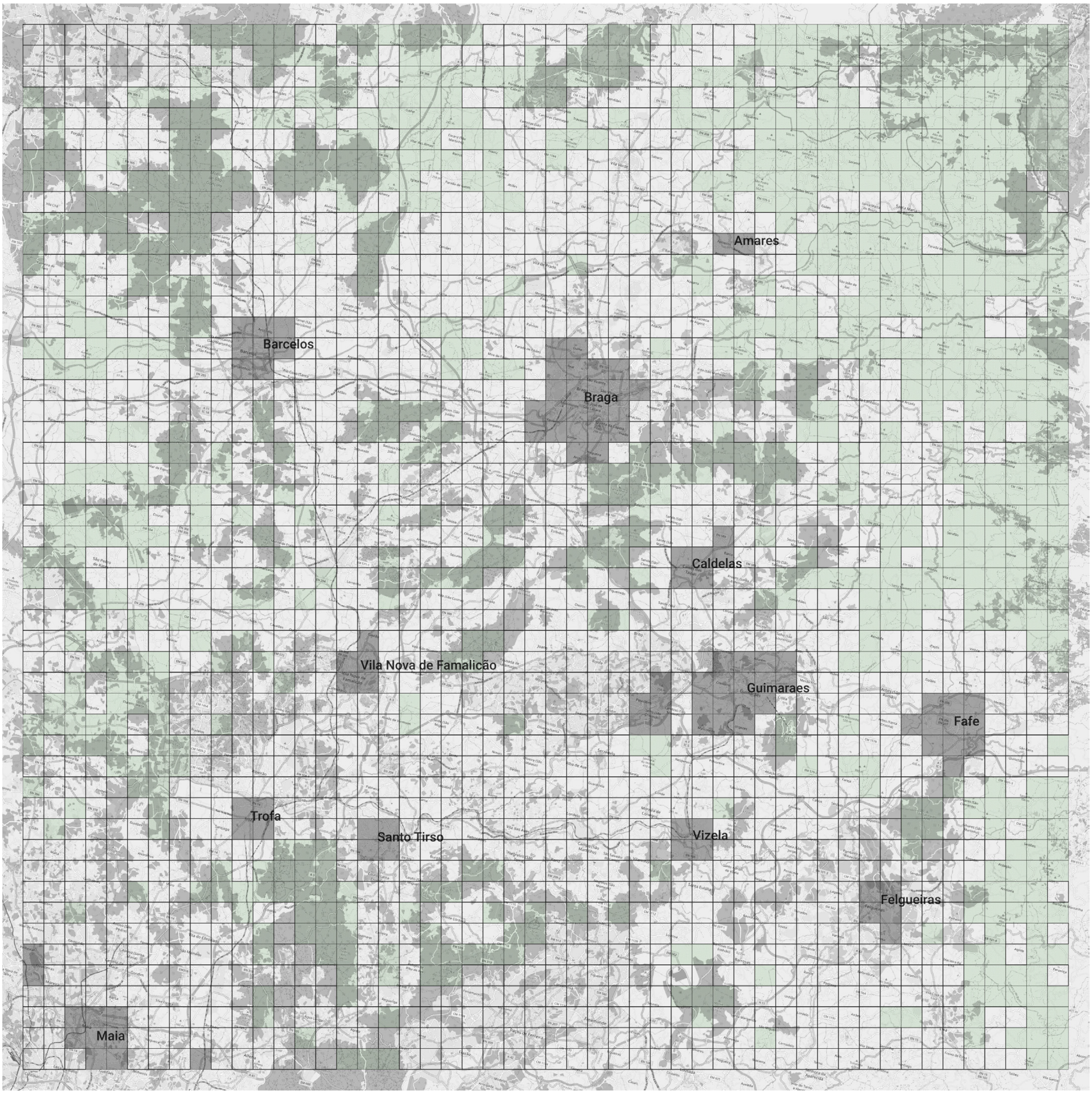


peri-urban

In the Portuguese case study area 1547 grid cells are defined as peri-urban. This equals 61,9% of all grid cells in the case study area. The Portuguese case study thereby represents the case with the largest share of grid cells classified as peri-urban. The case study is dominated by the peri-urban condition, interrupted only by cities and patches of nature.

Portuguese case study

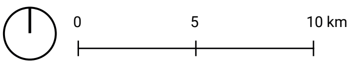
Peri-urban places



rural

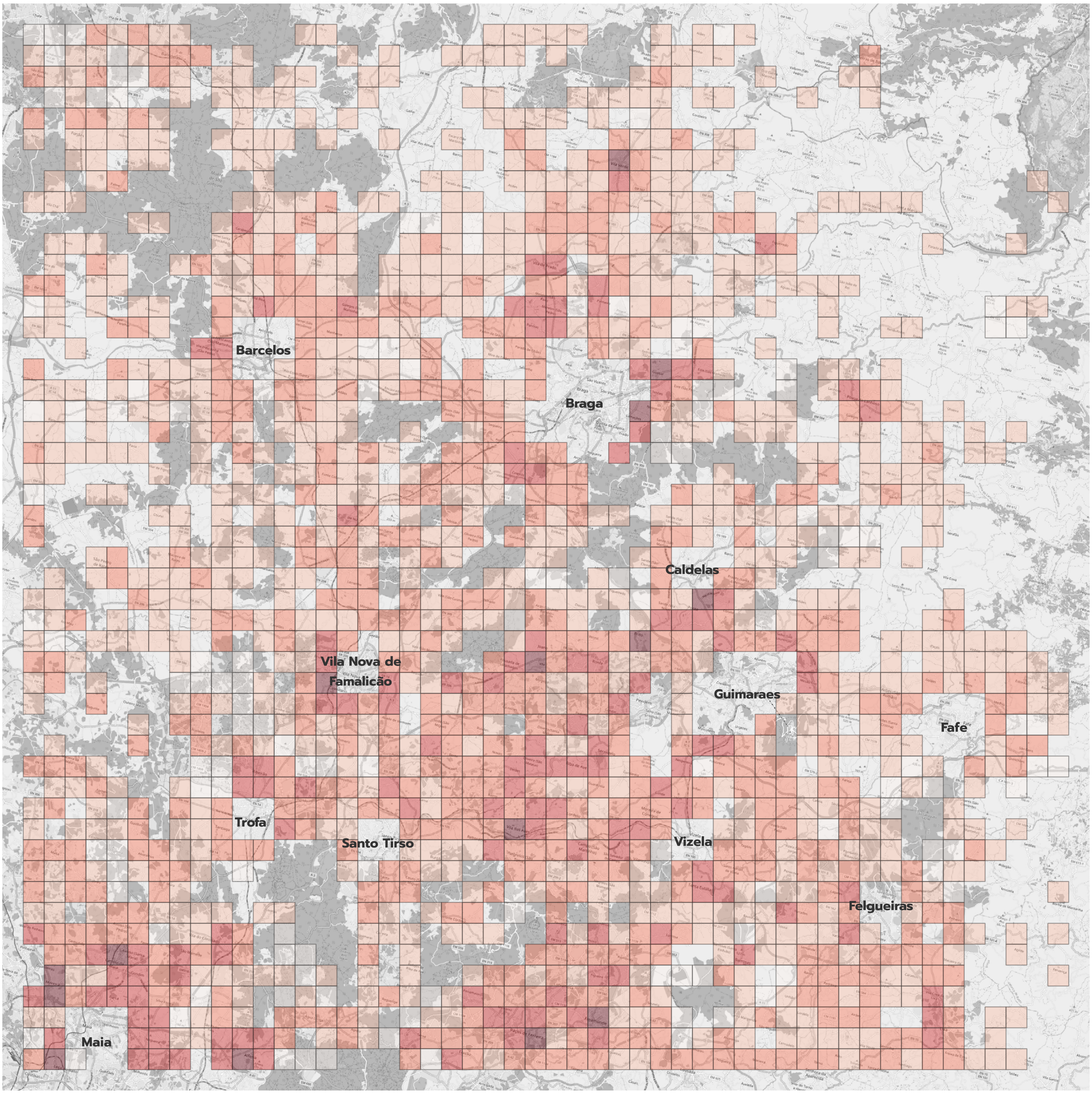
peri-urban

urban



Demographic typology and distribution of types

Case Portugal



	POP_DENS	AGE <15	AGE 15-64	AGE >64	% EMP
3	32	12,5%	68,8%	18,8%	50%
1	258	13,8%	66,1%	20,1%	47,7%
2	649	14,2%	66,2%	19,6%	47,9%
4	1468	15,4%	65,1%	19,5%	48,9%
5	3248	15,6%	64,3%	20,1%	48,4%

most common demographic type of peri-urban in the Portuguese case study area

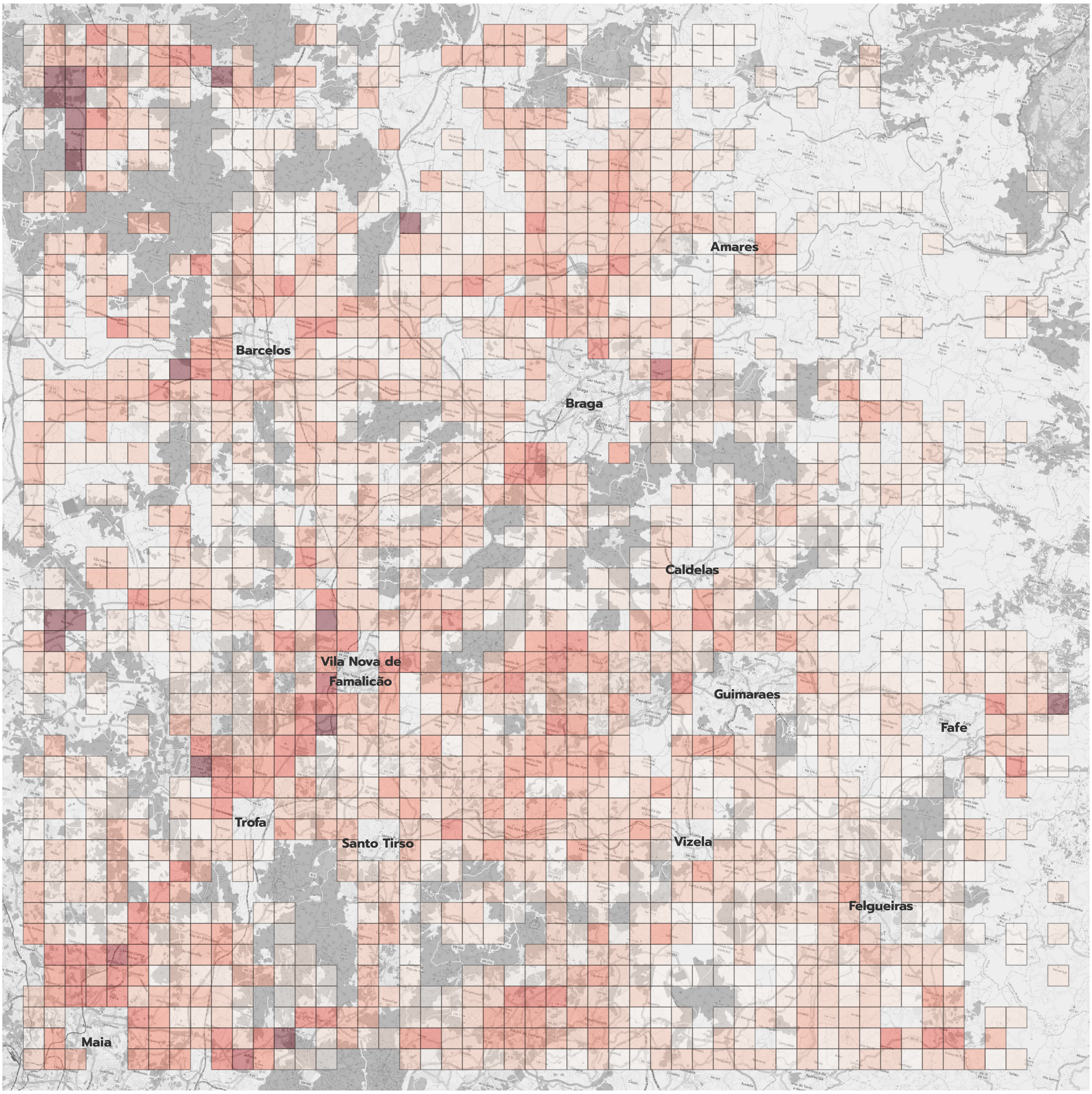
0 5 10 km

Characteristics Demographic typology Case Portugal

The Portuguese case shows distinct clusters of peri-urban. The types of places differ mostly in population density as well as employed population. The most densely populated type (just below 1% of all cells) shows approximately 10 times more population that the least densely populated (8%). In this case study area 50% of cells are of the demographic type 1, and 43% of type 2. Both have low population density, their age distribution is relatively similar compared to the other types, and tend to have a higher share of people over 65 than 15 years old or younger.

Spatial structural typology and distribution of types

Case Portugal



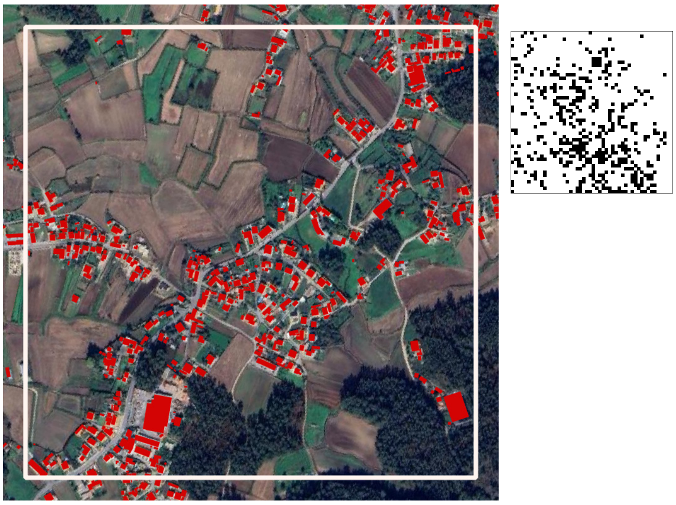
	CENTRALITY	POP_DENS	GSI	NUMBER OF BUILDINGS
5	low	low	low	low
3	low-med	low	low	low
1	medium	low	low	low
2	med-high	low	low	low
7	med-high	medium	low-med	low-med
4	high	low	low-med	low-med
8	high	low-med	high	high
9	high	high	med-high	high
6	high	low	low	low

most common spatial type of peri-urban in the Portuguese case study area

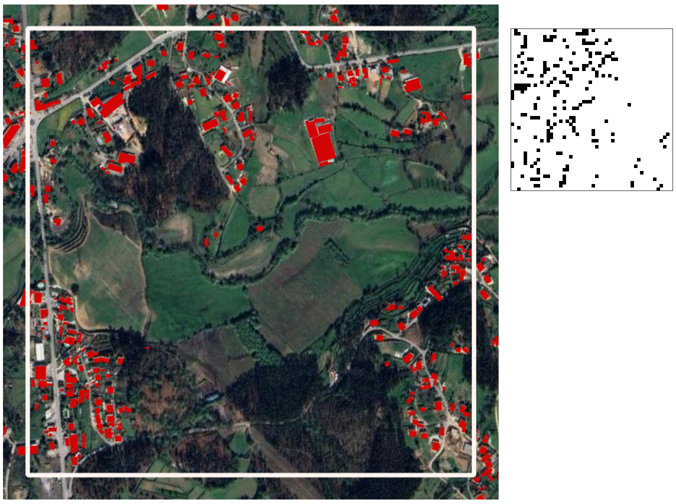
Characteristics Spatial typology Case Portugal

In the Portuguese case study, spatial type 1 is dominant (29%): it is characterised by low population density and medium spatial centrality. It has few buildings and a low ground coverage, indicating a loose settlement structure. Types 3 (23%) and 5 (21%) also appear relatively frequently - while type 3 has average centrality, type 5 has low centrality, and both show little built structure and a lot of open space. Type 8, a high spatial density type in highly accessible places, but with medium population density, does not appear at all. The densest, 'most urban' type occurs in less than a half percent of all grid cells. This means that the peri-urban in the Portuguese case study is extensive, but shows overall low density in predominantly non-central places.

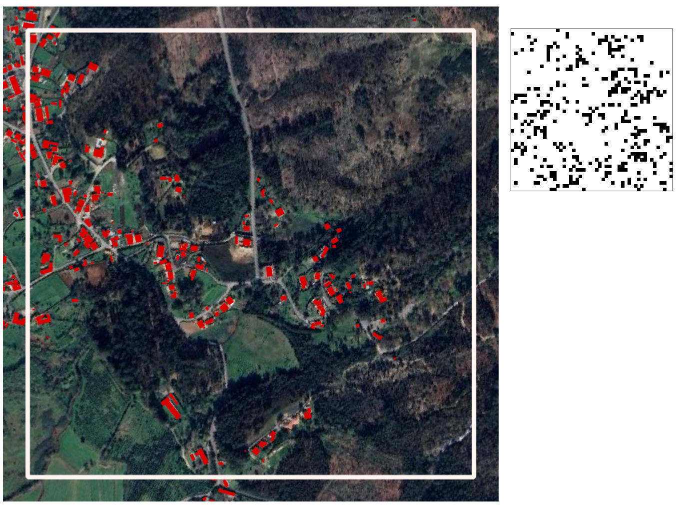
Exemplary manifestations of the spatial structural types
Case Portugal



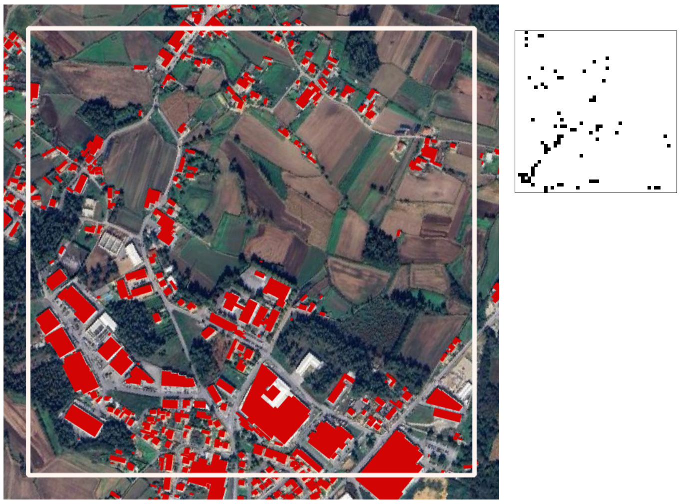
SC1 29%



SC2 13,5%

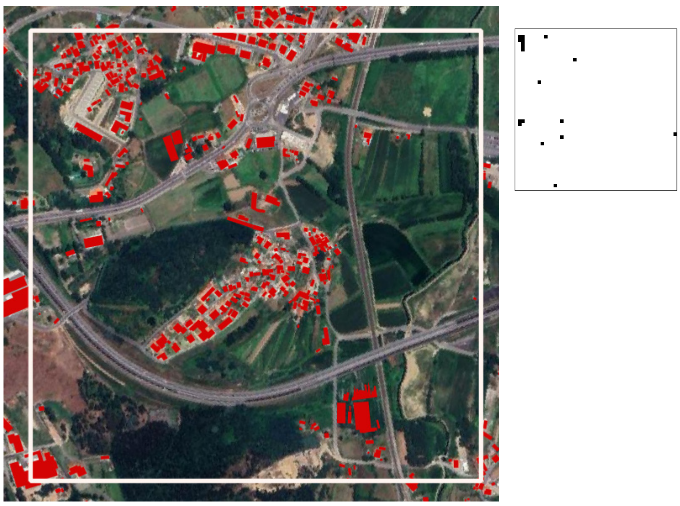


SC3 23,1%

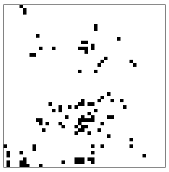


SC4 5%

SC5 21,3%

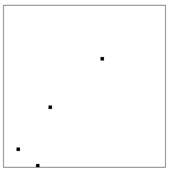


SC6 1,2%



SC7 6,7%

SC8 0%



SC9 0,3%

The spatial structure of the Portuguese case study area shows a highly complex pattern, with a wide diversity of settlement compactness and density across irregular terrain. Most buildings are located along paths and roads, separated by a fragmented mosaic of fields and forest patches. In this at first sight chaotic landscape, valleys are typically more densely occupied, whereas at higher altitudes there are fewer and more compact settlements.

Spatial type 1 consists of a fabric of small buildings along a fine-meshed street network with low density and low coverage, but overall medium centrality. This condition accounts for almost 30% of the total case study.

Spatial type 2 consists of loosely arranged buildings along the main roads between cities. These generally sparsely populated places are easily accessible in the region and tend to occur more frequently towards the Atlantic coast in the western part of the study area.

Spatial type 3 is the second most common in the Portuguese case study. It represents the less central areas with very low density and low land cover.

Spatial type 4 shows more compact locations along the main regional roads. It is characterised by a diverse mix of building types and sizes as well as land uses. This type is mainly concentrated in the corridor from Porto to Vila Nova de Famalicão and on to Braga. It also appears scattered throughout the rest of the study area.

Spatial type 5 represents the most segregated locations with the lowest density on the edge of settlement areas, often near hilly areas with forests. This type is the third most common in the Portuguese case.

Spatial type 6 includes locations with high centrality, which means good regional accessibility. These locations are very loosely built up and accommodate industrial buildings near motorways. This type accounts for just over 1% of all grid cells in the case study area.

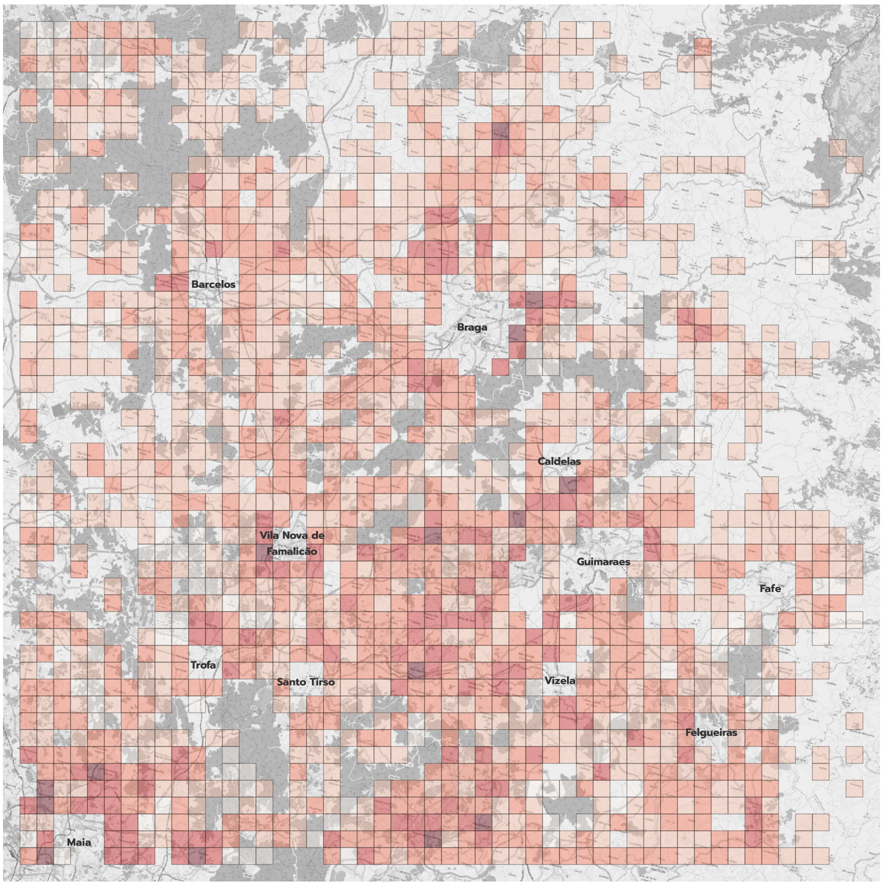
Spatial type 7 corresponds to larger villages in the region that also include industrial buildings. It is easily accessible, has a compact, lower density and often features small streams and nature corridors. These locations have a relatively medium centrality in the region.

Spatial type 8, with high land cover and fine-grained, low-density development with low to medium population density, does not occur in the Portuguese case study.

Spatial type 9 has the highest population density and comprises fine-grained development in the form of detached houses with gardens and also commercial buildings. Land cover in these areas is medium to high. This type only occurs along the main access roads on the outskirts of the larger towns in the study area.

Comparison of demographic and spatial structural typology
Case Portugal

Demographic typology

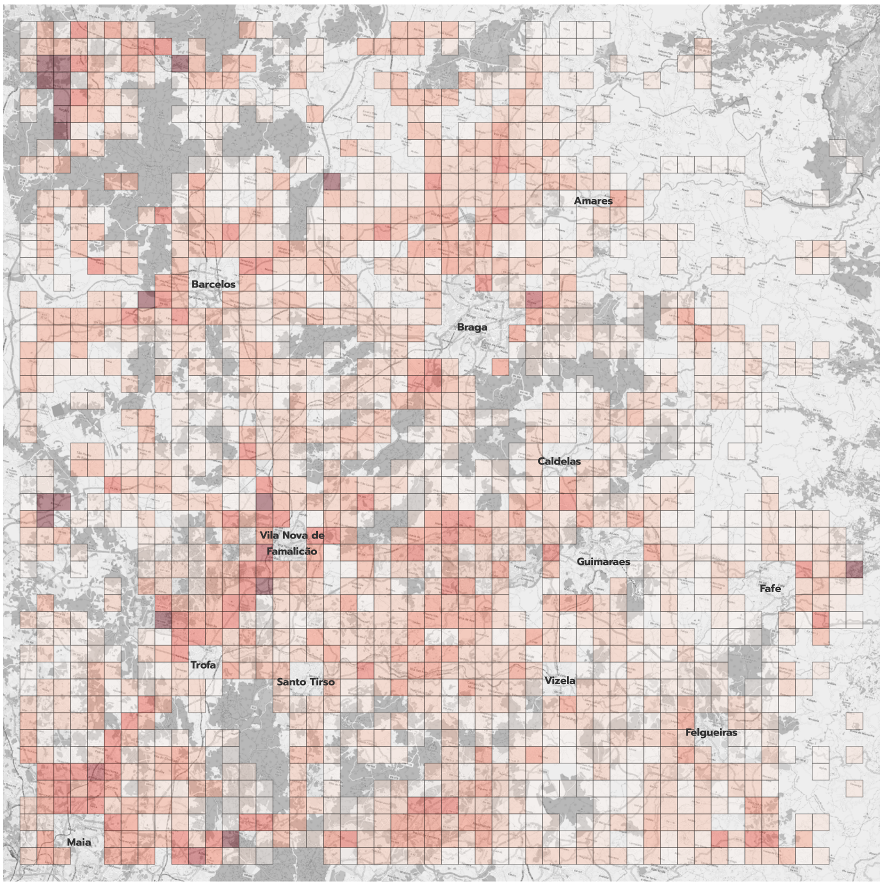


Statistics
Demographic typology

1547 peri-urban grid cells

Type1	767
Type 2	503
Type 3	129
Type 4	133
Type 5	15

Spatial typology



Statistics
Spatial typology

1547 peri-urban grid cells

Type1	448
Type 2	208
Type 3	358
Type 4	77
Type 5	330
Type 6	18
Type 7	104
Type 8	0
Type 9	4

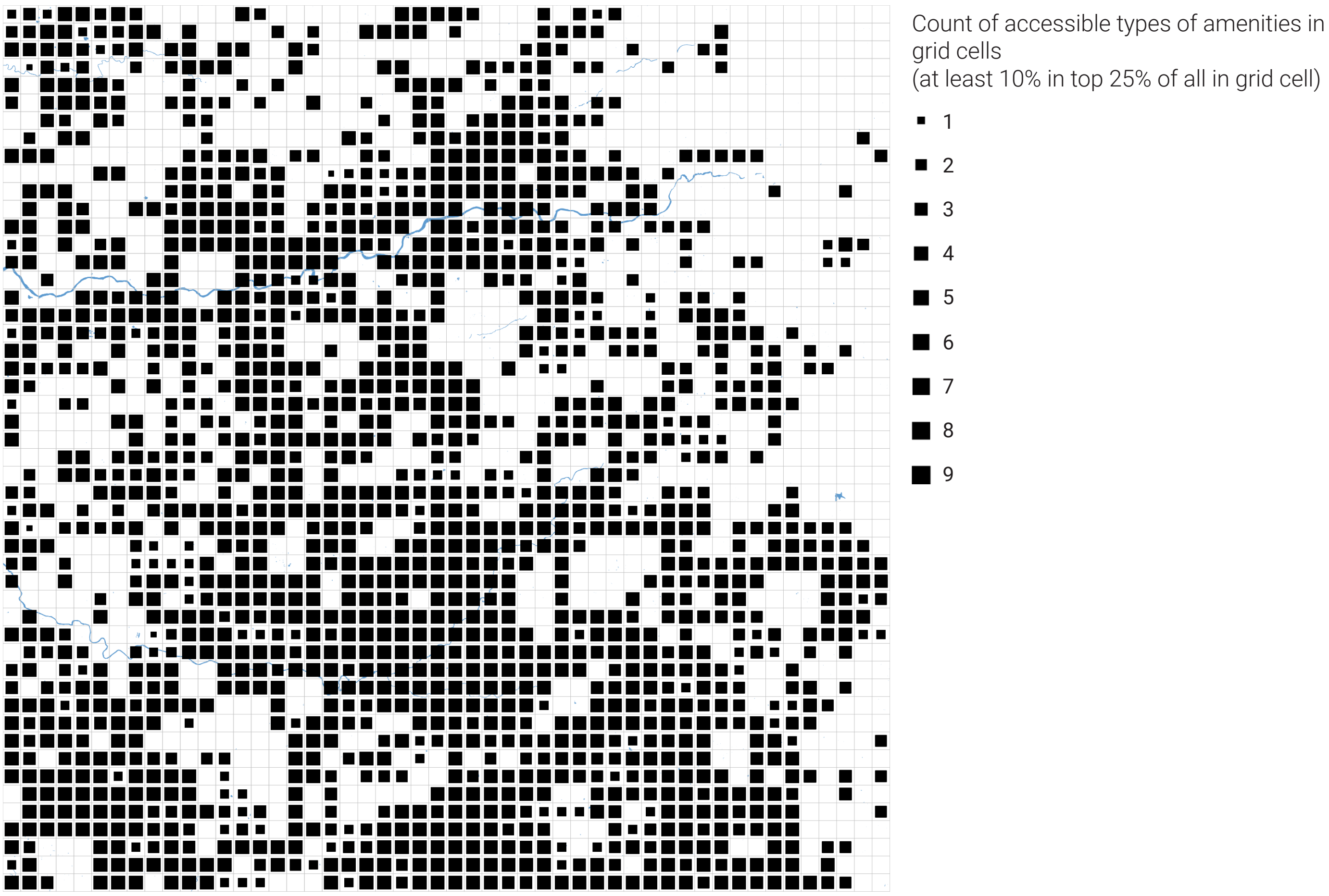
The most frequent typological combination in the Portuguese case study is demographic type 2 and spatial type 1. It indicates a lower density, trending towards a slightly ageing population, in detached housing along a relatively fine-grained street network of medium centrality. The combination of demographic type 1 and spatial type 3 also appears with much higher frequency than all other combinations, as even less central places with lower population density. Special to this case study is the rare occurrence of peri-urban areas with higher population density in more central places.

How do the demographic (DT) and spatial types (ST) relate?

DT \ ST	S1	S2	S3	S4	S5	S6	S7	S8	S9
D1	77	163	297	4	215	11	0	0	0
D2	346	25	13	53	59	3	4	0	0
D3	0	20	48	3	54	4	0	0	0
D4	25	0	0	17	2	0	89	0	0
D5	0	0	0	0	0	0	11	0	4

The ‘accessible types of amenities’ map gives an overview on the accessible amenities in each grid cell. The amenities considered draw from Moreno’s framework of 15min cities and regions, and are here interpreted in nine categories: leisure, healthcare, religion, work_industrial, work_offices, education, green public space, services and retail.

Accessible types of amenities



Governance Analysis

Introduction: Governance context in the region

The governance structure of the peri-urban area reflects the administrative complexity and the coexistence of multiple levels of decision-making, providing a complex network of relationships in which several entities and policies converge to implement mobility, housing, and spatial planning policies. Consequently, several actors and relevant instruments and initiatives were identified at the national and (sub-)regional levels. In addition, interviews helped explain the institutional connections and collaborative dynamics between the different stakeholders, translated into a network of interaction, coordination, and cooperation (Fig. XX).

The flowchart below illustrates the dominant presence of national and intermunicipal public actors in policy development. Although the municipal scale also plays an important role, it acts mainly as an intermediary in the operationalization of policies defined at higher levels. This may be attributed to its limited financial capacity. Relevant actors include a transnational entity, the EU, which acts as a financier and policy guide, driving the development of various actions through strategic instruments such as the Recovery and Resilience Plan (RRP) and the Portugal 2020/2030 programs. At the national level, ministries coordinate sectoral policies, including the National Program for Spatial Planning Policy (PNPOT), the Legal Regime for Urban Rehabilitation (RJRU), and the Institute for Mobility and Transport (IMT).

Regionally, the Northern Regional Coordination and Development Commission (CCDR-N) is responsible for administering the Regional Plan for the Spatial Planning of the Northern Territory (PROT-Norte) and NORTE 2030, while the Intermunicipal Communities (CIM) of Ave and Cávado manage urban mobility, through the Sustainable Urban Mobility Plans (SUMP) and projects like Via do AvePark. At the municipal level, the city councils acquire governmental evidence to support the elaboration of the Municipal Master Plans (PDM), the municipal SUMP (in line with the higher levels), and the local strategies for housing, in collaboration with specific municipal companies, such as BragaHabit. Finally, at the local context, parish councils and residents' assemblies (this being an initiative) emerge as entities of civic participation and proximity governance, which respond directly to the city councils.

Figure 42: Relations between actors and instruments/initiatives. Source: Elaborated by the authors.

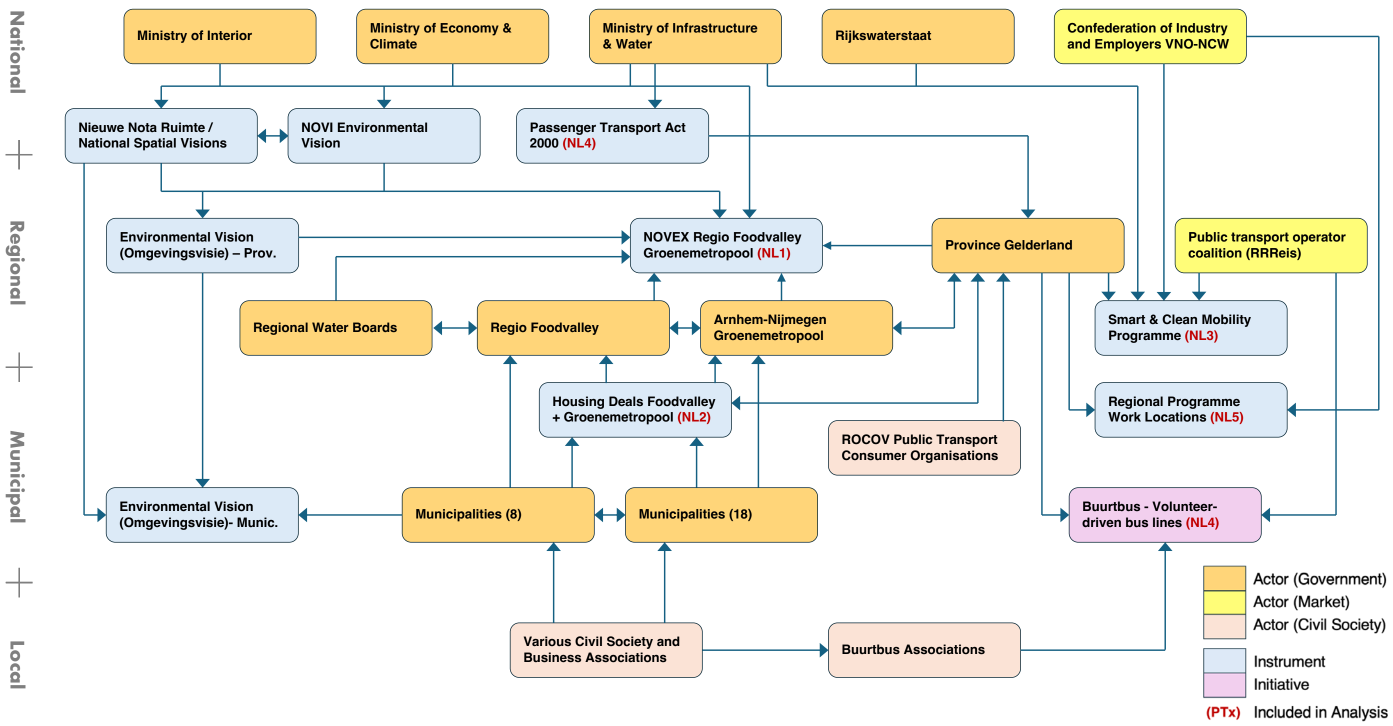


Table 10: Summary of the selected instruments/initiatives

Selected	YES	YES	NO	NO	NO
Case name	EIDT of Ave and Cávado	Urban Quadrilateral	Municipal SUMP	Urban Rehabilitation	Be.Neutral
Format / Type	Policy instrument	Collaboration initiative	Policy instrument	Policy instrument	Initiative
Aim / Aspiration	It is a reference for the territorialization of public policies, intending to respond to territorial challenges and promote social and territorial cohesion in a logic of multilevel governance.	Boosting the innovative ecosystem and the 'Quadrilateral' brand, by attracting resources for cooperative projects in innovation, creativity, and applied research.	Development of a transportation system that is effective and environmentally friendly within urban regions. Effort on intermodality to ensure accessibility and convenience for all residents and promoting healthier and livable urban communities.	Revitalize urban areas by improving quality of life, preserving heritage, promoting social inclusion, boosting economy, mobility, and creating livable and accessible environments.	Promote the development of carbon-neutral cities through innovative mobility solutions created in Portugal, positioning the country as a leading exporter and paving the way for Europe's first zero-carbon region.
Main scale levels	Sub-regional and municipal	Supramunicipal	Municipal	Municipal and local	National and municipal
Challenges / Opportunities	Collaborative decision-making among actors promotes a participatory approach aligned with regional needs but includes regulatory dependencies from national/EU funding. It allows some autonomy in setting objectives but relies on external frameworks.	Semi-formal governance framework: the municipalities retain strategic autonomy under a single manager coordinating various working groups. This flexible decision-making fosters dynamic regional cooperation and tailored project selection.	Limited autonomy due to external and higher-level regulatory requirements, as well as the need for multi-level coordination, which can potentially slow implementation. Plus, the resistance of civil society.	A highly formal framework enforces national regulations limiting planning flexibility, but municipal leaders retain some autonomy to tailor local approaches within overarching constraints.	Effective public-private collaboration promotes specialized expertise and flexible actions within a structured framework. However, there is an uneven distribution of decision-making power among municipalities, and there is a dependence on funding.
Relations / Tensions	Postponement of actions due to political regulations, resistance to change, the need for significant investments in infrastructure, and fragmentation and weak cooperation in governance between municipalities and partners.	Focus on regional and local connectivity and economic cooperation between municipalities. However, population dispersion, car dependency, and weak mobility policies make it hard to find effective solutions. While it can serve as a model for polycentric metropolitan regions, it overlooks other important themes.	Car dependency and urban fragmentation hinder active mobility initiatives. It is necessary to reorganize road networks, expand infrastructure for cyclists and pedestrians, and improve public transport in areas far from the city center. Despite the potential, resistance from companies and varying levels of stakeholder involvement complicates the implementation.	Governance conflicts and financial constraints challenge municipalities in renewing mainly central areas, often neglecting peri-urban and rural areas. Tax incentives and partnerships help, but balancing heritage, accessibility, and social inclusion is complex.	Financial and bureaucratic barriers and diverging priorities among stakeholders create conflicts in the integration of sustainable mobility into urban planning. Despite a shared commitment to decarbonisation and innovation, municipal capacities are often insufficient.

In addition to the institutional actors, participation of the market and civil society is evident, including several transport companies, such as Guimabus, Transdev, and Transportes Urbanos de Braga (TUB), which cooperate with the CIM and city councils to implement the mobility plans. Also noteworthy are the Business Associations (AE), such as the AE of Braga and Guimarães and the Commercial and Industrial Association of Famalicão (ACIF), which represent several companies and seek economic and sustainable development. Occasionally, non-governmental and environmental organizations are present, such as Youth Union of People With Initiative (YUPI), Braga Ciclável, and Famalicão em Transição. These organizations play a key role in implementing actions, promoting community engagement, and supporting transition processes.

In this governance context, impactful initiatives stand out, such as the Urban Quadrilateral, a supra-municipal structure that enhances cooperation between Braga, Guimarães, Barcelos, and Vila Nova de Famalicão. This initiative aligns with regional policies and strategic projects, fostering more integrated and sustainable development. Simultaneously, the Be.Neutral initiative plays a crucial role at both the urban and business levels in achieving carbon neutrality.

In summary, the peri-urban governance network is a dynamic and interconnected web of actors and instruments through which mobility, housing, and spatial planning policies are shaped by continuous interaction across scales. On one hand, inter-municipal collaboration in the development and execution of plans, along with the integration of collaborative policies from top to bottom, is highlighted. However, reliance on European funding may constrain local decision-making when establishing specific priorities. Additionally, the participation of market and local actors is linked to the main decision-making processes in a secondary or indirect way.

Governance cases: choice justification

A deeper understanding of peri-urban governance mechanisms was obtained through the qualitative analysis of the: Municipal SUMPs of Braga, Guimarães and Vila Nova de Famalicão; Integrated Territorial Development Strategy (EIDT) of Ave and Cávado; Urban Rehabilitation – application of the RJRU, through Urban Rehabilitation Areas (ARUs) and Urban Rehabilitation Operations (ORUs); the Urban Quadrilateral initiative; and the Be.Neutral Cities Network. Table 12 above summarises how the management of territorial dynamics functions, in particular, the actions, measures, and results affecting the territories under study.

For an in-depth analysis, the Urban Quadrilateral was chosen since it is a supra-municipal association that covers the three municipalities under study and represents the only initiative of its kind with a continuous history of practical cooperation in an integrated planning approach. Its continuity, even after the end of European funding, demonstrates the determination of municipalities to maintain an active work agenda, reinforcing their commitment to regional development. One of its areas of activity includes sustainable mobility.

The EIDT was also selected because it adopts a non-sectoral strategic planning logic, establishing guidelines for territorial planning in multiple areas. These strategies promote cooperation between the municipalities of each sub-region and involve several partners.

Case A: EIDT of Ave and Cávado

The development of an integrated strategy for Portuguese sub-regions is an integral part of a spatial planning process within the programming framework of the European Structural and Investment Funds (ESIF), which runs until 2030. In this context, the two political-strategic instruments emerged, one associated with the Ave and the other with the Cávado sub-regions, which generally define a structured agenda based on several priority axes encompassing the valorization of the territorial resources, promotion of social inclusion, efficiency and rationalization of intermunicipal collective services, energy sustainability and sustainable mobility, among others.

Actors, Aspirations, Actions

Regarding the network of relations, accountability and management are ensured by each CIM, which coordinates the various regional and local actors. This actor is thus responsible for following a regulatory framework, establishing binding standards that directly influence spatial planning, urban regeneration, and accessibility while guiding decisions through the allocation of incentives and advantages.

Given their binding commitment to the CIM, the municipalities enter directly into a coalition with the main actor to respond and implement the strategic guidelines in their territory. Higher education institutions and research centers also have a significant role, as they contribute to the strategic design. Finally, the implementation relies on a collaborative approach involving public, private and civil society entities, namely local companies that become partners in certain actions.

Mechanisms

The EIDT is based on a mixed governance model, structured through strategic planning documents, inter-municipal agreements, and financing mechanisms at national and European levels. Therefore, although coordinators have autonomy in defining objectives and metrics, they need to operate within the limits imposed by higher-level regulations. However, the decision-making process is based on a multilateral model, involving negotiation between the member municipalities, CCDR-N and other stakeholders. To this end, working sessions are held to foster network cooperation and align strategies with the needs of the territory, promoting a participatory approach that involves economic agents, universities, and other institutions.

Opportunities and challenges

EIDT is a crucial component of multi-level governance, as it establishes a coordinated framework for the different actors, with well-defined measures and actions. It is noteworthy for its interaction between the various policy domains but its capacity is limited by government fragmentation and disparities between cities and regions. However, there are significant opportunities to strengthen inter-municipal cooperation, namely through investments in sustainable mobility initiatives that promote greater territorial and social cohesion. To this end, it is essential for strategies to prioritize mutual support and foster a sense of spatial equity, ensuring that local communities, often undervalued in the decision-making process, are properly involved through awareness-raising and active participation.

EIDT has demonstrated a relative capacity to meet the objectives outlined, as evidenced by its involvement in several ongoing projects and significant financial resources. A notable example is the transition to a new generation of public transport service concession (expected in 2027), focused on road-based mobility. This initiative aims to increase the frequency and enhance the quality and attractiveness of public transport through improvements in fleet standards, scheduling, and route design, aligning with better accessibility and reducing car dependency.

At the same time, within the region, there is active solidarity among municipalities, with more densely populated areas providing financial and material support to those with lower density, putting at ease interterritorial equity and cooperative governance. Additionally, one of the most innovative yet still under-assessed initiatives is the development of on-demand mobility services. This sustainable system, resembling a taxi model in low-density areas, seeks to guarantee access to essential services for populations where high-capacity transport with fixed routes is not viable. Such solutions respond to proximity and inclusivity by ensuring tailored accessibility based on territorial realities, though their long-term effectiveness remains to be evaluated.

Nonetheless, structural limitations persist. For instance, the planned ecovias and urban pedestrian circuits connection has not been completed due to financial constraints and the demanding criteria of certain funding mechanisms. This failure demonstrates how ambitions for active mobility infrastructure are often hindered by resource limitations and rigid compliance frameworks, impeding the shift toward sustainable, local-scale mobility.

Despite these challenges, there is increasing adaptation to digital transition and changing socio-economic behaviors, alongside growing integration into innovation and cultural networks. The region also benefits from a strong cultural and touristic identity. This context opens opportunities to develop a network of connected spaces, which includes accessible public spaces, intermodal mobility nodes, and a decentralized system of general interest services. It further involves the strengthening of industrial clusters capabilities, cultural initiatives based on networked cooperation between existing cultural structures, and the consolidation of an interinstitutional governance model for multilevel coordination. Altogether, this integrated approach promotes territorial cohesion, fosters regional economic development, and ensures spatial and social equity. The EIDT is well placed to effectively coordinate and territorialise public policies through vertical and horizontal cooperation with relevant territorial actors.

Case B: Urban Quadrilateral

Note: At the time this research was conducted, the association was known as "Quarilateral"; however, it is currently referred to as "Pentagon" following the inclusion of a fifth municipality (Viana do Castelo).

The Urban Quadrilateral was created in 2008 as part of the national POLIS XXI Cities Policy program, which supported the creation of city networks. It is a cooperation initiative between four municipalities in the Northwest of Portugal to pursue specific objectives related to knowledge, innovation and territorial competitiveness. This initiative should be seen as the initial phase of a broader attempt that encompasses strategic investment planning and implementation to boost the innovation ecosystem and the "Quadrilátero" brand, establishing a competitive territorial entity that can become the third urban region in Portugal, following the Lisbon and Porto Metropolitan Areas. In April 2025, a new protocol allowed Viana do Castelo to join the group of municipalities participating in this intermunicipal cooperation, turn the Quadrilateral into a Pentagon.

The Urban "Pentagon" employs a hybrid approach that integrates direct interventions in land use and infrastructure development with indirect incentives aimed at shaping economic and, especially, mobility behavior. This approach is complemented by governance processes that promote collaboration and facilitate long-term visioning, thus increasing the overall effectiveness of urban planning and development initiatives.

Actors, Aspirations, Actions

In terms of the network of actors, an operational leadership level guides the collaboration between governmental, institutional, and business organizations. The network seeks to attract resources and consolidate collaborative projects that boost creativity and research, adapting solutions to the realities of companies and emerging local urban dynamics.

The strategic core actors include, at the government level, the CCDR-N and municipal leaders, guiding territorial policies and strategies and aligning urban and economic challenges between institutions. In the industrial and business sector, AIMinho and CITEVE are crucial partners in linking technological innovation and production requirements, thereby fostering the competitiveness of local companies. The University of Minho is also an essential institution, contributing to research and applied knowledge.

In addition to these fixed actors, the association benefits from the participation of other partners, whose integration is defined according to the working groups, guaranteeing a flexible and adaptable approach to the specifics of each project.

Mechanisms

The project itself is seen as an ecosystem integrated with all spheres of urban development. Therefore, it seeks integration and cooperation between the population, municipalities, civic, business and knowledge stakeholders, and supranational entities. The Quadrilateral Association carries out its activities from a flexible and collaborative structure, with one person coordinating various working groups made up of technicians and representatives from the municipalities and partner institutions.

In terms of decision-making within the municipal cooperation initiative, the now five municipalities work together to define strategic priorities and pursue initiatives that align with their collective interests, i.e., decision-making is based on multilateralism and strategic consultation, involving negotiations and adjustments according to common interests. However, although there are structured policies and strategic documents, mainly due to their integration into national or EU programs that require adherence to formal spatial planning regulations, decision-making remains flexible, driven by the dynamic nature of regional developments rather than strict institutional mandates.

Opportunities and challenges

The Urban Quadrilateral focuses mainly on improving mobility and fostering economic cooperation at the inter-municipal level while also addressing urban planning and sustainable territorial development. However, it is important to note that social policies and housing issues are a relatively minor part of its current agenda, indicating a potential need for a wider approach to the project framework that can effectively integrate social issues more comprehensively.

Beyond investments in regional mobility and general accessibility, this inter-municipal cooperation should also prioritize aligning sectoral policies, as well as improving coordination and strengthening commitment to local autonomy in planning processes. Persistent disparities between municipalities and parishes, such as uneven public space requalification, insufficient pedestrian infrastructure, and unequal access to health and education services, underscore the necessity for tailored responses to local needs. These spatial inequalities challenge the applicability of the 15-minute city principles, particularly in areas marked by dispersed urban occupation.

This reflects key concerns in multi-level governance and highlights the historical underrepresentation of policy domains within regional agendas. While the principles of the 15-minute city, particularly those related to proximity and sustainable mobility, are directly referenced, the others remain implicit within the strategic objectives of the Quadrilateral. Nonetheless, in favor of its multi-scalar interaction of actions, the initiative favors strong connectivity between urban areas and, in turn, cooperation among them.

The territory continues to face challenges, such as population dispersion and limited public transport integration, resulting in a high reliance on private cars. The absence of well-integrated multimodal mobility policies has further hindered the adoption of sustainable transport solutions. Despite the barriers, there is a growing institutional commitment to improvements in this area, with significant opportunities for the future implementation of Bus Rapid Transit (BRT).

The BRT project, initiated by the municipality of Braga and extended to Guimarães through a joint technical coordination protocol, aims to provide faster and more reliable intra-urban and interurban connections, reducing travel times and dependence on the car, particularly in corridors with high commuting flows. As part of a broader regional strategy for spatial planning and service distribution, if extended to the region, it will present better internal connectivity and greater regional integration, benefiting a wide range of stakeholders by creating new centralities and reducing the pressure on the central areas of the municipalities, reinforcing the polycentric potential of the region.

At the same time, the Urban Quadrilateral has also promoted smart mobility projects, including the development of a regional digital platform that enables multimodal travel planning, integrated ticketing, and real-time information on public transportation. Developed in collaboration with academic institutions, it lays the foundation for a more coherent and user-centric mobility system. However, disparities in digital infrastructure and digital user literacy between municipalities may affect their uptake.

Regarding the Quadrilateral's capacity, its broad scope of action allows it to drive forward the modernization of regional infrastructure and position itself at the forefront of this type of association. However, it lacks complete autonomy in its implementation, as it relies on external (European or national) funding and must align with all relevant governance frameworks. Additionally, implementation tends to be fragmented and time-consuming, making it challenging to bring integrated solutions to fruition, especially when local political cycles are not aligned.

Overall, the Urban Quadrilateral contributes to the formation of a more balanced and interconnected urban system in Portugal, serving as a model for other polycentric metropolitan regions and demonstrating the benefits of strategic inter-municipal cooperation in improving mobility, economic synergy, and regional development.

Conclusions/Reflection

The governance system reflects a multi-level hierarchical management model, marked by the prominence of the EU and the state in establishing guidelines and funding. Intermunicipal entities and municipalities (in a sectoral way) also emerge as the main coordinators of the cases analyzed. There is a distribution of competencies favoring the higher levels, but relational integration between actors remains insufficient. Added to this is the limited financial capacity of local players, who are subject to short deadlines and higher-level guidelines, often external to the territory (Ferrão et al., 2015).

In addition, civil society shows little active participation, with few co-decision practices and limited public expression of interests. While private actors and associations are relevant in certain sectors, they lack significant influence on structural decisions, as noted by Dallabrida (2015), who highlights the ineffectiveness of territorial associations for participatory governance. However, there has been a positive evolution in entrepreneurial actions that implement practical measures, unlike plans coordinated solely by public entities, which often lack effectiveness. In this regard, the actions taken by the Urban Quadrilateral (now the Pentagon) can demonstrate, in some instances, the potential of proactive governance to foster a more sustainable and accessible urban environment. The digital application for travel in public transport and efforts related to the BRT are prime examples of improving accessibility and proximity, which align with the broader vision of the 15-minute city model.

Among the structural challenges is the weak capacity for coordination and articulation among involved actors. Despite the consolidation of collaborative networks, which favors the development and design of strategies, their implementation often underperforms. Therefore, coordination among institutions remains superficial and unstable, which, combined with constant changes in government policies and practices, jeopardizes the effectiveness of territorial cohesion actions. A clear example of this is the persistent difficulty in coordinating public transport services between local and regional levels, notably due to the leading role asserted by the major municipalities, which in some cases refuse to cooperate with CIM in managing and granting transport concessions.

On the other hand, the decision-making process generally shows a good capacity for analysis and definition but lacks effective communication and continuous negotiation. Leadership, although occasionally effective, shows limitations in terms of network governance, particularly given the increasing complexity of implementing public policies outside urban areas (Ferreira, 2022).

In conclusion, there is an increasing intermunicipalisation, but local governance often lacks influence on strategic decisions. So, there is an urgent need to overcome structural constraints and invest in effective participation mechanisms to address the increasing complexity of new urban challenges. Furthermore, urban democracy must be strengthened by improving governance practices within a stronger political framework that involves the participation of a diverse range of actors in ongoing discussions (Ferrão et al., 2015).

Socio-spatial Analysis

Selection of focus areas

The municipalities of Braga, Guimarães, and Famalicão, located within the Cávado and Ave Intermunicipal Communities in northern Portugal, form a dynamic regional cluster near the country's second-largest urban center. Their proximity to Porto, an international airport, and a strong regional infrastructure network—comprising major highways and railway connections—supports both economic activity and high levels of (car-based) commuting, within vastly different urban morphologies and land use patterns in the area. This region hosts a high concentration of young and qualified residents, especially in Braga, contributing to sustained population growth while housing remains more affordable than the national average.

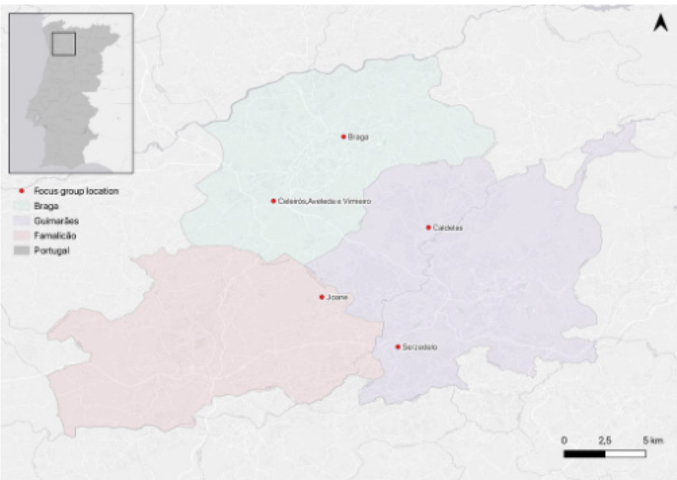
The key hypothesis for selecting the focus group areas was to choose periurban places with constant public transport accessibility/reduced non-peak service. We have also defined other tree criteria:

- Selection of different demographic patterns and density, including population clusters with distinct social aspects and land occupation features.

- Selection of a control case, eliminating proximity to a main national road, while maintaining average population and density values. This should be a case where public transport service is insufficient but not completely absent.

- Ensuring minimum comparability between the four case studies, through the analysis of initial physical, social, and economic characteristics.

Figure 43: Municipalities of interest and focus group locations. Source: Own elaboration with ESRI and DGT-CAOP



The selection of the four parishes—UF Celeirós, Aveleda e Vimeiro (Braga), Caldelas (Guimarães), Joane (Vila Nova de Famalicão), and Serzedelo (Guimarães)—is grounded in their distinct yet comparable socio-spatial characteristics within the peri-urban context. Three of these are situated along major national roads (N14, N101, and N206) that connect the urban centres of Braga, Guimarães, and Vila Nova de Famalicão, where public transport is available consistently during peak hours. These locations allow for the observation of dynamics influenced by accessibility, enabling the exploration of spatial justice and mobility issues central to the 15-minute city concept. In contrast, Serzedelo serves as a control case, displaying similar demographic features but with more limited transport accessibility and greater peripherality.

The selection also ensures variability in demographic composition, density, and economic structure while maintaining comparability. This enables a multifaceted analysis of peri-urban transformations and public service provision. By including both growing and declining population contexts, and parishes with differentiated sectoral employment profiles, the analysis can better account for the interplay between accessibility, urban influence, and territorial cohesion.

Demographic variables such as population size, age structure, and population density reveal differences in scale and life-cycle composition. Caldelas and Joane present the highest density values, suggesting more consolidated peri-urbanization processes, whereas Serzedelo, with a lower population and higher proportion of elderly residents (23.46%), shows signs of demographic aging and peripheral decline. In contrast, Caldelas stands out for its positive population growth (+10.15% between 2001 and 2021), while Joane and Serzedelo experienced decline, indicating divergent territorial dynamics.

Regarding the economic structure, the parishes display similarly low levels of employment in the primary sector, consistent with their peri-urban character. However, differences emerge in the weight of secondary and tertiary sectors: Celeirós and Joane maintain a stronger industrial base (secondary sector), whereas Caldelas shows a more service-oriented profile (58.6% in the tertiary sector), possibly reflecting proximity to urban cores and better connectivity.

Finally, the indicator of travel time by public transport to the respective city centres illustrates significant disparities in accessibility. While two of the parishes are within 20–25 minutes of travel, Joane and Serzedelo record a higher travel time, suggesting critical issues of transport provision, despite being located along a main road corridor.

Focus group participants: key figures

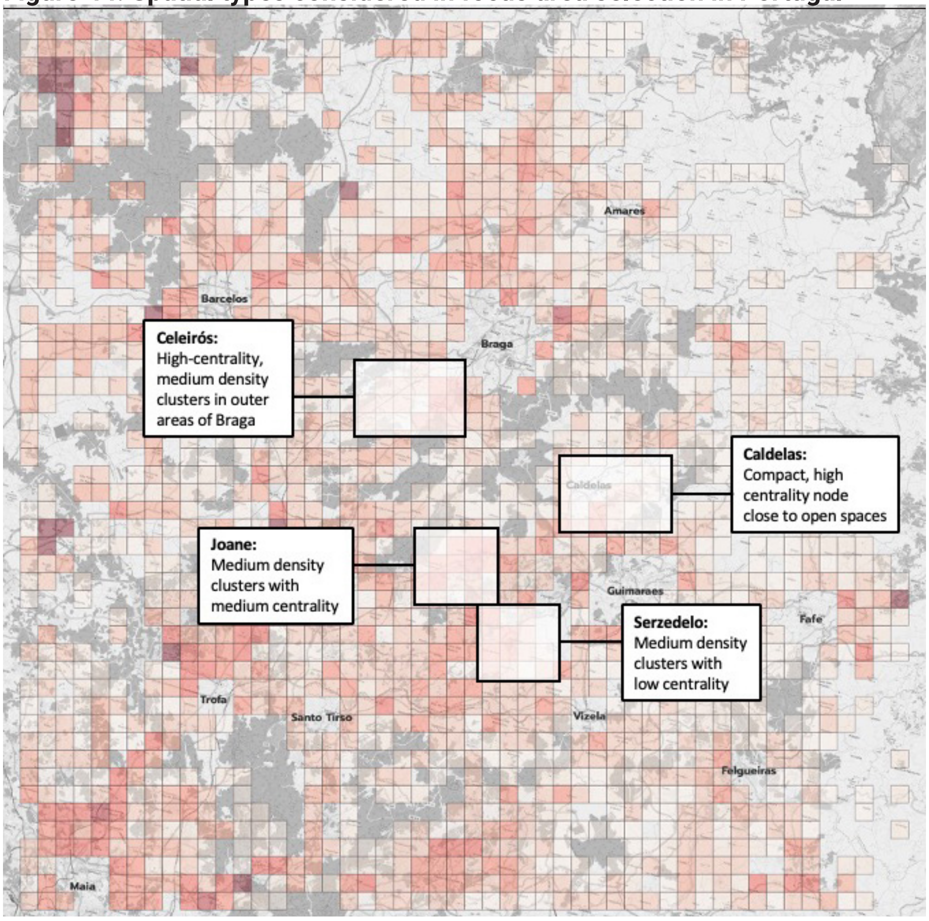
In total, 66 participants were involved across our study area. The focus groups targeted four main groups: young people (aged 18–24), elderly individuals (aged 64 and over), working adults, and informal caregivers.

The youth group was engaged through two separate focus group sessions held at Caldas das Taipas Secondary School in Guimarães, as part of a Geography class activity. A total of 46 students were questioned about their daily mobility habits: 19 female, 26 male, and 1 who did not report their gender.

The working adult group was involved in two sessions as well: one held at the Lúcio Craveiro da Silva Library in Braga, and another at the Serdezelo Parish Council in Guimarães. A total of 11 participants took part (2 male, 4 female, and 1 who preferred not to answer), most of whom were highly educated, reflecting the connection to the local municipality (municipal employees or researchers).

The elderly group participated in a focus group at the Joane Parish Council in Vila Nova de Famalicão, which included five retired residents. The group was composed

Figure 44: Spatial types considered in focus area selection in Portugal



Note: the demarcations of the areas of interest in this image depict the peri-urban context of the focus group locations and do not necessarily correspond to the exact places where the study was conducted.

of three men and two women, all of whom were active figures in the local community.

A focus group with informal caregivers was conducted at the Celeirós, Aveleda e Vimeiro Parish Council in Braga. This group consisted of individuals with strong community involvement and high educational qualifications, who responded to a public invitation issued by the parish council.

Main results of focus groups

The most important results of the focus groups are presented below. The main aim was to answer the three questions:

- Which relations exist between the daily practices of people using and reaching certain amenities and the places/regions they live?
- Which challenges of proximity and accessibility have been discussed? How do different groups use mobility in the region?
- How does the use of amenities generally differ between the focus groups?

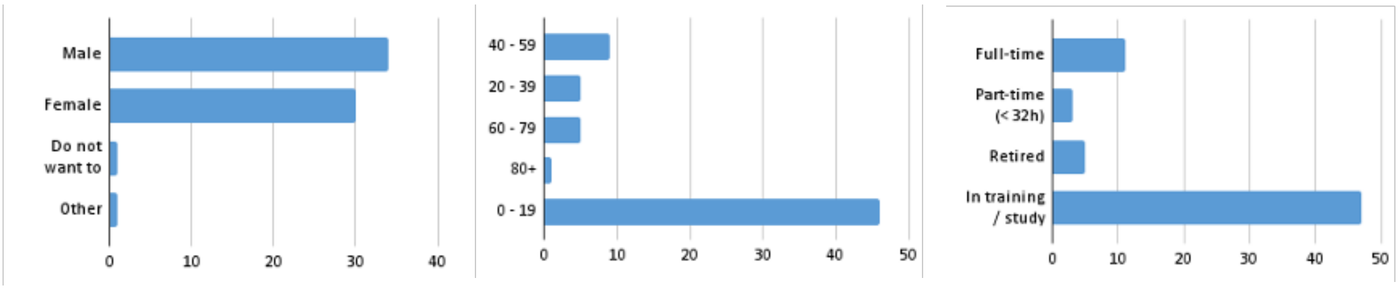
Overview of the discussion

Across all groups, the car emerges as the dominant mode of transport, often described as essential due to the lack of reliable public transportation, poor infrastructure, and challenging topography. It was notable that cars enable multitasking — commuting, dropping off children, shopping — especially in contexts where topography and distance are barriers to walking or cycling. But there are some problems with individual transportation such as traffic and parking, especially in Braga city center.

Table 11: Comparative Indicators of the Selected Case Studies

Indicator	Portugal	Braga	Guimarães	V.N. Famalicão	UF Celeirós, Aveleda e Vimeiro (Braga)	Caldelas (Guimarães)	Joane (V.N. Famalicão)	Serzedelo (Guimarães)
Corridor	-	-	-	-	N14	N101	N206	- (Control)
Population (Nr.)	10343066	193324	156830	133534	6,74	5,72	8,09	3,63
Age 0–14 (%)	13,84	13,84	12,49	12,81	13,94	14,05	12,79	11,18
Age 65+ (%)	18,19	18,19	19,98	19,68	19,13	17,85	17,85	23,46
Population Density (Nº/km²)	113,00	1064,70	649,30	665,10	890,62	2340,01	1086,11	665,11
Population Growth 2001–2021 (%)	-2,07	6,52	-0,80	-0,22	1,06	10,15	-1,77	-5,84
Pop with at least bachelor's degree (%)	11,678	15,205	8,988	9,386	8,885	10,136	8,583	5,647
Unemployment rate (%)	8,13	7,61	7,40	6,90	5,93	6,72	5,91	6,72
Annual gross income (Nr.)	10273,00	10545,00	9250,00	9436,00	n/d	n/d	n/d	n/d
Travel Time to City Centre (min.)	-	-	-	-	23	23	30	38
Cars per household (Nr.)	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d

Figure 45: Focus group participants' profile. Source: Own elaboration



The bus system is perceived as inadequate: full during peak hours, not aligned with daily routines, and insufficiently integrated with isolated villages. Long waiting times, transfer issues and a lack of intercity options were frequently noted. The necessity to improve public transport for sustainability and accessibility reasons was noted.

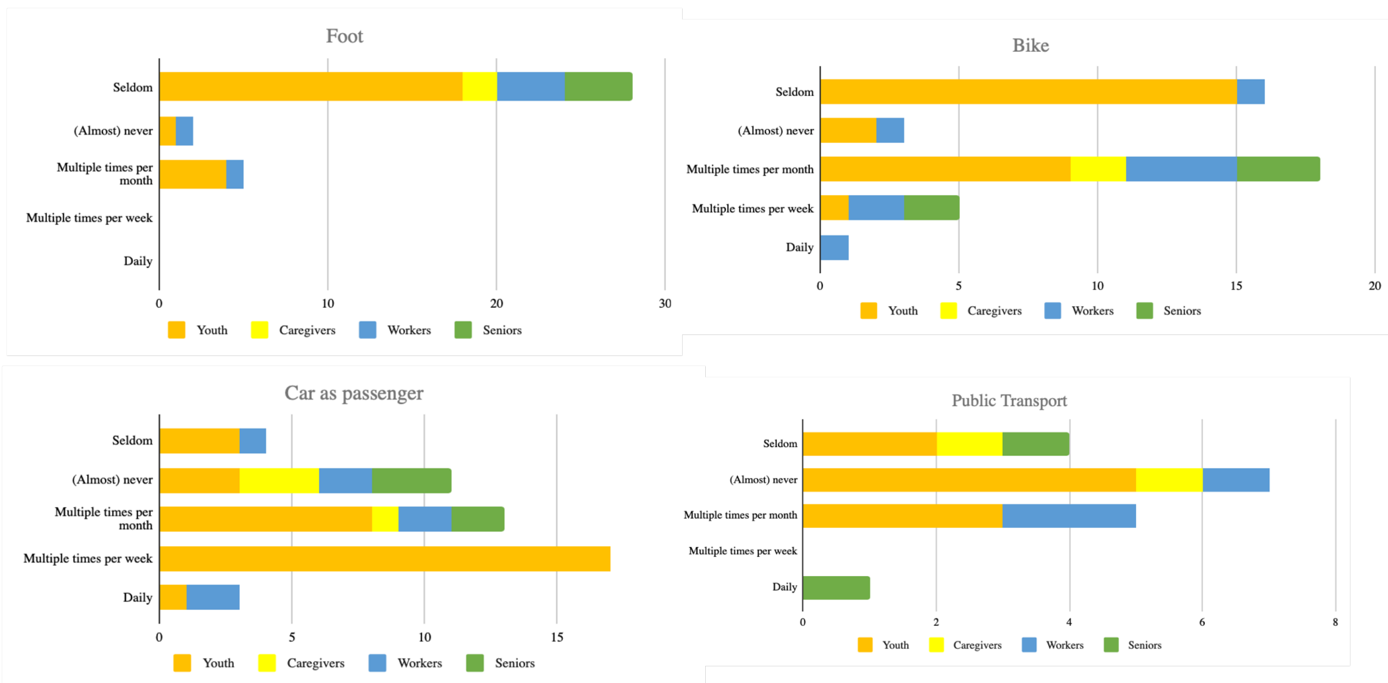
Cycling and walking, while seen as desirable and even quicker alternatives in some cases (e.g., electric bikes), are hindered by safety concerns, lack of infrastructure, and fear of traffic. Residents mentioned that bike lanes are either lacking or unsafe, and walking is often discouraged by poor sidewalks and lighting, especially affecting groups with low mobility.

Individuals aged 0 to 19, mostly students, rarely use their own bicycles for transportation between their daily activities and seldom rely on walking or public transport, while car usage is common. Among those aged 20 to 39, car use as drivers becomes even more common, though public transport and bicycles remain relevant. From age 40 onwards, daily car use predominates—especially for those employed—while older adults (60+) gradually shift toward public transport and walking, with car use declining significantly by age 80.

Among males aged 40 to 79, there is a strong pattern of frequent car usage, primarily as drivers. Females in the same age range also drive regularly, though their transport habits show slightly more diversity, including greater use of public transport and walking. Among younger individuals (0 to 19), females and males tend to rely more on cars as passengers, while males show a slightly higher frequency of bicycle or motorcycle use.

Car usage as drivers is the dominant mode among adult working males and females, especially between ages 40 and 79. Younger individuals show more variation, with females walking and using public transport more often, while males slightly favor bicycles or motorcycles.

Figure 46: Focus group participants' mobility profile. Source: Own elaboration



Overall, cars (as drivers) are the most frequent mode for working adults, public transport and walking are preferred by retirees and youth, bicycles are common among students, and being a car passenger is less common but relevant for those who do not drive. Household composition appears to influence acceptable travel times, with larger households (3 or more members) tending to tolerate longer durations, likely due to more complex logistical needs. Gender also plays a role, as younger women demonstrate greater tolerance for public transport compared to men in the same age group. Interestingly, elderly men living alone continue to rely on cars, possibly out of necessity and limited access to alternative modes.

Life in the area is generally perceived as peaceful and safe, marked by a strong sense of community and close social ties maintained through shared spaces such as cafés, churches, and public green areas. However, despite this social cohesion, residents face persistent challenges in terms of liveability and access to essential services. A lack of local amenities often leads residents—especially younger ones—to rely on nearby centers such as Braga for work, services, and social activities.

Key concerns include limited investment in infrastructure and social spaces, particularly in peripheral areas. Public parks, commonly used for outdoor sports, often lack adequate facilities. There is a pressing demand for more structured leisure and cultural infrastructure—such as libraries, community centers, and public sports facilities—as well as regular cultural programming and local markets. These are seen as vital not only for improving the quality of life but also for strengthening community engagement and cohesion across all parishes.

Daily routines are strongly shaped by work-related mobility and reliance on private vehicles. Families often manage complex schedules, with parents responsible for transporting children to school during the day and to extracurricular activities in the evening, while also supporting elderly relatives. This dependency on cars not only affects individual and family dynamics but also contributes to traffic congestion during peak hours, particularly around schools. These daily mobility patterns generate stress for residents and highlight the urgent need for better accessibility, as well as a cultural shift regarding children's daily travel habits.

Which relations exist between the daily practices of people using and reaching certain amenities and the places/regions they live?

Residents of Celeirós and Serzedelo emphasized the calm and peaceful environment of their parishes, which they greatly value, particularly in contrast to the busier pace of Braga and other cities. However, this tranquility is offset by a lack of local services and adequate infrastructure, creating significant challenges in daily life. All groups expressed a shared concern regarding the need to expand the availability, frequency, and reliability of public transportation. In Celeirós and Braga, residents highlighted the need for more frequent buses, improved scheduling, and better route connections. In Serzedelo and Joane, the issue was even more critical, with participants reporting a complete absence of public transport, affecting not only workers but also students and the elderly. This lack of efficient transportation options forces most residents to rely on private vehicles.

Mobility is further restricted by the limited availability of essential services within walking distance—such as pharmacies, grocery stores, and leisure facilities—posing daily challenges, especially for working residents with tight schedules. While residents of central Braga generally expressed satisfaction with their location, participants from Serzedelo and Celeirós emphasized the need to improve accessibility and advocated for strategies to reduce car dependency, particularly when accessing local services. Participants from Caldas das Taipas and parts of Celeirós noted that they prefer to travel to Braga for sports, entertainment, and socializing, given the limited leisure opportunities available locally .

Elderly residents in Joane can carry out daily tasks on foot, due to their interest in nearby public spaces such as parks, cafés, and libraries. However, there remains a need for cultural and commercial revitalization, suggesting that while basic services are present, there is a lack of vibrancy and diversity in the local offer. Similar concerns were raised by youth and caregivers, who pointed to the lack of regular public events in their parishes. Across all groups, there was a shared belief that the community would benefit from more frequent events and inclusive public spaces, which could strengthen social ties and foster a greater sense of belonging.

Participants from all parishes reported concerns regarding the poor condition of public infrastructure, including a lack of adequate street furniture and poorly maintained sidewalks. In Joane, elderly residents also stressed the need for better accessibility to healthcare services and public buildings.

Looking forward, participants proposed the rehabilitation of parks and the promotion of community events in green areas as strategies to improve social life and connectivity within their communities. Among young people in Caldas das Taipas, there was a willingness to adopt active modes of transport, such as cycling, if conditions were improved—namely, through safer streets and the introduction of dedicated bike lanes. Moreover, they expressed a strong desire for recreational and social amenities, such as swimming pools, cinemas, and bars.

Which challenges of proximity and accessibility have been discussed? How do different groups use mobility in the region?

The use of the car is strongly influenced by complex daily routines, particularly among workers with tight schedules, who often rely on it for flexibility. Cars are also essential for reaching places that are either underserved or not served at all by public transport, such as small villages and peripheral areas. Even for short distances, the car is commonly used due to the lack of viable alternatives. However, the disadvantages are also clear: traffic congestion, especially near schools and central areas, makes driving time-consuming. Parking difficulties in urban areas and limited access to certain destinations like sports facilities further reduce the attractiveness of this mode of transport. Cars are also important to reach the closest centre or the city of Porto. Sometimes the reason is related to tight schedules or the absence of proper public transportation. Youth complained about overcrowded buses and elderly about their reliability. Although it's possible to reach city centers with buses and trains, when cars are present in the daily routine, the cultural resistance often acts as a barrier to a behavioral shift to alternatives.

Active modes of transport such as walking and cycling are mostly used for short distances or leisure. Young people tend to use bicycles recreationally, while elderly residents appreciate walking to local cafés and shops. It was also mentioned that the region's hilly topography makes active travel physically demanding, and the lack of street lighting, proper signage and dedicated paths creates unsafe conditions due to shared space with cars and heavy vehicles. Poor infrastructure, combined with these safety risks, contributes to the underuse of active mobility options despite their potential benefits.

How does the use of amenities generally differ between the focus groups?

There are noticeable differences in how residents interact with and experience their living environments. The elderly, especially in rural areas like Joane, enjoy a peaceful and social life, with cafés, churches, and weekly markets serving as important social hubs where they maintain connections with the community. However, access to essential services in these areas is limited, and many face difficulties due to poor road conditions and inadequate infrastructure, which make accessibility challenging. In contrast, in more urbanized parts of Guimarães, such as the city center, elderly residents have better access to services but still struggle with mobility issues, mainly due to poorly maintained sidewalks and inaccessible buildings.

Young people living in more peripheral areas often feel disconnected from their environment, primarily due to the lack of social spaces and commercial amenities. Dependent on their parents for transportation with cars, they often rely on nearby cities like Braga for socializing and accessing services. This is in stark contrast to urban neighborhoods, where youth have more immediate access to entertainment options. However, urban areas also face challenges such as congestion (as the caregivers and workers indicated) and a lack of dedicated spaces for young people. As a result, there is a need for local initiatives, particularly those that incorporate safe and efficient public transport, as well as sports facilities, to strengthen the sense of community and improve youth independence.

Workers, especially in smaller parishes, face complicated daily routines. The limited public transport options force them to rely heavily on private vehicles not only for commuting to work but also for transporting children to school, extracurricular activities, and medical appointments. In comparison, workers in more urbanized parts of Braga benefit from better public transport options, although the need for private vehicles persists as they are still necessary for various tasks. This highlights a clear divide in terms of accessibility and mobility in our case study.

Many peripheral neighborhoods urgently need more local commerce and public spaces to reduce the dependence on traveling for basic needs. These areas, particularly on the outskirts, lack the necessary infrastructure to create vibrant, self-sufficient communities. In contrast, more central neighborhoods, while benefiting from a wider range of services, still face challenges such as overcrowding and lack of community spaces.

Other relevant insights

The region holds a unique significance within the Portuguese context, characterized by both socioeconomic vitality and territorial complexity. With this regional context, Celeirós (Braga), Caldelas (Guimarães), and Joane (Famalicão) represent interconnected peri-urban areas, while Serzedelo stands out as a control case marked by its disconnection from the municipal urban center, Guimarães.

This disconnection is also reflected in the demographic composition: Serzedelo shows the highest concentration of elderly residents, whereas Caldelas and Joane have higher population densities. Joane also exhibits notable development in the secondary sector. However, this indicator does not appear to influence accessibility to the urban core of Famalicão.

The connection distance may partly explain the apparent lack of governmental attention to Serzedelo, where residents have expressed the need for improved public health services and better walkability conditions—specifically, more pedestrian crossings, sidewalks, and adequate street lighting.

As previously noted in the context of Caldelas, mobility patterns from focus groups reveal a gender-based division in transport modes: men and women are more inclined to use individual transportation, whereas young women show a tendency to rely on active transportation. Across all parishes, the use of private transport among males shows a progressive increase with age. Women tend to rely more on private transport between 40 and 60 years of age because of their daily activities with children and work, but beyond that, there is a clear transition toward more frequent use of walking and bicycles.

The gender dimension also reveals that women tend to be more flexible with regard to travel time, which may be influenced by the number of household members. Poor mobility conditions, low reliability, and the lack of essential services and attractions might impact the predominant use of public transport by the female gender.

The Netherlands - Groenemetropool-Foodvalley Region

Context

Historical overview

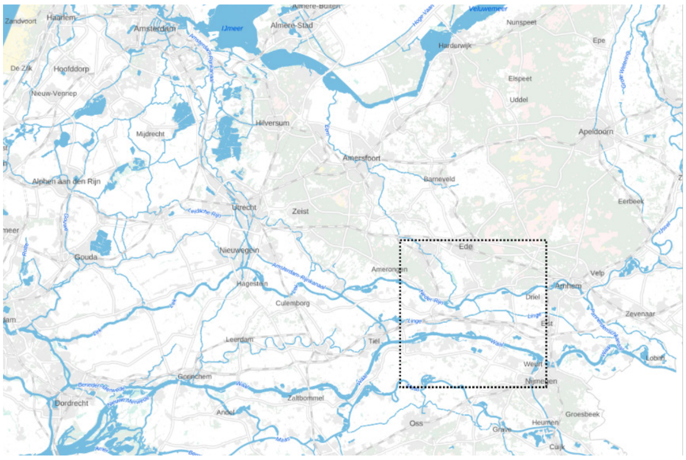
The Arnhem–Nijmegen area is one of Europe's oldest continuously developed landscapes. Nijmegen started as a Roman military camp and in 98 AD it was one of two Dutch settlements that received Roman city rights. Arnhem, 15 km upstream on the Nederrijn, gained city rights in 1233 and joined the Hanseatic trading network in 1514, benefiting from the commercial activities in the Rhine region. In the nineteenth century, the Rhine/Waal corridor industrialised rapidly: steam-powered brickworks, paper mills and metal works lined the rivers, and the Amsterdam–Utrecht–Arnhem–Germany railway (opened during 1843-1856) and Maas–Waal canals integrated Arnhem and Nijmegen into a national transport grid. Meanwhile, the high sandy plateau to the north remained sparsely populated, with heath and forest (the Veluwe is the largest nature area in the Netherlands).

The Second World War destroyed most of both river cities: In 1944 Arnhem's centre was destroyed, while Nijmegen suffered heavy bombing. Post-1945 reconstruction, coupled with welfare state housing programmes, created extensive suburbs along new motorways, and at district railway stations, laying the foundations for today's polycentric urban pattern.

Especially after WWII, the impact of the state on the national spatial organisation set the Netherlands apart from other (European) countries (Spit & Zoete, 2006), and since the 1970s, regional planning has deliberately balanced growth with landscape preservation. The Room-for-the-River projects, initiated in 2006, restored nature along the rivers, the Veluwe became a national park buffer, and peri-urban municipalities such as Ede, Wageningen

Figure 47: Historical map (1889 Kaart ten behoeve der cavaleriemanoeuvres) showing Ede and Veenendaal as small, isolated settlements. The Utrecht–Arnhem railway (diagonal line) existed but ran far south of Ede's village core. The Veluwe forest to the east was largely uninhabited land.

Figure 48: Location of the study area in the Netherlands.



and Barneveld became self-contained smaller (and greener) municipalities between the two larger cities. In 2023 the Dutch government designated the area as a NOVEX key development region. 100.000 new dwellings need to be planned in transit-oriented locations and preferably in a compact manner. All tiers of government must coordinate to realise this massive scaling up.

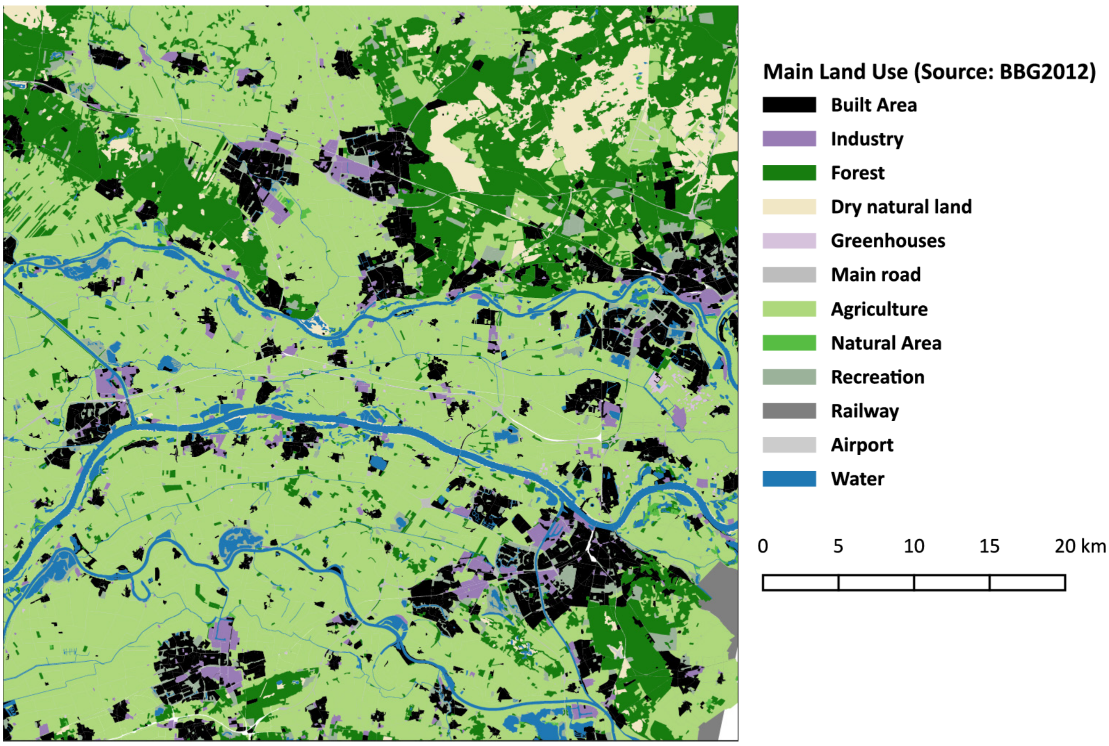
The municipality of Ede originated as a medieval village on the western edge of the Veluwe. For centuries, it remained a modest rural community. The station (part of the Amsterdam– Arnhem railway) opened in 1845. It was built at a distance from the old village, but spurred growth. Ede's expansion accelerated in the early 20th century with the establishment of new industries (e.g., the ENKA rayon factory in 1922) and military bases on the heathlands. In the post-war decades, Ede's urban footprint grew rapidly: the small 19th-century town evolved into a sizeable municipality with new residential neighbourhoods spreading into former farmland and heath. By the 21st century, Ede and its surrounding villages started to merge into a semi-urban cluster. However, open green spaces (forests, heath, and agricultural land) still separate the major built footprints.

Geographical and socio-economic context

Spatial structure

The region sits between the densely populated Randstad (west) and Germany's Ruhr (east). Two parallel East-West river corridors, the Nederrijn and Waal, carry trans-European freight, while the wooded Veluwe Plateau and the fertile Gelderse Valley (the Foodvalley), form a north-south ecological spine. Settlement is therefore strongly ribboned along rail & motorway axes (east-

Figure 49: Spatial Structure (source: Bodem Grond Gebruik BBG)



west: A12/A15 and the rail corridor; A50 north-south; ICE Arnhem-Duisburg) yet compact historic centres (Arnhem, Nijmegen, Wageningen) and post-war satellite towns such as Ede and Veenendaal, form more concentrated development along those ribbons. The preservation of green wedges creates a city-in-landscape feeling.

Mobility and connectivity

The Arnhem–Utrecht railway line (with Ede-Wageningen station as a node) and the A12/A30 connect the region, including to the Randstad (Amsterdam is approximately one hour west by train). However, in the more rural parts of the Foodvalley, public transport is limited and many smaller villages lack rail service. Cycling infrastructure is well-developed in towns, but drop in outlying areas. As a result, the car is the dominant travel mode for regional mobility, especially for commuters. Commuting flows link the main cities to each other and the Randstad: in recent years a number of residents from the Randstad have relocated to Ede/Foodvalley (seeking affordable housing and quality of life) while often still working in the west. This contributes to substantial daily commuting traffic on the highways and peak-hour trains (Meer Landschap Meer Stad, 2023; Regionaal Perspectief Landelijk Gebied, 2024; Tordoir et al., 2015; Venema et al., 2022).

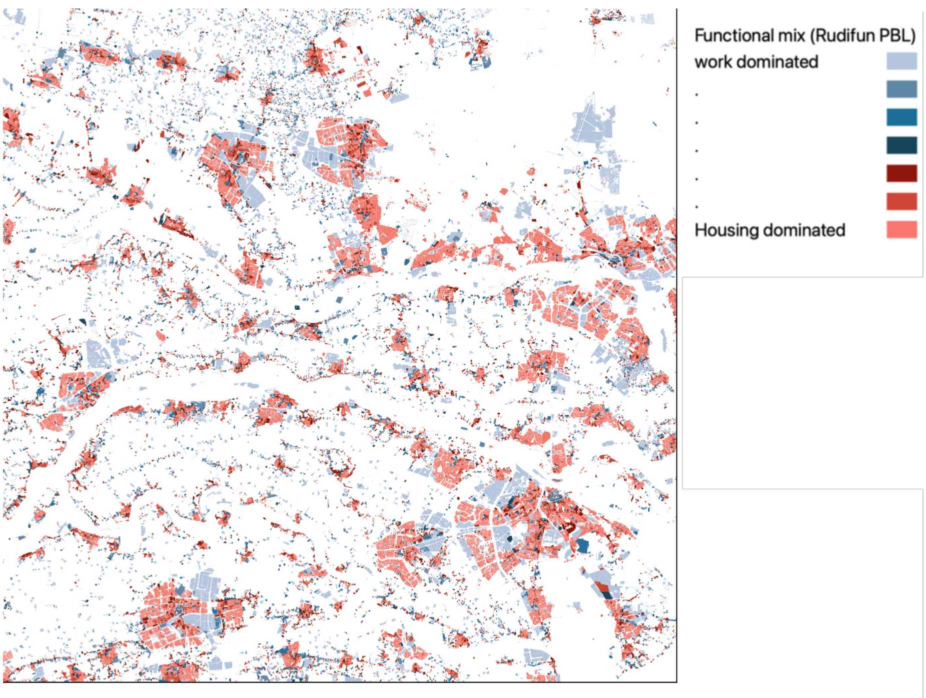
Economy

The regional economy is characterised by a strong agri-food and technology sector. The Arnhem–Nijmegen–Foodvalley area brands itself as a hub of Food and Health innovation. In the Foodvalley subregion, agriculture and food industries are key, with intensive farming (dairy, poultry) as well as food processing and agri-tech firms. Wageningen University & Research (WUR) anchors a cluster of research institutes and startups. The World Food Centre, a new innovation campus focused on food sustainability, is located in Ede. The economy has nevertheless diversified across manufacturing, logistics, and a growing service sector. The region provides fast connections to the Port of Rotterdam, Schiphol Airport, and Germany's Ruhrgebiet. Tourism and recreation also contribute: the surrounding Veluwe natural area brings in visitors from the densely populated west for camping and cycling (Meer Landschap Meer Stad, 2023; Regionaal Perspectief Landelijk Gebied, 2024).

Housing and demography

Population growth in the region is the result of three main trends: students and knowledge workers drawn to Radboud University (Nijmegen) and Wageningen University & Research; households relocating from the dense (and expensive) Randstad for more affordable family housing; and ongoing suburbanisation. Housing values in nodes well connected to the train network (Arnhem-Centrum, Nijmegen-Oost, Ede-Centrum) are increasing, whereas some peripheral municipalities still offer lower prices, resulting in spatial socio-economic gradients. The NOVEX sets a target for 100.000 new housing dwellings by 2040 in the form of inner-city densification and mixed-tenure new quarters near stations to curb sprawl.

Figure 50: Functional mix (work and housing mix) (source: Rudifun, PBL)



As of late 2024, the municipality of Ede has 124.225 inhabitants, up from approximately 118.500 in 2021 (BRP gemeente Ede). Population growth has been moderate but steady. The age profile is relatively younger than at the province level (see Figure 50): the median age in Ede is around 40 years, and the share of youth under 20 is comparable to the proportion of residents aged 65 or older, both about 20%. The educational level is mixed; the proximity of Wageningen University means that many highly educated professionals and students reside in or near Ede, yet some rural villages have more traditional, agrarian communities. Income and employment rates are close to the Dutch average; poverty is not high, though there are pockets of lower-income households in certain neighbourhoods. Unemployment remains relatively low (3%), and labour force participation is high (75%), thanks in part to the region's diverse economy.

Administrative context

Governance in the Netherlands is organised on multiple scales, all of which are relevant to this region. National spatial policy has recently become more directive: after a period of decentralisation, the Dutch national government reclaimed a more assertive spatial planning mandate. In 2020 the Cabinet presented the Nationale Omgevingsvisie (NOVI), articulating a long-term framework for four interlocking challenges: climate adaptation and the energy transition, sustainable economic growth, strong and healthy cities and regions and future-proof rural development. Building on NOVI's strategic vision, the State subsequently launched NOVEX (2022), identifying priority territories where national, provincial, regional and municipal authorities must operate as a single planning "ecosystem". The Arnhem–Nijmegen–Foodvalley corridor is one of these regions.

At the provincial level, the region spans parts of two provinces, primarily Gelderland (which includes Arnhem, Nijmegen, Ede, Wageningen) and a portion of Utrecht province (including Veenendaal). Provincial governments play an important role in strategic spatial planning, environmental regulation, and infrastructure. At the regional/municipal level, there are established inter-municipal collaborations. The Groene Metropoolregio Arnhem–Nijmegen is a coalition of 17 municipalities (in Gelderland) that coordinates regional development

Figure 51: Population age distribution, Gelderland Province (source: CBS, 2023)

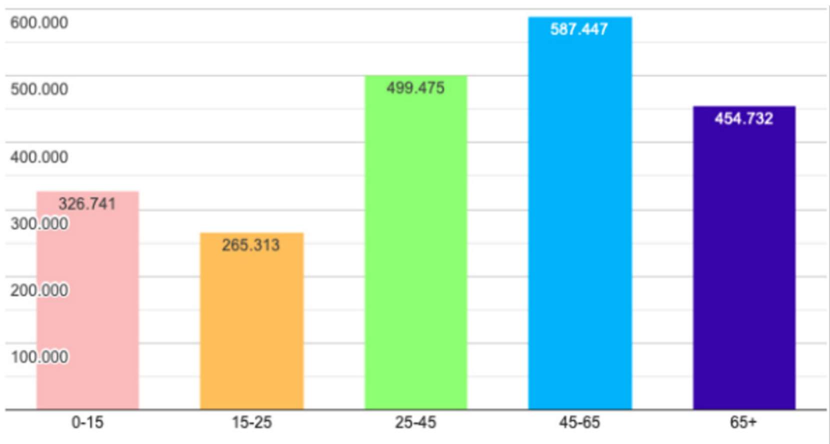
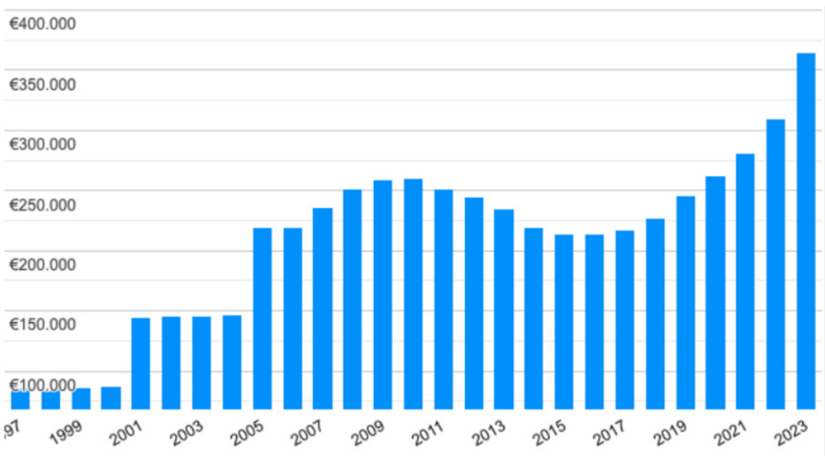


Figure 52: Average house prices, Gelderland Province (source: CBS, 2023)



for the Arnhem-Nijmegen metropolitan area. The Regio Foodvalley is a partnership of 8 municipalities focusing on economic development in the agri-food sector. These two regional bodies overlap in the NOVEX area and are working together (with the provinces and national government) on a unified Urbanisation Strategy.

Crucial actors in governance include the municipal governments, which handle local planning and services; the Provincial Councils, which set regional spatial frameworks; and the national ministries. In addition, the region's water boards are important stakeholders given the need for water management and nature restoration (there are protected Natura 2000 areas like the Veluwe that impose environmental limits). Also, agencies like Staatsbosbeheer (state forestry service) manage large nature reserves. The NOVEX governance model brings all these players together in negotiations.

Challenges connected to the 15mC principles

The Arnhem–Nijmegen–Foodvalley case illustrates several challenges in achieving 15-minute city principles, spanning mobility, housing, spatial planning, and socio-economic dimensions, as identified in regional policy documents, focus groups, and literature:

a. A core goal is reducing car dependency by providing convenient local alternatives. In this region, however, access to public transport and safe cycling infrastructure drops sharply outside city centres. Many smaller villages and outer neighbourhoods have infrequent transit service and are beyond a comfortable cycling distance to key services. This makes a car almost a necessity for commuting and errands. The challenge is to improve sustainable mobility options (e.g. expand bus routes, create "fast cycling routes" between centres, improve local amenities, so that residents of peri-urban areas can be closer to a 15-minute lifestyle. The region must address congestion and carbon emissions: major roads are busy with inter-city commuters, and while ambitious transit and bike projects are proposed (such as bicycle highways), substantial investment is needed to shift the modal split away from cars. Aligning the transport infrastructure plans with 15mC principles, prioritising accessibility and active travel, is an ongoing governance challenge.

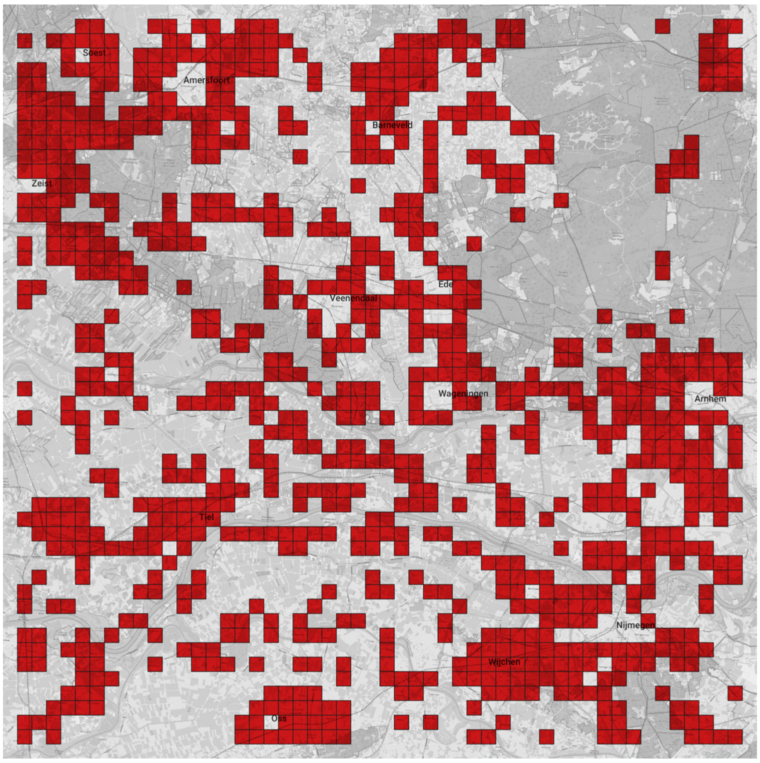
b. The region faces a housing affordability and supply crisis, with a nationally mandated goal to build approximately 100,000 in this NOVEX region by 2040. The pressure to develop new housing at scale can conflict with 15mC ideals if not managed carefully. Traditionally, Dutch suburban expansions (including around Ede) consisted of low-density, car-oriented estates, "VINEX"-style single-family home neighbourhoods that lack retail and mixed uses, forcing residents to drive for daily needs. Repeating that pattern would undermine 15mC objectives. The challenge is where to locate new housing and how to design these areas. Regionally, the easiest land for development lies on greenfield sites at the urban fringes, but building there can exacerbate sprawl and car reliance. There is strong policy emphasis on infill and transit-oriented development, yet land availability near existing centres is limited. Housing must cater to diverse groups (young families, students, seniors) and prices. Ede has a high owner-occupancy rate and insufficient social/midrange rentals, which leaves lower-income and younger people with fewer choices close to city amenities.

c. The NOVEX initiative stems from the recognition that fragmented local planning is insufficient to address today's spatial challenges. In this region, multiple critical objectives collide: the need for further urbanisation, with increases in housing and facilities, versus the need to preserve green landscapes and restore ecological systems. The Gelderse Valley is an environmentally sensitive area. Intensive farming and past development have put pressure on these ecosystems, so any new spatial interventions must be considerate of further impact on the natural areas and vulnerable ecosystems.

d. Another challenge is the jurisdictional complexity, as two provinces and more than 20 municipalities are involved, making it difficult to align planning and land-use plans. The new regional strategy aims to resolve this by having all levels negotiate where growth should occur and what infrastructure is required. Implementing a coherent plan encounters multiple challenges, such as legal barriers (for example, the Dutch Nitrogen Law has stalled many projects aimed at protecting Natura 2000 areas). In the Arnhem-Nijmegen region, high nitrogen emissions from agriculture could potentially impact housing construction.

e. A successful 15-minute city also depends on social inclusion and economic opportunity at the local level. The region faces challenging socio-spatial disparities. While the Foodvalley has a strong rural, even conservative identity (it lies in the Dutch 'Bible Belt', with a tradition of agrarian and religious communities), it is experiencing an influx of new residents from the urban West drawn by job opportunities or housing availability. The differences in lifestyles and needs are becoming visible: long-time village residents may be accustomed to driving to a distant supermarket or church, while new arrivals might expect better bike lanes, public transit, and nearby cafes and upmarket restaurants.

Spatial analysis
Case Netherlands

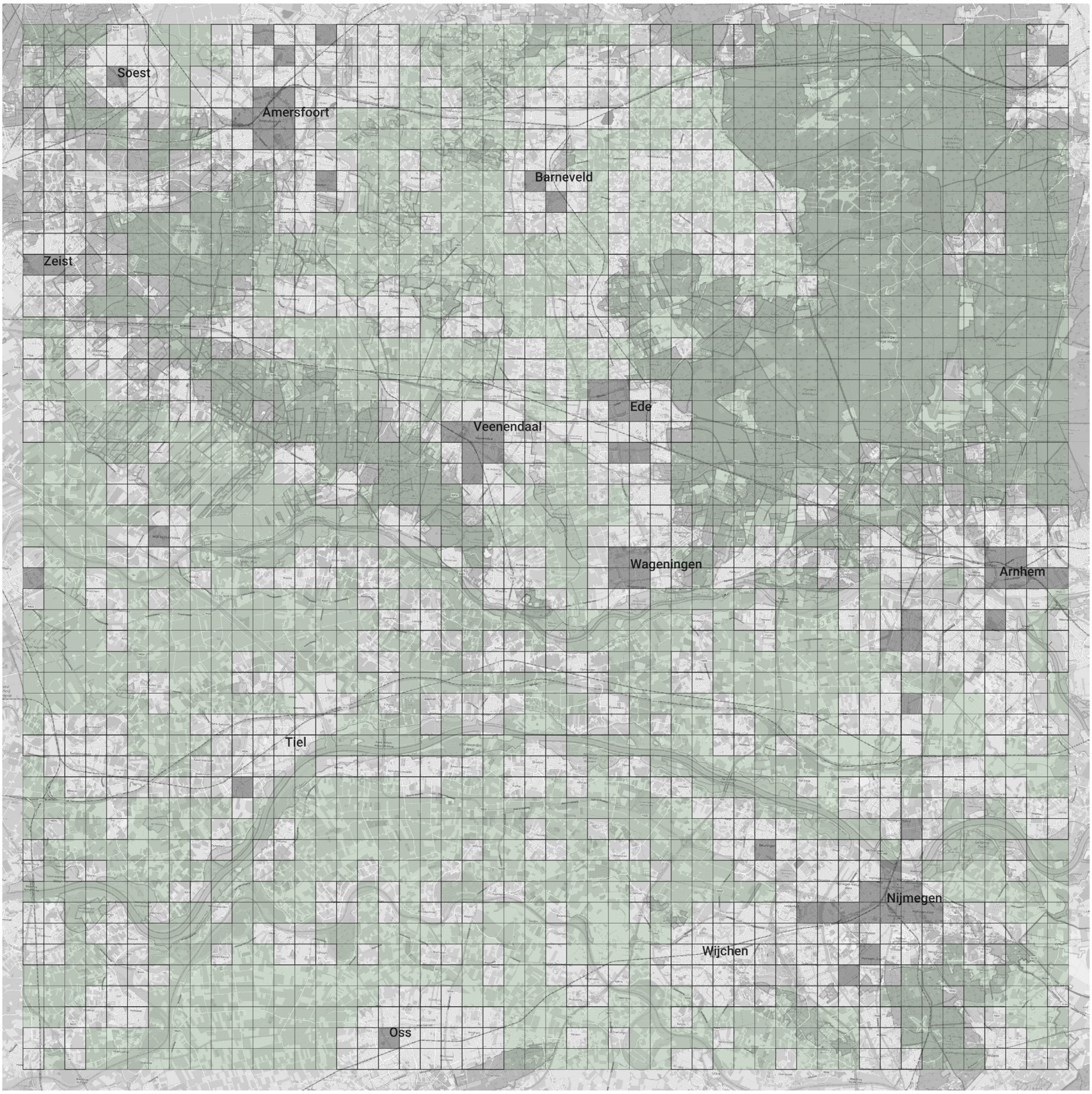


peri-urban

In the Dutch case study area 918 grid cells are defined as peri-urban. This equals 36,7% of all grid cells in the case study area. The Dutch case study thereby represents the case with the second lowest share of peri-urban. This case study area is characterised by its river landscape, including river Meuse and two branches of river Rhine - the Lower Rhine and the Waal. This riverine landscape is characterised by dikes and due to its low land delta condition extensive floodplains and natural wetlands. Stretched along the river banks relatively wide low-rise sandy ridges correspond to the peri-urban places where old villages interweave with fine-grained agriculture and gardens.

Overall, the case study shows more connected peri-urban cells at the edges of the cities. Additionally, linear bundles of peri-urban cells align with the rivers and mobility infrastructure. In between those more clustered peri-urban places, fine grain fragmentation appears embedded in the agricultural and natural in-between areas.

Dutch case study
Peri-urban places



rural

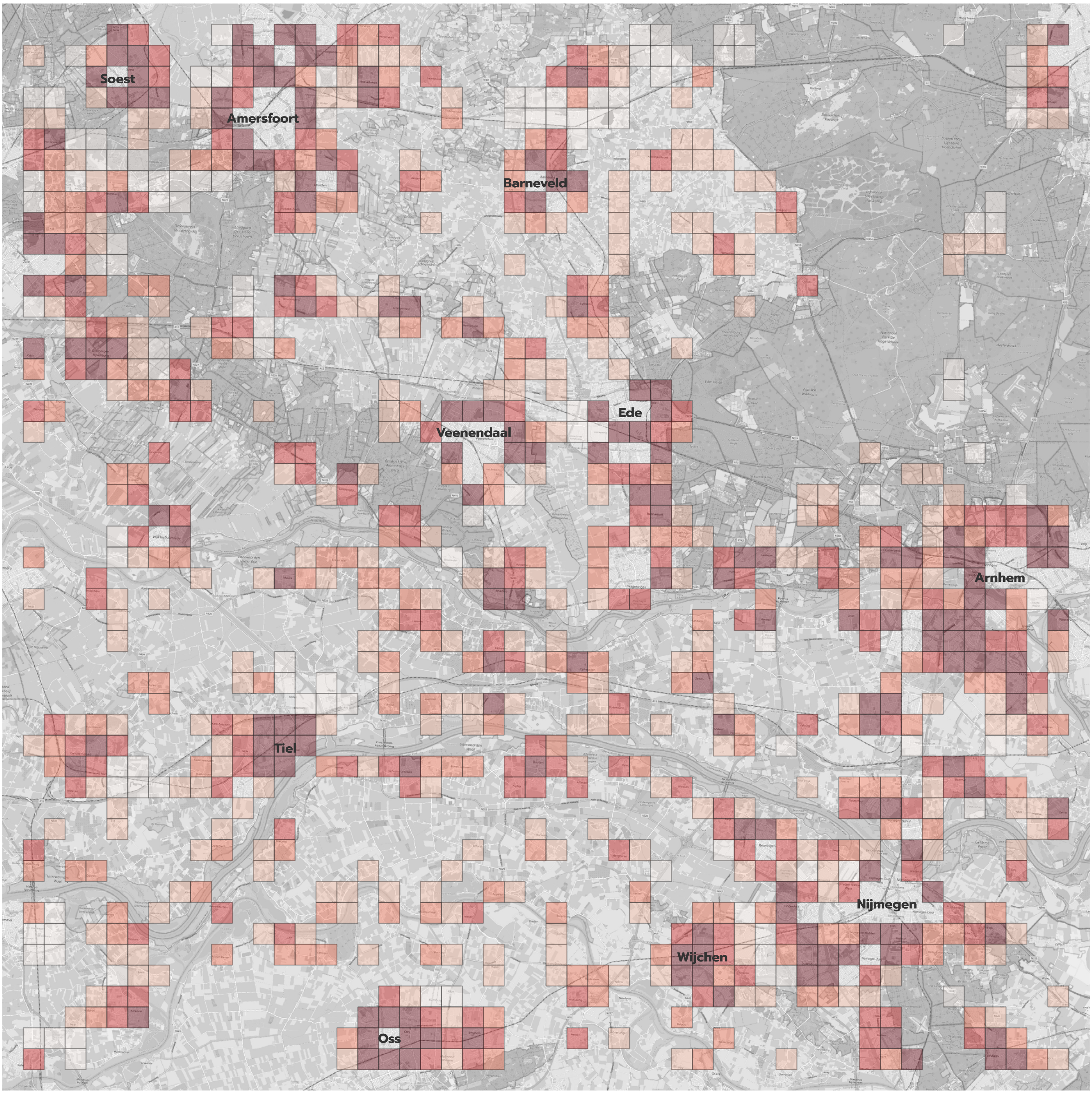
peri-urban

urban

0 5 10 km

Demographic typology and distribution of types

Case Netherlands



	POP_DENS	AGE <15	AGE 15-64	AGE >64	% EMP
3	32	12,5%	68,8%	18,8%	50%
1	258	13,8%	66,1%	20,1%	47,7%
2	649	14,2%	66,2%	19,6%	47,9%
4	1468	15,4%	65,1%	19,5%	48,9%
5	3248	15,6%	64,3%	20,1%	48,4%

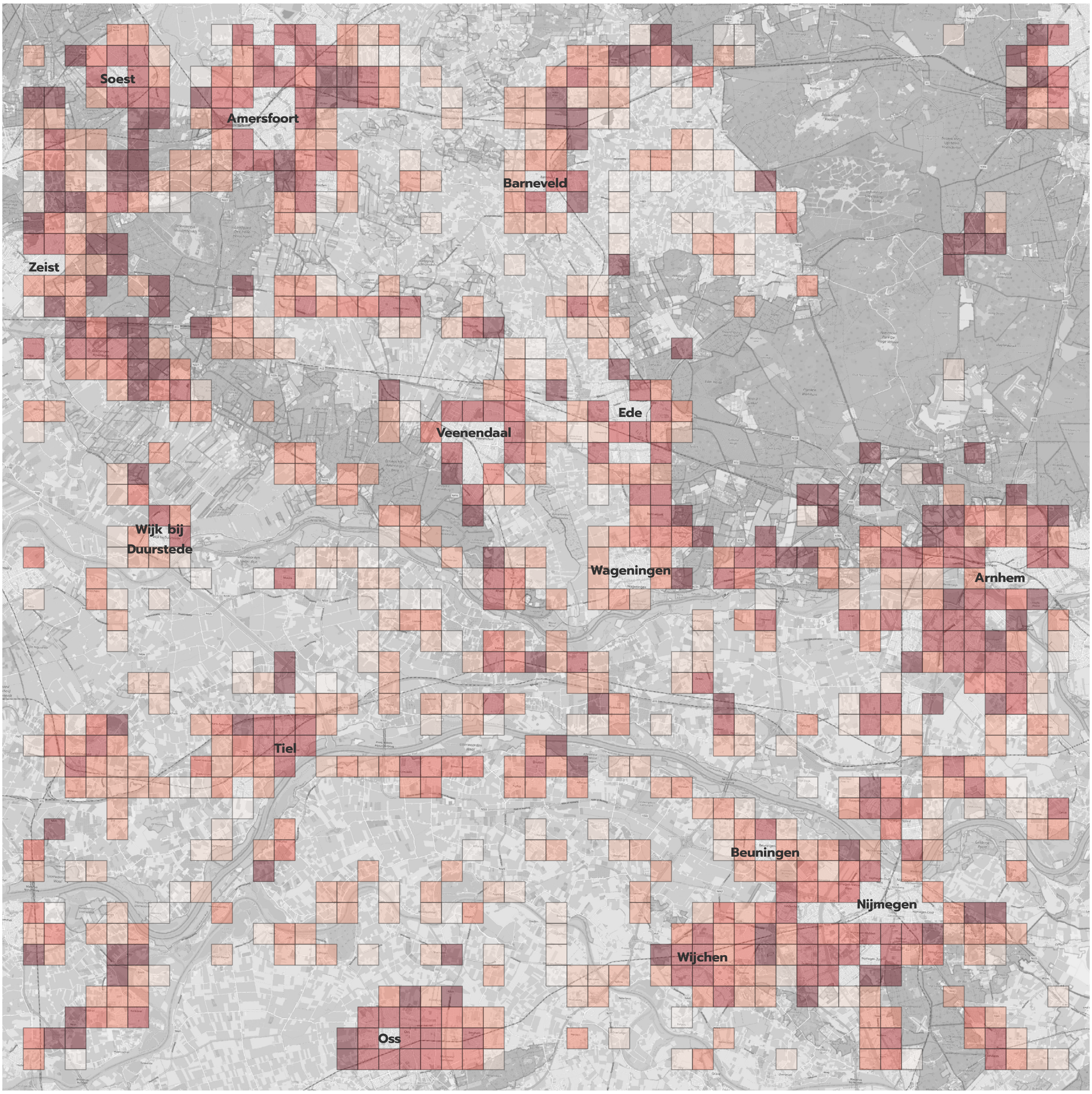
most common demographic type of peri-urban in the Dutch case study area

0 5 10 km

Characteristics Demographic typology Case NL

The Dutch case study has demographic type 1 as the most common (28%) peri-urban variety. It is characterised by low population density, is one of the two types with the highest share of people older than 65 and the one with the lowest shared of employed people. Type 2 is the second most common (21%), with more than twice the population density of type 1, but a slightly younger population. The other three types account together for about 51%, with type 3 being the least common (12%). This means that the Dutch case is characterised in terms of demography by higher-density peri-urban areas.

Spatial structural typology and distribution of types
Case Netherlands



	CENTRALITY	POP_DENS	GSI	NUMBER OF BUILDINGS
5	low	low	low	low
3	low-med	low	low	low
1	medium	low	low	low
2	med-high	low	low	low
7	med-high	medium	low-med	low-med
4	high	low	low-med	low-med
8	high	low-med	high	high
9	high	high	med-high	high
6	high	low	low	low

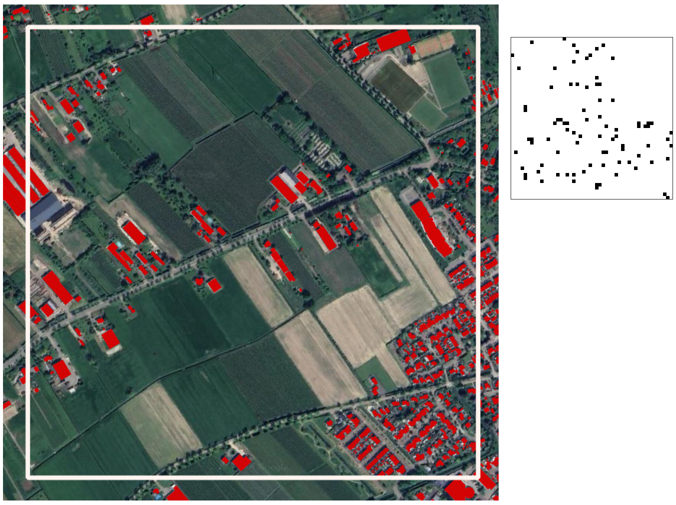
most common spatial type of peri-urban in the Dutch case study area

Characteristics Spatial typology Case NL

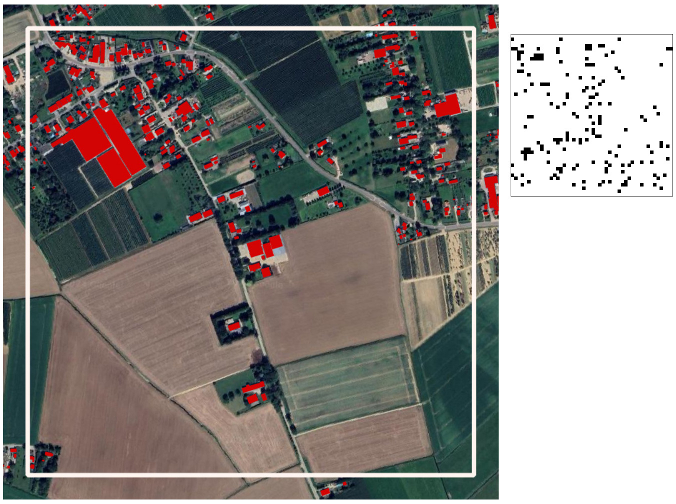
In the Dutch case study, two peri-urban spatial types are dominant: Type 2 is characterised by low population density and medium spatial centrality, meaning that these places lie at some distance from the more central roads. Type 2 also has few buildings and low ground coverage. Type 7 is a highly central place, with medium population density, medium ground coverage, and a high number of buildings. The denser type 9 appears almost as frequently as the other types. It is characterised by a high degree of centrality, the highest population density, a high number of buildings and a medium level of ground coverage. This results in a fine grained and compact built environment.

Exemplary manifestations of the spatial structural types

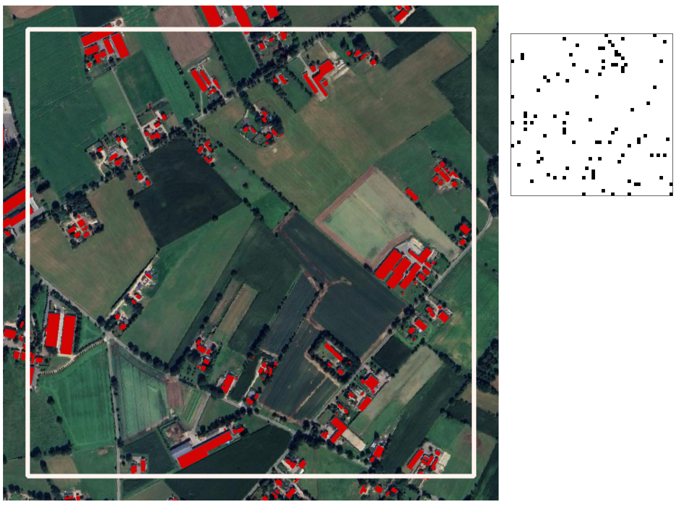
Case Netherlands



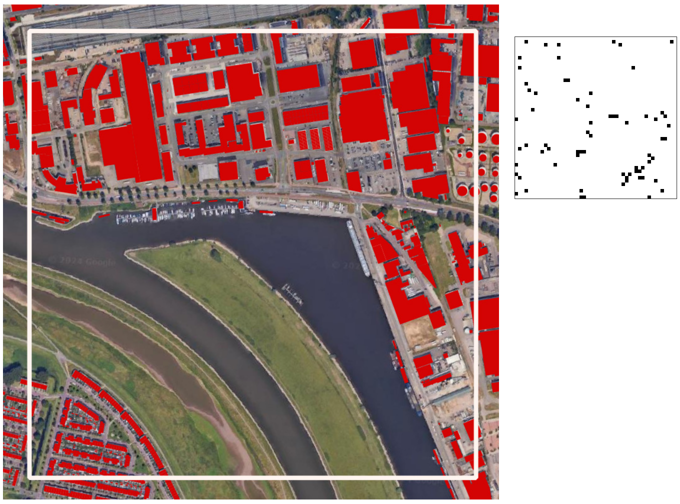
SC1 9,4%



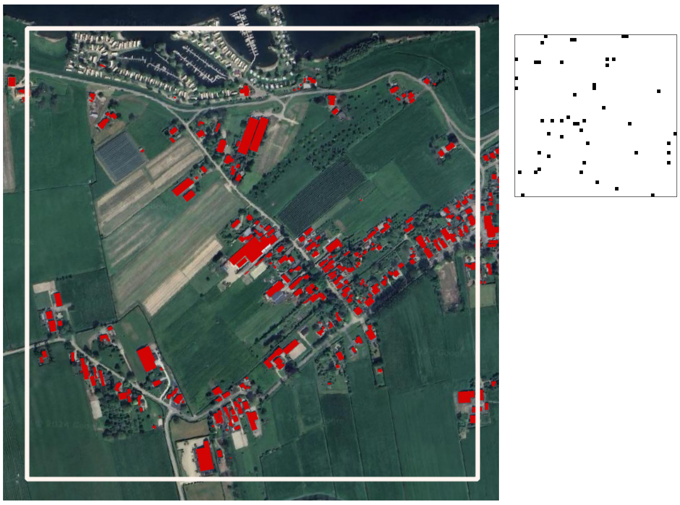
SC2 18,2%



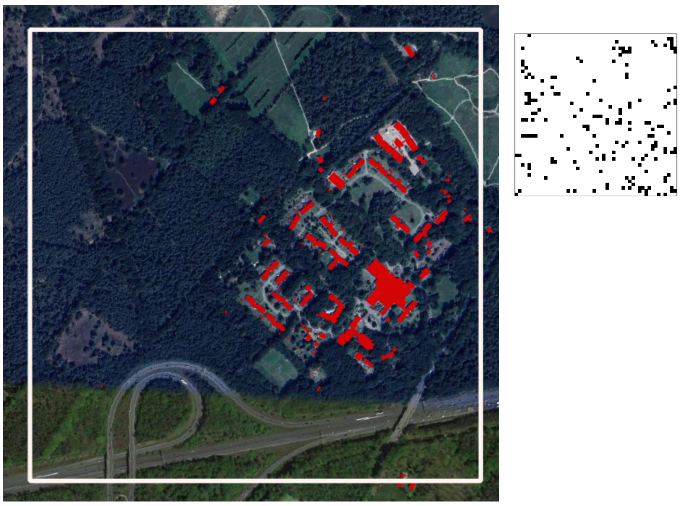
SC3 10,6%



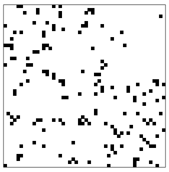
SC4 7,5%



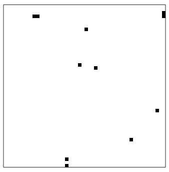
SC5 5,2%



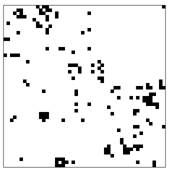
SC6 13,7%



SC7 17,7%



SC8 1,2%



SC9 16,6%

The spatial structure of the Dutch case study area shows a strong relation with the dominant land use character of the region - agricultural with natural zones. The settlements in the area are smaller towns and cities, typically compact and often historically developed along the historic main roads. The settlement structures near the river are strongly influenced by fluvial terraces, dikes and related parcellation patterns. All types are spread across the case study area.

Spatial type 1 consists of sparsely settled villages in form of ribbons, grown along historic roads. It appears across the whole case study area in places of medium centrality.

Spatial type 2 appears at the of edge settlements, close to different types of infrastructure. These medium-high accessible places have a diversity of buildings and related land uses, from residential to industrial. This is the most frequent type appears in the Dutch case.

Spatial type 3 has a wide variety of building types, from small to large footprints, which relates to the variety of land uses in areas distant from the most central places.

Spatial type 4 is characterised by places located along the central main roads of the region. This type has often developed along historical road connections, is compact and at the edge of higher density places. In the Dutch case this type shows a high share of industrial land use, with higher ground coverage concentrated in certain areas.

Spatial type 5 is an edge situation in non-central places. This type shows few buildings along streets in proximity to mobility or water infrastructure. It is the type that appears less often in the Dutch case study.

Spatial type 6 includes highly accessible places with a looser but internally compact built up settlement form, in proximity to motorways. This places have high regional accessibility.

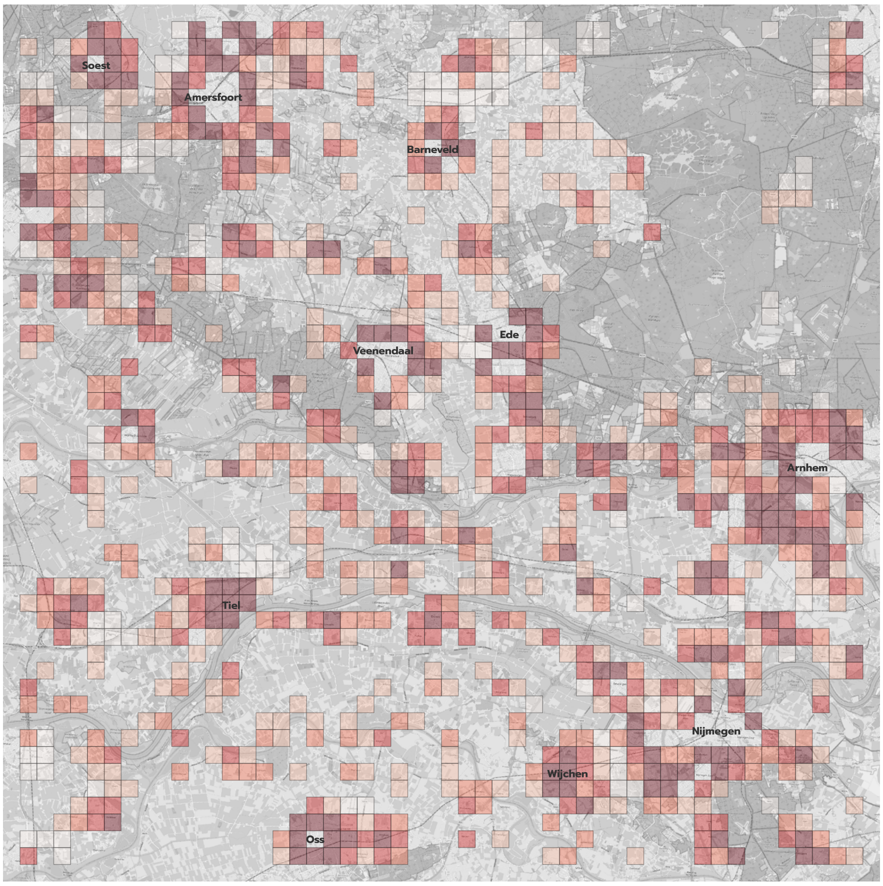
Spatial type 7 appears at the edges of the larger cities and towns and medium-density villages. This type has medium-high accessibility, with compact medium density overall, interwoven green and a share of commercial land use.

Spatial type 8 shows both high ground coverage originating in industrial buildings and a fine-grained low-rise dwelling fabric with lower population density. This type is also located along central roads in the region.

Spatial type 9 has the highest population density, embedded in a very fine-grained built structure in form of villas and row houses. These areas have a high ground coverage and mainly correspond to residential areas of cities and towns, where most dwellings have their own garden.

Comparison of demographic and spatial structural typology
Case Netherlands

Demographic typology



Statistics
Demographic typology

918 peri-urban grid cells

Type1	258
Type 2	192
Type 3	115
Type 4	173
Type 5	180

Spatial typology

Statistics
Spatial typology

918 peri-urban grid cells

Type1	86
Type 2	167
Type 3	97
Type 4	69
Type 5	48
Type 6	126
Type 7	162
Type 8	11
Type 9	152

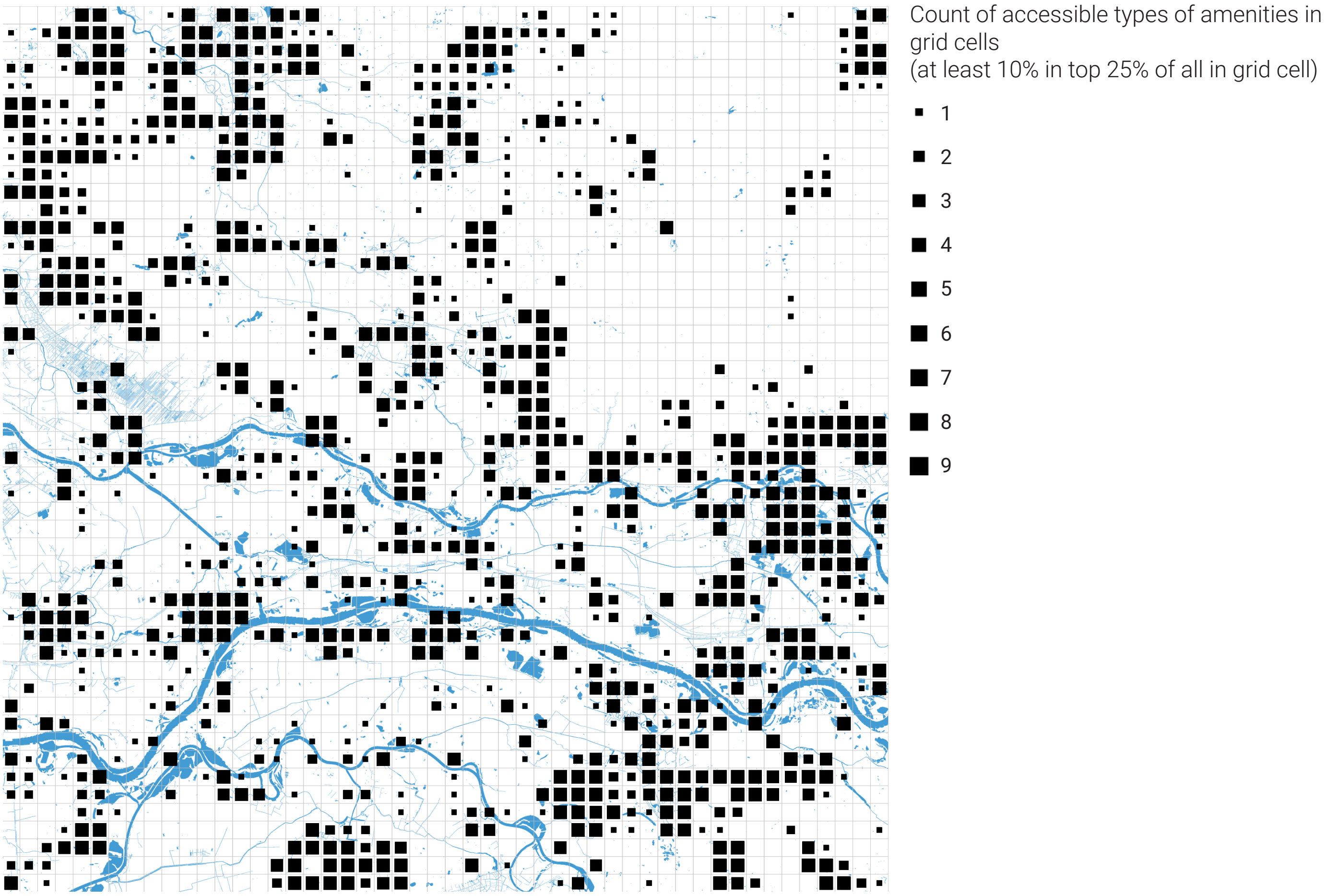
The cluster type combinations that appear most frequent in this case study are demographic type 4 / spatial type 7 and demographic type 5 / spatial type 9. These combinations do not correspond to the individual demographic and spatial types occurring most often. Instead, the case study is characterised by mid to high concentrations of population in highly central places.

How do the demographic (DT) and spatial types (ST) relate?

DT \ ST	S1	S2	S3	S4	S5	S6	S7	S8	S9
D1	7	90	67	10	26	58	0	0	0
D2	67	37	10	38	8	28	4	0	0
D3	1	40	20	6	12	36	0	0	0
D4	11	0	0	15	1	3	137	6	0
D5	0	0	0	0	1	1	21	5	152

The ‘accessible types of amenities’ map gives an overview on the accessible amenities in each grid cell. The amenities considered draw from Moreno’s framework of 15min cities and regions, and are here interpreted in nine categories: leisure, healthcare, religion, work_industrial, work_offices, education, green public space, services and retail.

Accessible types of amenities



Governance Analysis

Introduction

The governance context in the Groenemetropool-Foodvalley region of the Netherlands is characterised by a multi-level network of actors addressing intertwined spatial, economic and environmental challenges. Key players include regional alliances of municipalities, such as Regio Foodvalley and Groenemetropoolregio Arnhem-Nijmegen, the provinces of Gelderland and Utrecht, and national ministries responsible for sectoral policies. Individual municipalities vary in influence and capacity, while some public-private coalitions (e.g. business and industry confederations) help shape policy directions.

Relevant instruments and initiatives include regional investment agendas, economic innovation programmes, and integrated mobility and spatial strategies. A key recent development is the NOVEX programme (Nationale Omgevingsvisie Extra), which designates the region as strategic for implementing national spatial ambitions through intergovernmental collaboration, new planning instruments and testbeds for integrated spatial development at all policy scales. This designation reflects the competing claims for space for housing, amenities, industry, agriculture, nature, energy, and water management areas, which exert strong pressures on urban, peri-urban and rural areas. Within a crowded landscape of policy actors, there are dynamic coalitions aimed at governing these competing spatial priorities, often led by municipal alliances, while provinces act as key brokers and the national government as provider of integrated visions.

The multi-scalar integration patterns in recent Dutch spatial governance show a strong national-regional coordination, integration and strategic alignment, which represents a significant departure from practices in recent years. Indeed, the abolition of the national ministry for Housing, Spatial Planning and Environment in 2010 (VROM) became notable as marking the end of most nationally integrated spatial policies and the devolution of planning authority to municipalities and provinces (Zonneveld and Evers, 2014). However, as the 2020 National Spatial and Environmental Vision (NOVI) states, the numerous environmental and socio-spatial challenges currently faced by the Netherlands led the country to reverse a decade of decentralisation in favour of a coordinated and integrated approach to spatial planning. This re-centralisation trend is due to continue as the new national Spatial Planning Memorandum (Nota Ruimte) is developed to replace NOVI around 2026. Notably, the national ministry has returned (VRO), although now separate from the Environment.

As a result, while local and municipal actors retain agency, the higher scale levels (via NOVEX, regional deals, etc.) retain a strong coordinating role, potentially reinforcing power asymmetries. Some asymmetries may be reflected in categorical distinctions between urban, peri-urban and rural areas, and their positioning in investment priorities (visible for instance in separate documents dedicated to urban planning/urbanisation and rural planning - see the NOVEX flowchart below). Notably, these distinctions are not based on formal actor boundaries, spheres of influence or jurisdictional competences, but rather on spatial characteristics such as land use, functions and environmental features. Thus, the same actors operate across all spatial categories – including the peri-urban types defined earlier – adopting different roles and strategies depending on the area.

Governance cases: choice justification

Note: At the time of publication, the new Nota Ruimte (the national spatial vision) has been made public, providing long-term planning guidance nation-wide. All the governance instruments explored here are likely to be influenced by this new document, and the relevant changes will be added in future versions of this report.

The choice of governance cases to investigate was strategic, encompassing a range of scales (national to local), actors (mainly government levels but also sectoral agencies, market actors and civil society), spatial policy areas (housing, mobility, economy, ecology, social) and governance approaches (harder, softer, process-oriented). Despite this variety, all the cases have a stake in governing and/or supporting peri-urban development, and how they are made operational can reflect, enable or boost the adaptation of 15-minute city principles, or, alternatively, neglect or hamper them. The analysis allows us to identify opportunities, gaps and challenges related to spatial development at multiple governance scales in peri-urban areas.

We first selected the NOVEX Development Perspective, a key national initiative that directly shapes spatial planning and governance in the region. By attempting to organize the 'puzzle' of competing (and often

Figure 53: Relations between actors and instruments/initiatives. Source: Elaborated by the authors.

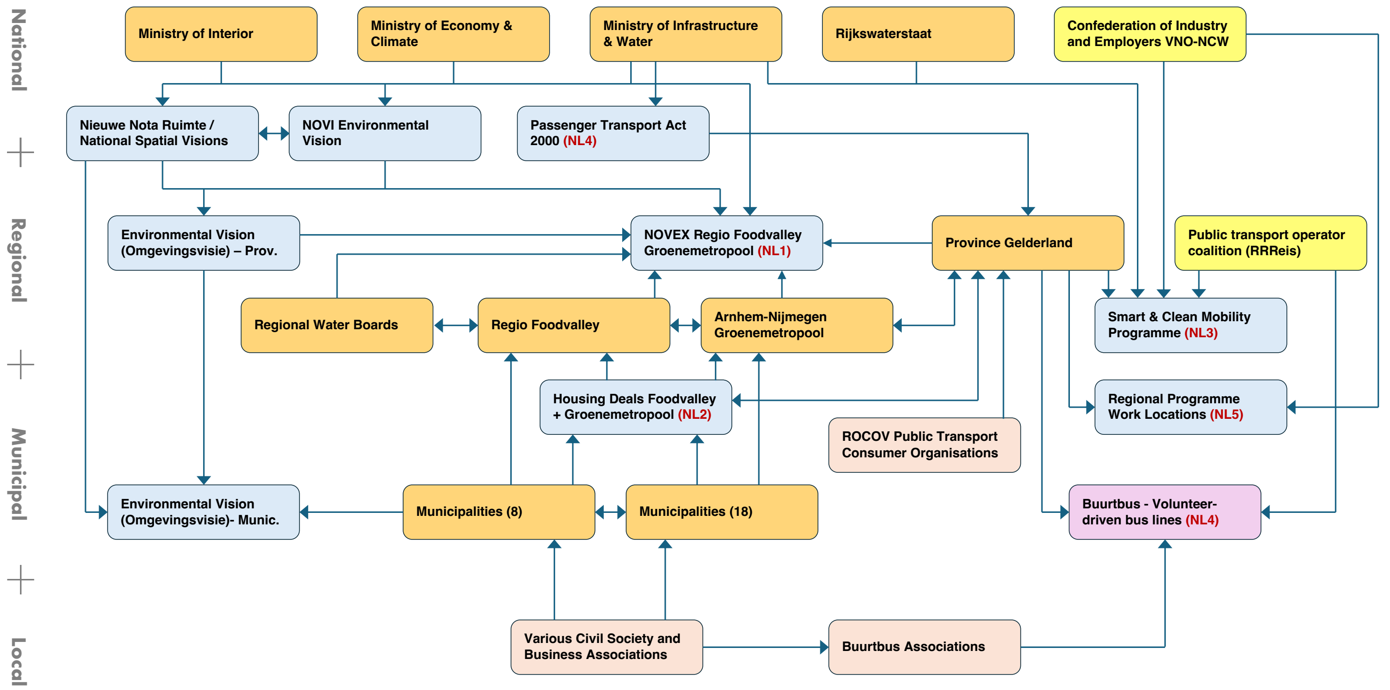


Table 12: Selected cases

Focus	YES	YES	NO	NO	NO
Case name	NOVEX Development Perspective	Public Transportation Governance + Buurtbus	Housing Deal Regio Foodvalley	Regional Programme Work Locations	Programme Smart and Clean Mobility
Format / Type	Policy instrument	Policy instrument + Initiative	Policy instrument	Policy instrument	Policy instrument
Aim / Aspiration	Integrate spatial planning of housing/ urban development, mobility, nature, energy, climate, agriculture.	Cost-efficiency of public transport.	Agreements on housing delivery targets, timing and investment.	Delivery of high quality work locations to support economic transition.	Changing behaviour of employees towards car-free mobility.
Main scale levels	Regional/Local	National/Regional/ Local	Regional/Local	Regional	Regional
Challenges / Opportunities	Competing spatial claims & priorities.	Reduction of public transport services in the peri-urban.			
Relations / Tensions		Efficiency can lead to downscaling of public transport network.			

incompatible) spatial claims in the region through adaptive planning dialogues across government levels, NOVEX is a guidance instrument for spatial policy at all scales, the fundamental source of (sustainable) planning values for housing, mobility, quality of life, and societal transitions in the peri-urban area, and an example of cross-sector and cross-actor relations and tensions.

We selected two more sectoral instruments which are closely interdependent with NOVEX, namely the Housing Deal (Woondeal) and the Regional Programme of Work Locations of the Foodvalley. The first represents the multi-level agreements to accelerate housing development in the region in response to national housing shortages. As an ongoing negotiation with changing targets (e.g. building around 25,000 new houses by 2030), the Housing Deal raises issues about spatial distribution across current urban cores and mobility hubs, percentages of affordable housing, and integration in broader spatial strategies, as well as tensions between municipalities about their capacity to absorb expansion. With impacts on the presence of amenities and transport, the instrument may either enable or hamper the development of new urbanization under the principles of the 15-minute city.

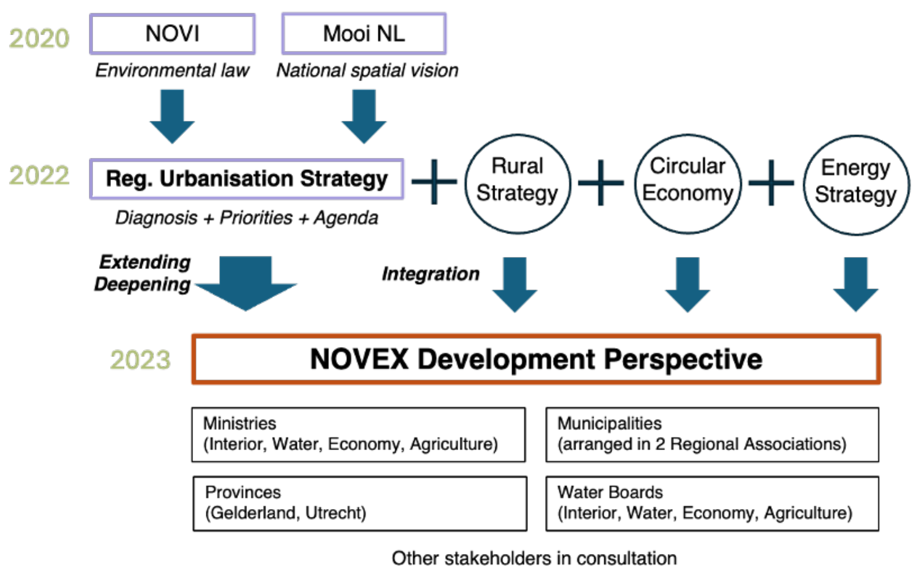
The Regional Programme of Work Locations aims to deliver a supply of flexible, high-quality business areas to support the economic transition of the region. However, it reveals a problematic polarization between its adherence to zoned spatial specializations, which neglects key 15-minute city principles, and its integration in a more adaptive and multi-functional regional spatial strategy.

The two last governance cases are closer to the topic of mobility. We selected the Dutch Public Transportation Governance and the regional Programme Smart and Clean Mobility. Good public transportation is a key element for 15-min regions. In the interviews with regional associations we realized that regional public transportation services are under great pressure, and often being reduced and downscaled. This issue is common in the Netherlands outside the greater cities. In 2023, for example, no companies competed in a tender for bus public transport in the region of Zeeland (OV magazine, 2023). Within this case, we also look at the emergence of Buurtbuses, community buses run by volunteers in areas not served by public transport.

The Programme Smart and Clean Mobility is conducted by the province of Gelderland and by the two regional arrangements (Foodvalley and Arnhem-Nijmegen Groenmetropool) and aims for behavioural change towards smart and clean mobility. It includes collaborations with the Ministry of Infrastructure and the Association of Employers. Among other things, it aims to change the commuting behaviour of employees.

From this list, we focus in greater detail on two main cases, namely the NOVEX Development Perspective and the governance of Public Transport. We do this because, on one hand, we see these cases as illustrative of fundamental challenges to peri-urban governance in what concerns the pursuit of 15-minute city principles. On the other hand, these cases constrain to some extent the scope and capacity of the other instruments that work on more sectoral dimensions and smaller scales.

Figure 54: NOVEX structure



Case A: NOVEX Development Perspective

The NOVEX Ontwikkelperspectief (Development Perspective) is a strategic planning framework in the Netherlands, focusing on integrated spatial development for designated areas under the metaphor of a 'puzzle' consisting of spatial challenges that need to be solved. It builds on existing spatial-environmental strategies, namely aiming to realise the National Strategy on Spatial Planning and the Environment (Nationale Omgevingsvisie – NOVI) and integrates ambitions through regional arrangements. It complements local and provincial spatial policies, offering a coherent national framework.

As the need for more centrally coordinated planning became more visible, in 2022, the national government determined 16 priority NOVEX areas. These are areas where pressures for spatial transformation are large and overlapping and therefore require priority attention and joint management. The program, as applied to these areas, translates the NOVI legislation (National Spatial and Environmental Vision) to planning guidelines, and is inspired by the 'Mooi Nederland' programme focusing on achieving spatial quality by transforming the territory nation-wide. To kick-off the process, the affected provinces, municipalities and regional associations of municipalities develop an urbanisation strategy (Verstedelijkingsstrategie) for their area. This instrument is then deepened and widened in the form of the NOVEX Development Perspective, which becomes the core planning document and articulates the updated spatial planning vision with the rural planning, circular economy and energy vision documents. Regional arrangements emerge as a result, acting as further steering actors, and must fit the development lines provided in the larger instrument. Binding provincial and municipal plans (including specific projects) are framed within these successive instruments. Note that the NOVEX areas per se do not have a legal mandate, therefore the provinces take forward the regulatory power.

Actors, Aspirations, Actions

NOVEX operates under a polycentric governance system of semi-autonomous actors (decision-making bodies) that cooperate with each other. Spatial planning proposals are the intended output, based on new knowledge constructed from the actor interactions. The actors formally involved are government entities, namely:

- Ministry of Interior (BZK): coordinates the overall NOVEX programme nationally.

- Ministry of Agriculture (LNV): guides articulation with agricultural and natural land uses.

- Ministry of Infrastructure and Water (IenW): guides water management and transport infrastructure integration.
- Ministry of Economy and Climate (EZK): provides national economic and energy transition strategy.

- Provinces of Gelderland and Utrecht: lead regional coordination, translating NOVEX goals into regional strategies and provincial vision and sectoral plans. They oversee coordination between municipalities and water boards.

- Water Boards (Rijn en IJssel, Rivierenland, Vallei en Veluwe): coordinate water management, implement 'water and soil-led' principles.

- Municipalities in Regio Foodvalley (8) and Groenemetropool Arnhem-Nijmegen (18): collaborate in associative platforms tasked with producing detailed Regional Arrangements to steer development.

The plan is rooted in principles of:

a. Multifunctionality: Integrating housing, agriculture, nature, and mobility to maximize spatial efficiency while balancing competing land-use needs.

b. Water and Soil as Leading Factors: Prioritizing the natural characteristics of water and soil systems in spatial planning to ensure resilience against climate change.

c. Broad Prosperity: A vision beyond economic growth to ensure improvements in social equity, environmental health, and livability for all residents.

d. Adaptive Governance: Flexibility and iterative learning to adjust strategies based on evolving knowledge and changing (demographic, climate) circumstances.

e. Collaboration across scales: Fostering multi-level governance that aligns national objectives with provincial and local priorities.

NOVEX incorporates several collective goals that are common across the various target areas nationally. The most relevant goals for spatial development refer to housing, where the aim is to deliver 100,000 new homes by 2040 to address regional housing shortages. Urban densification is emphasized to enhance urban livability and maintain environmental integrity. In parallel, mobility goals involve promoting options such as fast cycling routes and public transport corridors to reduce car dependency and regional congestion.

Goals in articulation with other domains tackle climate and nature, through strengthening ecological corridors in natural areas and river landscapes and Integrating water retention systems and flood control measures; agricultural transition, by facilitating the reduction of nitrogen emissions and promoting circular food systems; and energy transition, focusing on renewable energy infrastructure (e.g. solar and wind) that minimizes conflicts with landscapes and local communities.

Mechanisms

Lacking a legal mandate per se, NOVEX planning instruments provide a policy framing and narrative to other formal instruments, e.g. provincial visions (legally binding spatial regulations) and municipal land use plans. These follow the principle of compatibility across scales, giving NOVEX a strong role in the formalization of lower levels. The document (and the policy packages it summarizes) also triggers the formation of semi-formal Regional Arrangements, structured cooperation between municipalities that allocates responsibilities, decision-making and accountability. NOVEX provides a platform for informal negotiation and coordination between actors before the formalisation of decisions and facilitates tacit agreements about competing domain priorities.

In this setting, decision-making is based on multilateral collaboration and negotiation, reflecting the Dutch tradition of consensus-building in governance. However, access to decision-making and influence varies depending on the type of actor, governance level, and issue at hand. Horizontally, multilateral collaboration organized in Regional Arrangements (Groenemetropool and Foodvalley) articulate inter-municipal planning and align priorities. Vertically, negotiation between national actors, provinces, municipalities and water boards is employed to find compromises between priorities, designate land-uses, and fund infrastructure projects. These institutional stakeholders have equal formal access to decision processes, but in practice funding capacity may influence the power balance, within a general consensus-seeking and iterative approach, open to constant adjustment. This is partly because of the principle of 'bundled funding', in which various national, provincial and municipal funding programmes are combined per sector or project, but the 'bundle' itself is project-driven and part of the negotiation process.

All actors with formal access are regime actors. Smaller (niche) actors, including civil society, businesses, knowledge actors, etc., participate in consultation processes, but these are organized ad-hoc in various provincial and municipal settings. There is no explicit pipeline towards shaping higher-level policy and input of these actors is not binding.

Opportunities and challenges

Due to its focus on multifunctional integration of land uses and activities, social prosperity, liveability and accessibility, and adaptive multi-scalar governance, NOVEX is central to support the adoption of the 15-minute city principles in peri-urban development. However, challenges remain regarding the integration of policy domains, coordination across scales and the capacity of actors to realize their ambitions.

Cross-domain planning, integrating urbanization, nature, water, agriculture and energy, lies at the core of NOVEX. Key alignments include guidance for multifunctional land uses (e.g. water management & recreation, living & working, energy & economic activity, etc.) planned with natural water and soil systems, rather than strongly altering them. Such an ambitious goal comes with several challenges.

First, sectoral priorities compete for limited space and may not only overlap but be mutually exclusive. For instance, the 'water and soil leading' principle determining spatial choices may limit housing development in areas in risk of flooding. Consequently, preserving existing natural systems can result in fragmented and discontinuous urban areas occupying the available spaces in-between protected zones, thus harming the 15-minute city principle of proximity. Further challenges of this spatial competition come from stakeholder resistance to spatial transformations, especially niche actors not included in the governmental structure responsible for the instrument. Farmers resisting land use changes, local communities resisting housing densification, or industry sectors resisting mobility transitions add complexity to (democratic) decision-making but satisfying these diverging interests may further harm the aims of coherent, compact and connected peri-urban development.

Second, the different levels of urgency of the various domains, both in policy documents and public perception, can lead to an unbalanced development of 15-minute city components. This is visible in the national urgency for housing, as the focus on the rapid development of dwelling units tends to neglect allocated spaces for the corresponding amenities and public transport provision (especially at local scales where buses play an important role). And even if amenity spaces are planned, they take much longer to develop due to the risk avoidance of private commercial actors (retail, services, etc.) that do not commit to new initiatives before urban developments have matured. In this temporal gap, lower levels of liveability and accessibility and greater car-dependence become ingrained.

This temporal misalignment is also reflected in the contrast between the time horizon of housing delivery and long-term priorities in other domains (e.g. nature restoration, urban diversity, etc.). NOVEX does not have an explicit timeline prioritization, as operationalization is left for (possibly inconsistent) lower-scale planning instruments. However, the adaptive planning principle, where new actor-created knowledge constantly adjusts the goals and priorities, can provide ways to monitor and resolve misalignments over time.

Regarding opportunities and challenges across scale levels, NOVEX follows the principle of sequential and interdependent intervention scales, integrated through negotiated cooperation between actors, which facilitates cross-boundary and multi-scalar planning. Still, the nature of the document based on steering and broad objectives does not contemplate the variable level of resources of smaller administrative units and leaves room for inconsistent or incomplete applications at lower scales. An example within municipalities is the loss of amenities and transport links in villages or low-density peri-urban locations. This is a spatial justice problem related to the need of the municipality to align as a whole with large-scale planning priorities and major regional projects, which tend to privilege densification and investment in the denser cores (both for the sake of preservation of low-density liveability but also responding to financial efficiency imperatives). Specifically, if the regional scope of the plan focuses the attention on large rail and road corridors linked to existing cores, smaller municipalities will express interest in ensuring connectivity to those elements, which may neglect their needs at the local and neighbourhood scales. Larger municipalities such as Arnhem and Nijmegen can take this connectivity for granted and focus their attention more on amenities and liveability, which can create further quality of life discrepancies between localities.

On the other hand, there are more salient spatial planning aspects where the regional coherence of the plan can fall into a governance gap and be constrained by local implementation barriers. For instance, while there is agreement on the total number of new housing units (100,000), its inter-municipal distribution is part of the negotiation process. The main perception among municipal partners is a ‘scalar leap’ in urbanization, leading to tensions around housing densification, with local arguments given to avoid (perceived) excessive numbers in the different municipalities. This problem is heightened by the need to comply with other top-down documents that lack a nuanced approach at different scales, such as rural and energy planning visions.

An opportunity lies in the need for inter-municipal collaboration embedded in the instrument, as municipalities are systematically called to respond to updates of the guiding documents. Alignment of municipal spatial plans, such as expanding cycling networks, is made easier. Similarly, the large-scale corridor approach in various domains (e.g. green-blue and transport infrastructure) also assumes an effective municipal alignment. In these consultation moments, municipalities can encourage participation from smaller scale actors (civic, commercial), increasing the likelihood of innovative niches having a voice in the overall planning. For that, NOVEX-related instruments can explicitly provide a pipeline for these actors to contribute.

A final source of governance challenges is the alignment between actor aspirations and capacities. NOVEX recovers spatial planning as a key priority of provinces and municipalities after years of absence, and adds an adaptive level, where plans are constantly adjusted as new knowledge emerges from actor cooperation. At the procedural level, this leads to the need to create new methods of dialogue and consultation, pioneered by the provinces, which are not embedded in the working practices of actors in recent decades. Consequently, much of the time and resources of these actors goes into constructing the new procedural frameworks, leading to gaps and delays in the content development of the plans.

Generally, the roles and capacities of each actor are well defined, even if they experience limitations to their activity. The national government is tasked with policy design and providing financial capacity but has limited capacity to understand local needs and contexts, having to rely on the willingness to cooperate of other actors. Provinces are strong in regional coordination and resource allocation capacity but their limited capacity to manage intra-municipal implementation weakens the coherence aspiration. In the case of municipalities, their variable financial, administrative and technical resources often lead to limited capacity to deliver aspirations beyond the main cores, harming inclusion across peri-urban and rural territories. Overall, the complexity of programmes framed as “puzzles” to solve and the aforementioned need to invent new forms of dialogue and negotiation may trigger inconsistent, inefficient and incomplete realization. Furthermore, the absence of relevant stakeholders (e.g. transport companies, businesses) beyond ad-hoc consultation may result in the neglect of the coherence of essential services.

Case B: Public Transport Governance and Sustainable Mobility Policies

The Passengers Transport Act (in Dutch, Wet Personenvervoer 2000) was created in 2000 to reduce public transport costs and improve the quality and efficiency of services. In the previous decades the financial feasibility of public transport had reduced together with the increase of car ownership and investments in road infrastructure. The Act determines that the provincial governments are responsible for the tendering of concessions for regional public transport. Most railway services are concessed nationally to the Dutch Railways company, but urban and regional transport is typically tendered by the provinces (except for the bigger cities of Amsterdam, Rotterdam and the Hague). This act determines that public transport concessions are awarded for 8 years (or more) to the lowest bidder.

The main actors involved in public transport in the region are the Province of Gelderland, the Ministry of Infrastructure, the bus and train companies which won and run the concessions (RRReis), and ROCOV – a legally defined regional network of consumer and user organisations to provide advice to the province and public transport companies. ROCOV typically includes representatives from organisations such as public transport users, cyclists, students, seniors, and people with disabilities associations, as well as associations of small towns and villages. Other relevant actors are the Buurtbus (community bus) associations, which are associations of volunteers who run bus lines in areas where there is no commercial offer of public transportation. In Gelderland there are about 1500 volunteers active in 33 community bus associations.

Mechanisms

The tendering of public transport is established by Dutch law. Before every tender the provinces draft a programme of demands, with input and advice from the regional ROCOV and municipalities. The ROCOV platform has the duty of advice, and they can also give unrequested advice. They are consulted not only when drafting a new tender, but regularly about any changes on public transportation. Within ROCOV they have several working groups and try to aim for consensus.

The financing of regional public transport is partly (50%) paid by the provinces for the service hours provided (DRU). The other 50% are covered partly by the student free public transport deal organized between the Ministry of Education and the public transport companies, and partly from ticket revenues (per km travelled).

The Gelderland province together with two other provinces (Flevoland and Overijssel) organizes the tender for the concessions. In Gelderland there are four areas of concessions and one train line concession. Both the train line (Ede-Wageningen to Barneveld and Amersfoort) and the area concession of South Veluwe overlap with the area of Ede and surroundings. The province receives funds from the Ministry of Interior via Provincie Funds for a broad range of tasks related to mobility, including subsidies and investment in public transport.

The Buurtbuses are typically organized bottom-up, by residents who want to cover the need for public transport in their region. The public transportation company provides the mini-buses used by the volunteer drivers, and the province compensates the private costs these volunteers incur to travel to the places where they should pick up the bus. Moreover, Buurtbuses are officially integrated in the public transportation system, in terms of visibility in the general public transportation schedules app, and in the ways people can pay for the trips.

Opportunities and challenges

In the first years after the tendering law was implemented, it was observed that supply had generally increased but was not accompanied by an increasing demand for public transport (Veeneman, 2018). More specifically, interviewees representing interests of regional public transport users mentioned that there was a trend of scaling down public transport services, for several reasons: the market mechanism through which public transport has mainly to be profitable for the company, the fact that despite high inflation the subsidies for the companies were not updated, the sharp decrease of public transport users during the Covid-19 pandemic which has not been completely recovered, and the lack of bus drivers.

These factors result in companies not fulfilling their tender commitments and deciding to cut or scale down the least profitable routes or schedules. Bus lines are “straightened” by not passing anymore through several streets in the villages or city centers, in order to allow them to cover more kilometers faster. This comes at a cost to fine grain accessibility, particularly to those who have difficulties walking, or are dependent on public transport. The reduction of schedules (the earliest or latest services), because these are least profitable, complicates fair access to transport for people who travel at those times. The perspective shared was that the market-based governance contributes to a trend where closing and scaling down lines is more common than expanding, and results in shrinking of regional public transport services.Recent reports show as well that the scaling down of public transport has led to poorer accessibility particularly in peri-urban areas (PBL, 2024), and car dependency is increasing outside large cities as public transport is becoming less attractive (KiM, 2022).

In the case of Buurtbuses, their integration in the public transportation network reflects their important role. However, relying on volunteers is a strong weakness of the initiative. There are reports of lines where they were having problems finding sufficient volunteer drivers, putting the service at risk. Likewise, interviewees shared the concern that bus companies could drop their least profitable lines to be run instead by a Buurtbus.

There are other conflicts that occur between scales and policy domains. First, there is no official role for municipalities in the governance of public transport, which are key local actors dealing with complementary or conflicting transport policies. This creates a misalignment between transport planning and local spatial strategies and is particularly problematic given that municipalities are responsible for land-use planning, active mobility infrastructure, and local amenities — core components to realize 15-minute city principles. Without their structured involvement, opportunities for integrated multimodal networks, transit-oriented development, and tailored service provision are missed. As a result, public transport risks remaining disconnected from the lived realities of residents and from broader urban development goals such as reducing car dependence, promoting inclusivity, and ensuring equitable access to services across different neighborhoods.

This gap is visible in how the coordination of public transport with spatial planning policies seems to be weak. A government programme (Wooningbouw en Mobiliteit / Housing and Mobility) aims to support with 7.5 billion euros up to 2030 the development of mobility infrastructure associated with new housing areas resulting from the NOVEX and the Housing Deal. While most of this investment will go to urban areas, 107 millions are earmarked for the Foodvalley region (including 40 millions for the expansion of a bridge over the Rijn river.

However, there are no specific funds for investing in new bus lines or extensions in new neighbourhoods and companies usually do not take that risk themselves. Similarly to the problem of late arrival of amenities to new housing areas discussed above, the result is that often public transportation only arrives years later to a new neighbourhood, contributing to enshrine car dependence. Furthermore, the spatial development model in many cases of new urban expansion that prioritizes low-density residential projects with a lot of parking space in newly built neighbourhoods with few amenities is not conducive to public transportation investment.

Socio-spatial Analysis

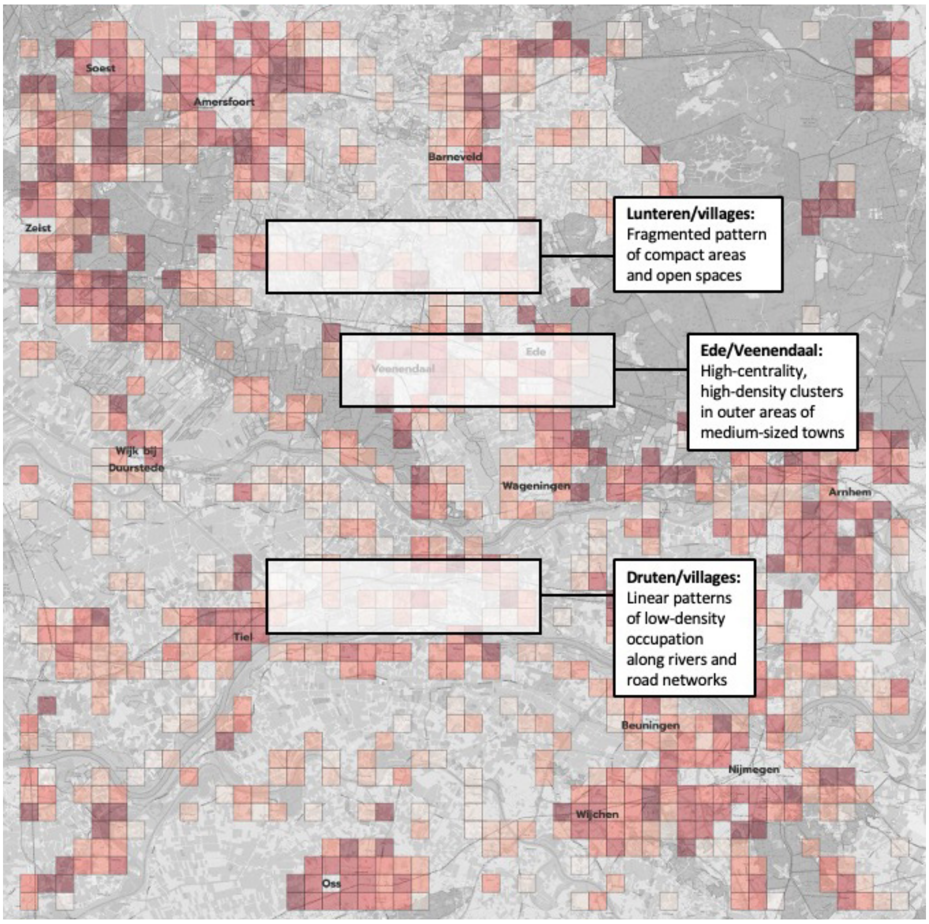
Selection of focus areas

The project focuses on two regions, organized as regional alliances of municipalities: the Foodvalley Region (8 municipalities), and the Arnhem-Nijmegen Green Metropolis (17 municipalities). It borders in the south west the region of Rivierenland, to the west the Utrecht province, the Achterhoek to the east and the Veluwe natural areas to the North.

While there is great variation across municipalities in terms of population size, density, types of settlements, access to public transportation, and presence of amenities, we can distinguish three variations of peri-urban settlement:.

- Outer neighbourhoods around the town centers of Ede, Veenendaal, and Wageningen, but also of the larger cities of Arnhem and Wageningen. These areas correspond in our spatial analysis to broader patches of peri-urban clusters with higher density and centrality as well as high em-ployment concentration.
- Villages and municipalities situated near medium-sized centers, such as Lunteren, Bennekom, Ederveen, or Elst. In the spatial analysis, these areas are characterized by a more fragmented pattern of medium/high and low density clusters co-existing side by side with rural areas, reveal-ing the persistence of compact settlement types and open spaces.
- Villages, towns and smaller municipalities located further away from urban centers, such as Rhenen, Druten, and Heteren, among others. The settlement type in these areas changes to a more spread out occupation of low to medium density clusters, usually with medium/high centrali-ty due to their proximity to roads and low employment concentration.

Figure 55: Cluster types considered in focus area selection NL



Note: the demarcations of the areas of interest in this image depict the peri-urban context of the focus group locations and do not necessarily correspond to the exact places where the study was conducted.

Table 13: Key numbers (source: CBS 2023, 2013)

Areas/ Indicators	Netherlands	Ede	Veenendaal	Wageningen	Druten
Population 2023	17942942	122012	68525	40960	19505
Pop. growth (2013-2023)	7%	11%	9%	9%	7%
Population density (inhabitants/ km2)	529	384	3528	1347	520
% youth <15	15%	18%	18%	12%	15%
% elderly >65	20%	19%	19%	17%	21%
unemployment rate %	3.7	3.1	3.5	4.4	3
%pop with at least Bachelors degree	24%	24%	20%	43%	21%
Annual gross income	39700	39200	38200	35100	38000
Cars per household	1.1	1.2	1.1	0.6	1.3

For the purpose of the social analysis, we focused on the area of Ede and surroundings. We wanted to reach people from Ede who lived in the outer neighbourhoods of the central city characterized as peri-urban, but also in the villages of Lunteren, Ederveen and Bennekom. However, we only got one participant from Bennekom, which means that most of the personal impressions we got were from people living in Ede and experiencing peri-urban settlement conditions as part of their daily mobility patterns.

Figure 56: Age groups focus group particpants

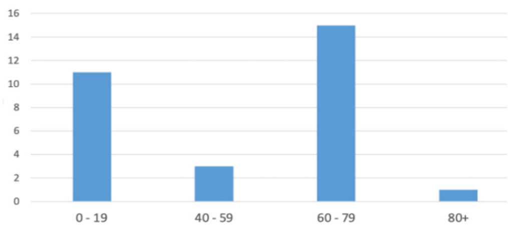
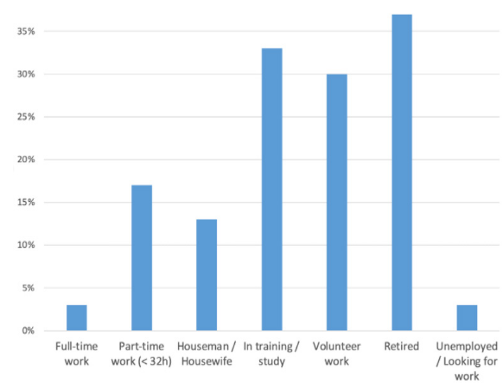


Figure 57: Occupation focus group participants



Focus group participants: key figures

In the Dutch case study 29 residents participated in seven focus groups, aimed at retired people (x2), youth (x2), workers, caregivers and people who recently moved to the region. Women were well represented in all groups except for the elderly, where only one was present. In terms of age groups, as seen in table X, we did not have any participant in the age group 20-39, and those in working age (40-59) were also few.

Table 14: Key numbers selected areas (source: CBS 2023, 2013)

Sub-areas / Indicators	Ede	Ede Zuid	Lunteren	Bennekom
Population 2023	122012	12855	13875	15380
Pop. growth (2013-2023)	11%	59%	7%	3%
Population density	384	4064	273	623
% youth <15	18%	21%	20%	15%
% elderly >65	19%	11%	20%	27%
%pop with at least Bachelor's degree	24%	29%	15%	32%
Annual gross income (Euros)	39 200	37 700	40 500	42 600
Cars per household	1.2	1.3	1.4	1.1

Figure 58: Travel modes

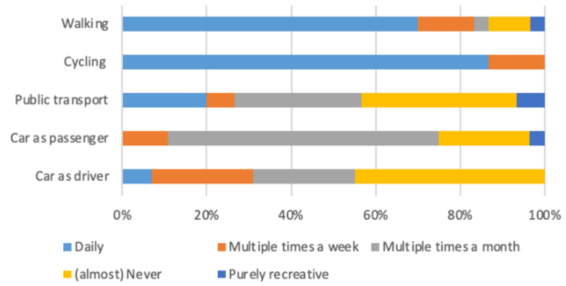


Figure 59: Travel modes per focus group

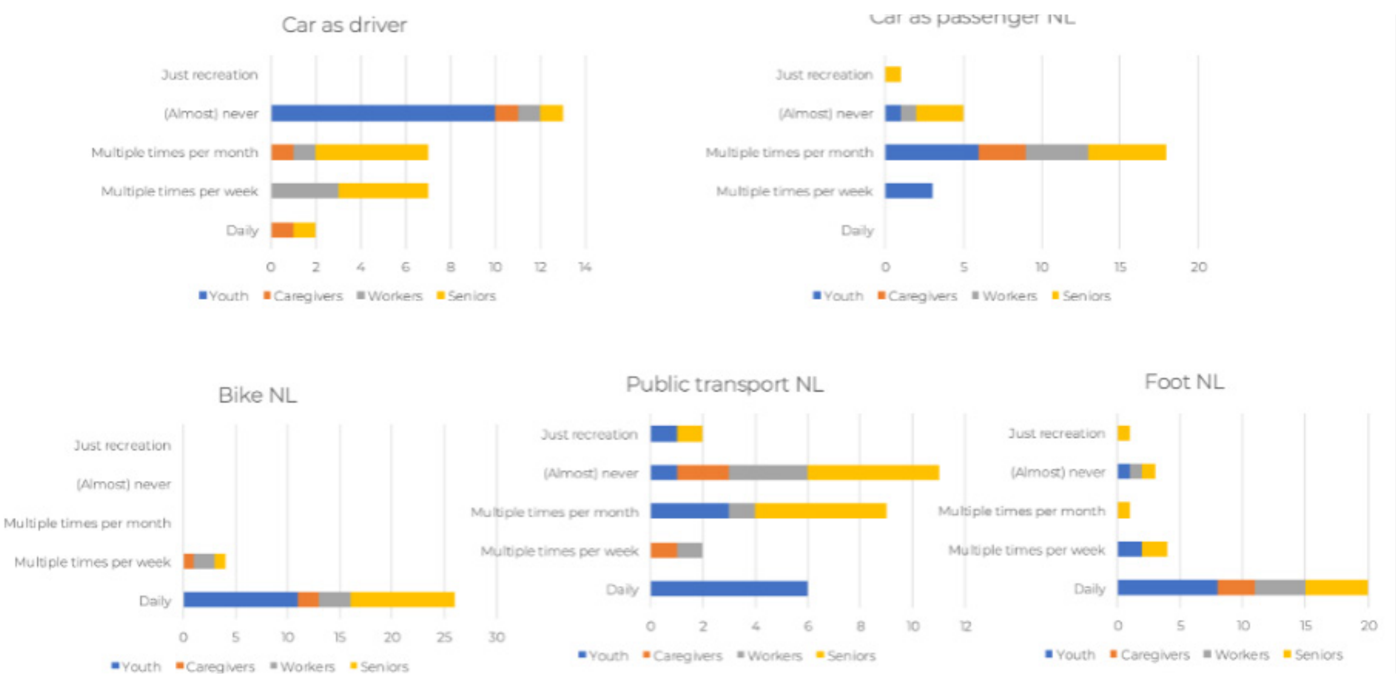
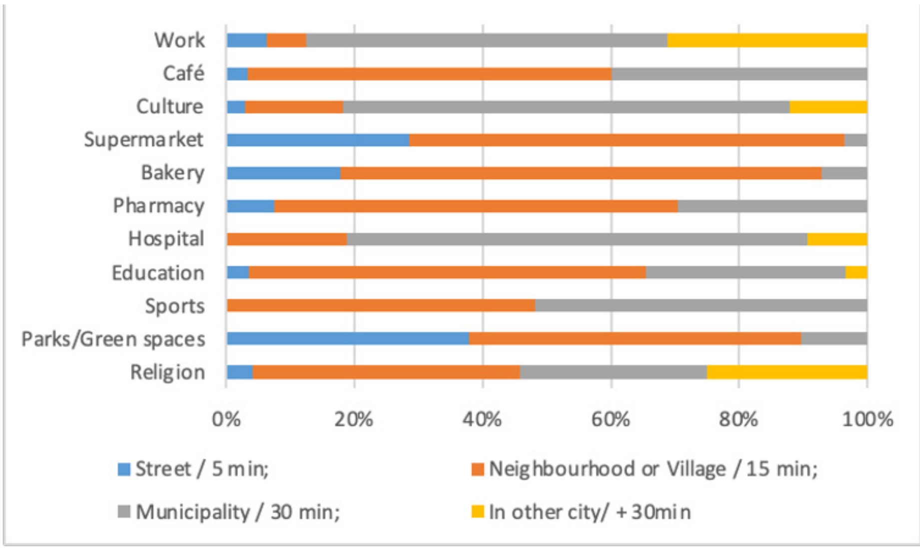


Figure 60: Preferred distance to amenities



Among working people, the majority worked part time (less than 32 h/week). From all the participants, 30% did voluntary work, and almost 15% identified themselves as houseman/housewife. Most participants were retired, or studying/in training.

Main results of focus groups

The most important results of the focus groups are presented below. The main aim was to answer the following three questions:

- Which relations exist between the daily practices of people using and reaching certain amenities and the places they live?
- Which challenges of proximity and accessibility have been discussed? How do different groups use mobility in the region?
- How does the use of amenities generally differ between the focus groups?

Overview of the discussion

For travelling within the city of Ede, the bike seemed to be the standard option among participants. Several people mentioned bike bags for grocery shopping or carrying objects. Cars are used to commute to other cities or places not well connected by public transport, due to physical limitations, to accommodate schedules of caring responsibilities, and because they are faster than public transport. They are also used in the city to carry heavier things, to give a ride to someone else, or for some shopping when en route back/to from other activities. Public transportation is regularly used by students to reach other cities for their studies, but less commonly by adults.

When asked about their mobility patterns, almost all participants use their bike on a daily basis. About half of the youth group used public transport daily, but nearly half of the participants used public transport rarely or never. Every participant owned a bike, and except for the youth, only two adult participants did not own a car. Still, less than 10 participants used the car daily or weekly as drivers. The ten participants in the youth group did not have a driving license or owned a car.

Participants were asked about how close they would like to be to several amenities. On table X, we see that for work, culture and the hospital, participants were more willing to travel further, including to another city. On their street, participants valued having a park/green space and a supermarket. The preferred amenities in the neighbourhood were a bakery, a café, a school, and a pharmacy. For sports, participants valued almost equally having amenities in the neighbourhood and the municipality.

There were few complaints about amenities. People seem satisfied (or used to) to what they can reach. Some neighbourhoods have no shops, but that is not seen as a problem as the inhabitants say they can easily reach the city center by bike in 10 minutes. Ede is perceived as green (and appreciated for that), with people mentioning it being surrounded by green and nature areas to walk and cycle in. The village identity persists for many people. “Going to the village” was commonly heard when referring to the city center.

Which relations exist between the daily practices of people using and reaching certain amenities and the places they live?

The majority of the focus group participants lived within the limits of the city of Ede, but in different neighbourhoods part of the higher density peri-urban types. While there were some comments comparing different neighbourhoods, the main differences in routines had to do with peoples‘ living situation (e.g. student attending studies in another city, caregiver with limited physical mobility, working or volunteering in cities and towns in the region, retired and doing voluntary work in Ede, working parents with young children, etc.). People living in the Ede Zuid neighbourhood were quite satisfied with the amount of supermarkets which could be easily reached, often by bicycle. It was mentioned that some neighbourhoods in Ede do not have any shops (e.g. the Enka development in the old Kazerneterrein). However, these areas were perceived by some participants as “quiet”, close to nature and more attractive to live, but quite expensive.

Other places and municipalities in the region were often mentioned, sometimes in comparison to Ede, but more often as destinations where friends and relatives live, or where participants conducted (volunteer) work, study or other (leisure) activities. Among these locations are Wageningen, Veenendaal, Rhenen, Barneveld, Arnhem and Utrecht. Bennekom, a village just to the south of Ede that belongs to the municipality, was mentioned a few times as a destination for sports/leisure activities. Bennekom sits between Ede and Wageningen, where there is a large university. The access from the highway A12, the bike paths connecting to the train station and the bus lines that connect to the university, go through or around Bennekom. Similarly to Lunteren, a more traditional village of Ede in the Northeast, the central street is a shopping street with a large variety of shops, including clothing, a bookshop, bakeries, cafes, and several supermarkets, and a dependency of the central library/cultural center Cultura. Veenendaal is a municipality bordering Ede to the East, and practically fully built, separated from Ede at the narrowest point by a mere kilometer of remaining farmland. Some participants found the center area of Veenendaal more attractive than Ede’s (using the Dutch term gezellig – cozy) and its bike infrastructure more advanced and intuitive. Some participants would go to Veenendaal for independent shops, and some youth travel there regularly to attend church services, see friends or go to school.

A possible indicator for how people in the surrounding villages and towns move is the means of transport that people in Ede use to reach those places - if they are hard to reach from the core city by public transport, we can assume that the system will be similarly inconvenient to move within and between villages and towns. In general, our participants tend to use the bike within Ede, but take the car more often to reach neighbouring towns/villages. The youth who attend church in Veenendaal must cycle for 30 minutes. Some of them also attend school in Veenendaal, because of family preferences and cycle 50 min daily. The bus connections after a certain hour are very sparse (hourly), and this was seen as problematic, for instance if one had to work in the evenings in Veenendaal. It was mentioned in one of the youth focus groups that the bus connections to the outer villages are rather poor.

Which challenges of proximity and accessibility have been discussed? How do different groups use mobility in the region?

In Ede, there are six areas with supermarkets and other shops. The main center in the northeast of the city is where most shops and cafes/restaurants are located, as well as amenities such as the central library, the municipality, the cultural youth center, and a weekly market. Outside the center the neighbourhoods are mostly residential with some primary schools and other educational functions. But some neighbourhoods have their own small shopping central area, with supermarkets and other shops (hairdresser, florist, cosmetics, cafeteria, etc.). Examples are Winkelcentrum Bellestein and Stadspoort. This means that most people live within a short cycling distance from daily amenities. Most participants go shopping by bike, using bike bags. When using the car for other motives (picking up children, or coming back from work outside Ede), they stop on the way to get their groceries as well. Generally, people were satisfied with the amenities they could reach. However in one of the youth groups, it was mentioned that for the parts of neighbourhoods furthest away from the shopping areas it could still mean cycling about 15 minutes to the supermarket, which was deemed too far. Other young participants recalled that a small shopping area had been torn down and now it was harder for the elderly to walk to shops. The youth group also reported going to other cities for shopping and day outings. Some complained about a lack of clothing and shoe shops and vintage clothes markets. They wished that markets (in the center and Stadspoort) could happen more than one day per week and include clothing stands.

Interestingly, walking was not mentioned as a way of reaching shops, but rather a leisure activity, often in green natural areas. Buses are generally not used within the city. Several participants highlighted the termination of some bus lines, that buses required stepping up or down, that stops were too far apart for people unable to walk longer distances, and that in some areas of Ede reaching the center requires changing buses and takes much longer than by bike. Still, it was recognized in one of the focus groups that “there were no ‘bus people’ there”, and that more attention should be paid to that group. Some participants observed that the number of cars in the city has been rising in the last few years and complained about traffic jams on major roads. Others acknowledged that while they might get a second car, if needed, they see the harm to neighbourhood livability as their streets become full of parked cars. Some students added that this happens even though there are not sufficient parking spaces (which they saw as needed).

Work and (higher) education are the main reasons to travel out of Ede. The city of Arnhem was considered very accessible by train (10 minutes), and some people sometimes even travelled there by (e-)bike, depending on the weather. Students travelled to Utrecht and Arnhem by train. The youth and students mentioned the fact that they had free public transport as a main reason to use it. None of them had a driving license, but most were planning to get one. In a youth group, participants expressed the wish to have a car instead. They saw it as more convenient than the train can be often crowded, delayed or cancelled. Among participants using the train, the standard was to travel to the station by bike and park it there. Further purposes of travelling include visiting friends and family, and (sometimes related) doing care activities for others. Such visits outside Ede are often done by car, as public transport was considered 'difficult' for longer distances or to reach remote places. To visit other cities in the region, such as Apeldoorn, the car was seen as the easiest option as it takes about 35 minutes while public transport requires about an hour. The need to change between connections was also considered inconvenient.

Regarding accessibility, the new train station was seen as lacking in several aspects, including staircases, escalators and wheelchair platforms. The route in and out of the station by bike is not straightforward as it requires several level changes, making it difficult for people with reduced mobility. Similar safety and accessibility problems were mentioned city-wide regarding narrow or unlevelled sidewalks and poor visibility of children on the street as they become cluttered with parked cars. Indeed, concerns about traffic safety came up often. All the groups mentioned the recent accidents that occurred in a recently redesigned roundabout in the south of the city (connecting to Bennekom), where despite cyclists having priority, cars tend to speed up and have too little time to notice cyclists crossing from both directions. Other complaints were about excessive car speed in school streets.

How does the use of amenities generally differ between the focus groups?

We observed some differences in the topics discussed in the various focus groups. The caregivers group was the most vocal about accessibility and municipal social services, showing concern for the needs of others with disabilities or in vulnerable situations. All participants had experiences with disabilities or physical limitations, either personally or through close family members. But two of them were also active in the community, engaging municipal services to improve conditions in the neighbourhood or advocating better support for vulnerable residents. Besides barriers in physical infrastructure (such as in the new train station), participants also discussed at length how social services should work faster and better. The fact that these services are coordinated at the municipal level can lead people to move to municipalities where they can get better support for their needs. In the workers group, the routines and life circumstances were quite diverse. Concerns in this group included livability being threatened by increasing numbers of cars, and the pressure of a growing population and housing in the area.None of the participants was originally from Ede or the region. While two live there already for decades (but still called themselves an "import"), the other two have moved in recently. They talked about belonging and getting settled in Ede. One participant coming from the urbanized West said she enjoyed not meeting anyone she knows on the street. Two others reflected that they enjoy coming across people they know. They discussed feeling at home, or as a local ("Edenaar"), and reflected that perhaps that feeling came from the memories of the places where they grew up.

There were two focus groups for the youth, one with high school-aged participants, and the other with slightly older people, in higher education, taking a gap year or working. The latter group made the most use of cycling and public transport. Those studying full-time make use of a free public transport pass during the week or weekend. The younger group depends more on the bike, which some even use to reach places far away from the center. They talked in depth about spots where they find it unsafe to cycle, and the lack of salt in some bike paths in winter making the pavement too slippery. Other themes that came up were the lack of public spaces in bad weather, such as covered areas in parks, youth community centers, or places to meet new people. Safety was mentioned in terms of street lighting and privacy. One participant talked about a park close to the apartment buildings where she could sit on the grass enjoying the view without being seen. These groups also complained about the lack of buses and limited schedules connecting to nearby villages and municipalities.

In the retired people group, participants had a lot of free time to engage in leisure activities. Some lead quite active lives, exercising frequently (cycling, walking), joining local associations, volunteering, and taking part in cultural activities. Some referred to themselves as "housemen" as their wives were still working. Problems with cycling infrastructure was a key concern discussed in this group. Participants complained about traffic planning still being organized around the car, long waiting times for cyclists at some crossings, inconsistent directions of bike paths, and bike routes not properly identified by Google Maps. They also discussed the pressure to build housing on green areas within the municipality, highlighting the example of the nearby sports fields which the municipality wishes to move to an outer area behind the highway. The participants agreed that sports fields, open areas and parks should remain close to the built area, and not be pushed further away.

People who have moved to the region in recent years report that they chose it for the green and nature areas, the availability of amenities, including the hospital, and the good access by car and train to other cities. Some also had relatives in the area, adding an extra layer of personal meaning. They compared Ede to places where they have lived before, and while the city was not seen by this group as very cozy ('gezellig'), and could improve in terms of cycling infrastructure, it was appreciated for being calmer than the cities in the West, having an active social and cultural life, and being well connected to the rest of the region and the Netherlands.

Other relevant insights

Housing and Urbanization

In the Dutch case, all focus groups were asked about their thoughts on the plans for further urbanization of the region (40,000 in the Regio Foodvalley, and 100,000 in the whole NOVEX area, including the Arnhem-Nijmegen Groenmetropool). There is a strong awareness of the lack of housing in the country and the region. Participants mentioned specific groups, such as students, elderly people, nursing homes, among others. They added that asylum seekers who had developed roots in Ede had to move to Veenendal, a neighbouring municipality. Others commented on the fact that in some families, when the children move away, there is often a big house left only for two people. In principle, some elderly people could move to smaller apartments, but these are often not available in the city or are unaffordable. Several people mentioned the lack of assisted senior homes ("bejaardenhuisen"). As a result, the elderly might struggle to live alone, but they have few alternatives, as nursing homes are often only available for people who require constant medical attention.

However, regarding the prospect of thousands of new houses in the city-region, there were worries about the whole city becoming more crowded with people and cars. Another concern was the prospect of having high-rises in Ede, which was not considered attractive. Nevertheless, some see a population increase already happening, observing greater traffic jams and more crowds in natural areas. Incoming residents from the west of the Netherlands (Randstad area) were mentioned in several focus groups, as wanting to move to the area because of its affordability, nature, and road and rail connectivity. There was a slight tension in a group between someone who recently moved there for these reasons and a long-term resident who complained that the influx of new people is causing traffic jams and crowds. Two newcomers to Ede reflected on what had happened in their home regions, where green spaces and farmland have disappeared to give way to new urban expansions. They feared the possibility of that also happening in this region, as more housing would be built in open areas between the city of Ede and Veenendaal, Lunteren, Bennekom and Wageningen. Overall, the discussions reflected both an acceptance of the idea that more housing is needed, but also concerns for how it would impact their living environment. Participants were self-reflective, considering that they already had their own house, but could understand that young people and new residents also want a place to live.

Identity and community

Most people describe Ede as green and surrounded by some of the biggest natural areas in the Netherlands, and they value being so close to beautiful surroundings. Several mention the fact that Ede is multi-faceted, namely that it has all the needed amenities, great road and rail accessibility, and a diversity of green areas and social activities. Indeed, several participants find Ede gezellig (in Dutch, literally 'cozy'). This term can be used to refer to an environment that is sociable and friendly. Several people did emphasize the many clubs, cultural associations, and possibilities to get involved. One participant who had previously lived in another city where he still has friends, said that even though he sometimes questions whether to return, he is very satisfied with his rich social life, in choirs, sports clubs, and associations. He added that while it might be difficult to mobilize people for civic participation, Ede has quite an open culture, which might be related to the longstanding role of churches, where it is encouraged that people look after one another. However, some participants do not find the centrum of Ede 'cozy' in comparison with other cities (e.g. Veenendaal, Utrecht). In this case, they mean that the physical space in the city center is not very pleasant.

Participants with roots in Ede refer to going to the center as going "to the village", while others refer to it as "the center". A participant from the caregivers group calls it "a village with city allure". In three focus groups there was some criticism of an (over)ambitious plan of the municipality for a World Food Center which had flopped and would eventually harm this 'village' identity. The feeling is most pronounced in villages belonging to Ede, particularly in Lunteren, which has a very strong identity. Lunteren is known for a high social cohesion but also being a place where outsiders have more integration difficulties. The youth group mentioned that people raised in Lunteren stay there, which gives it a strong group culture. They give the example that in the supermarket people greet each other, which does not happen in Ede. Still, this closeness and village scale inspire some youth to consider Ede safe in comparison with their perception of bigger cities, which have areas seen as no-go zones. Among the youth attending higher education, some would like to live in a bigger student city, but appreciate the feeling of living in a village and say they would like to move back to Ede later in life, back to a more peaceful environment.

The caregivers group was quite precise about the perceived needs of the community, and discussed that more support is needed for vulnerable people at the neighbourhood level, eventually connecting formal (municipal) with informal (community) services.
An example is the apparent increase of people with dementia, and how important it is for people in the neighbourhood to know how to recognize and help a neighbour in that situation. Several participants support neighbours by conducting shopping trips on their behalf or dealing with the municipal services. Given the general dissatisfaction with the municipal social services, participants asked what would happen to these people if the informal support was not there.

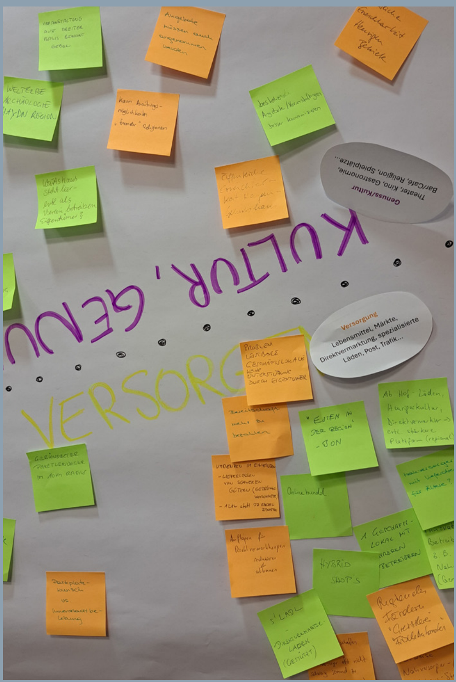
Interlude

Along the (policy) margins: InPUT's fieldnotes from the peri-urban

Peri-urban areas lie at the margins: between urban and rural, between administrative boundaries, between possibilities and contestations about planning futures. They also lie at the margins of knowledge production, often overlooked by researchers and policymakers, but able to generate knowledge that does not come from the centre and to diversify our mental maps of what kinds of spatial development are possible, plausible and desirable. It then becomes quite appropriate to experiment with research activities also 'at the margins' - i.e. outside the formal setting of governance institutions, official policy documents and stakeholder interviews, moving towards semi-informal environments that allow collective discussion, exploration and co-creation.

As a result, the theme of the margins inspired the four co-identification workshops with policymakers conducted in the Netherlands, Austria, Belgium and Portugal between January and April 2025. As mentioned in the methodology chapter, these events aimed to fill some of the gaps left between the spatial, social and governance analyses. The focus on "co-identification" appears as we wanted to work together with policy stakeholders to identify the elements of the 15-minute city that are already present (even if hidden) in their peri-urban regions, the ones that are missing, and what opportunities and challenges exist in order to pursue them. Furthermore, we wanted to look prospectively into the future: as we envision a peri-urban area with conditions of proximity, accessibility, liveability and inclusivity (by itself perhaps a 'marginal' idea), what policies and priorities were needed to get there?

Fitting the exploratory spirit of these initiatives, what follows is structured as a visual essay documenting the events, their setup, interaction, materials and textures, interspersed with text that points out the key findings. These are framed according to the three main previously expressed ambitions: to triangulate research findings with more tacit knowledge, to verify everyday practical trade-offs and frictions that affect peri-urban policymaking, and to understand how policymakers imagine the opportunity spaces that represent their ambitions for transformative spatial developments in peri-urban areas.



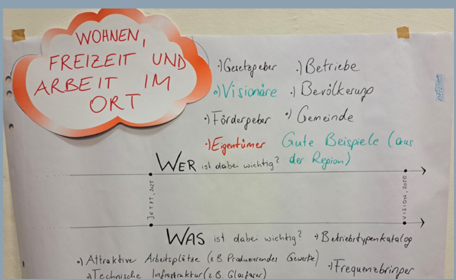


Photo 1: Workshop Netherlands

Triangulating Governance Challenges

The workshop results strongly aligned with the governance challenges identified in the analysis, with actors pointing out sectoral misalignments, temporal mismatches in delivery, fragmented responsibilities, and constraints across decision-making scales.

Decisions about infrastructure (both in terms of mobility and urban design) still reflect an automobile logic, with the deep-rooted car dependency becoming an infrastructural and a cultural default limiting the imagination space of policymakers and residents.

The scope of imagination is also determined by tensions between local agency and systemic constraints. While local actors see room to experiment with alternative spatial or procedural parameters, they remain limited by national regulations, concession structures and hierarchical funding logics. This is partially mitigated by a strong medium-scale actor (e.g. a Province) able to nurture a cooperative culture, allowing actors to focus on pragmatic place-based issues and take them to larger negotiation platforms.

Here, the key messages focused on coordinating governments with service and infrastructure providers as well as developers to facilitate integrated planning. The need for strong public sector actors able to carry influence over infrastructure investments and regulatory environments is considered key.

Overall, policy actors recognise the need to focus on mobility, amenities, proximity care systems, but stress the importance of multi-scalar cooperation, negotiation, and improving municipal capacity and resources.

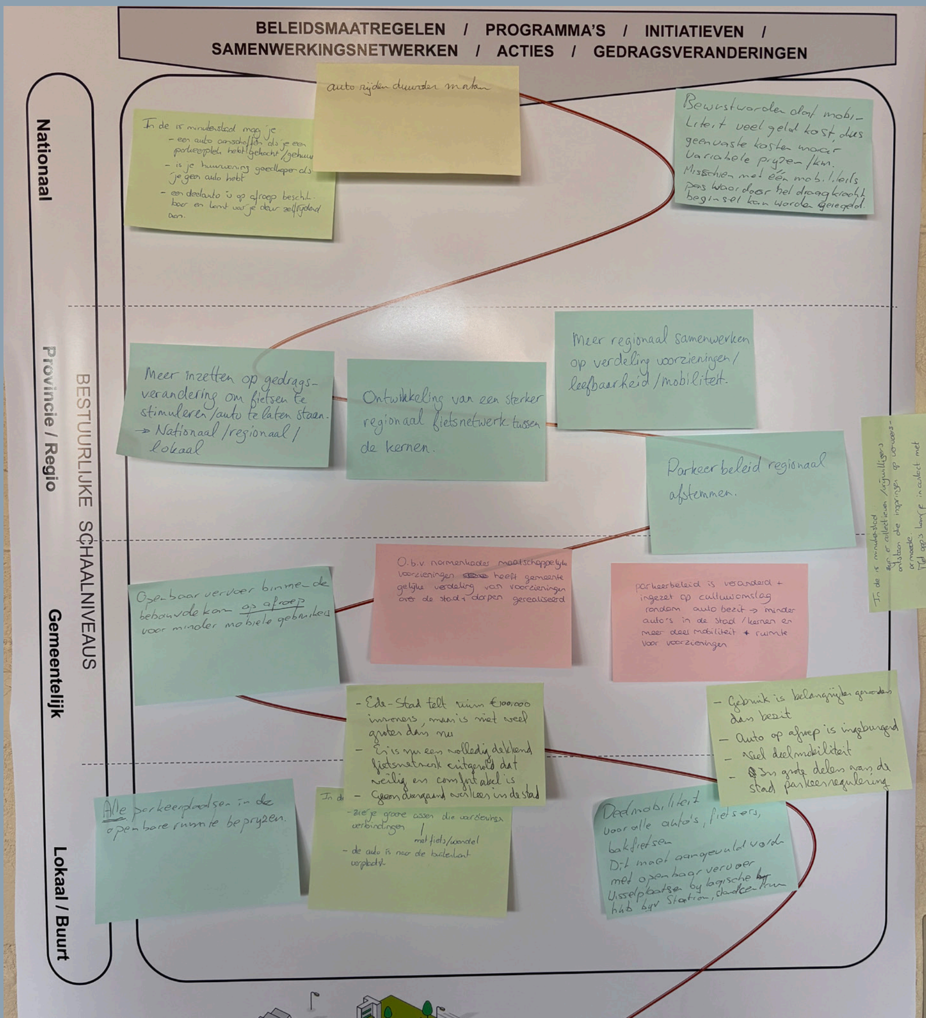


Photo 2: Workshop Portugal

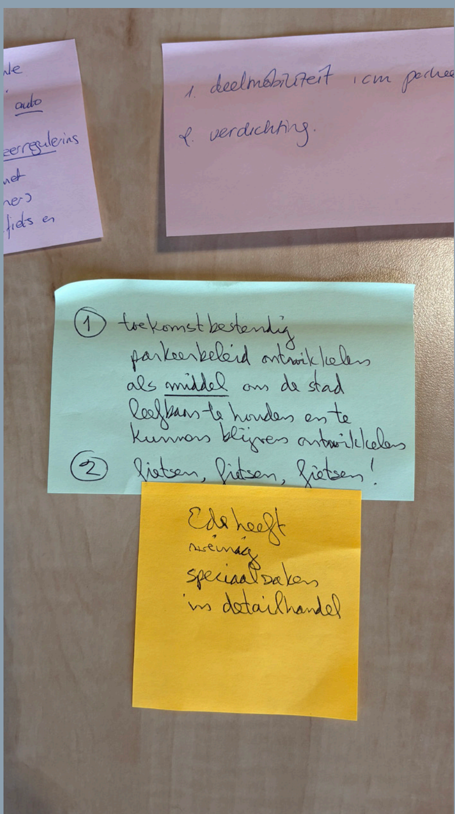


Photo 3: Workshop Portugal

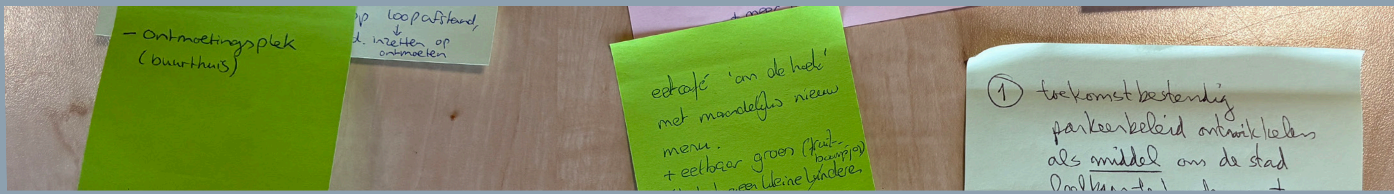


Photo 4: Workshop Portugal

Everyday practical trade-offs and frictions

Three types of governance frictions hamper the implementation of 15mC principles. The first is the trade-off between the planners views on improving proximity, accessibility and liveability and the political willingness to adopt certain measures, based on the (perceived) local mindsets. Better public transport, walkability and cyclability are desirable, but regulations or costs that disencourage car use are politically unpopular. Inclusive policies oriented to the public good are positive, but concrete measures to prioritize public space development, encourage shared amenities between parishes and municipalities, or develop alternative forms of (collective) housing lack proper political support.

Another trade-off is between the desire to encourage community-led decision-making and the generally weak participation level. Initiatives are geographically uneven and supported by a few engaged individuals, rather than by a broad social representation, as peri-urban areas are still developing a culture of civic participation. Moreover, many civic initiatives focus on hyper-local priorities emerging from local attachments and do not prioritise coordination with larger scales. As such, governments cannot uncritically implement those initiatives, which leads to a perception by civic groups of lack of voice in decision-making.

Finally, there are frictions between what is just and desirable from a policy perspective and the need to rely on market players and ensure economic feasibility. A common critique addresses the orientation to efficiency and demand rather than social need as factors to plan public transport. Similarly, the economic incentive to locate amenities (retail, services, etc.) tends towards consolidation in highly accessible nodes, detaching them from everyday local mobility networks and limiting local liveability. In the current paradigm, policymakers are frustrated by their limited capacity to increase the attractiveness of the local scale for many economic actors.

Photo 6: Workshop Portugal

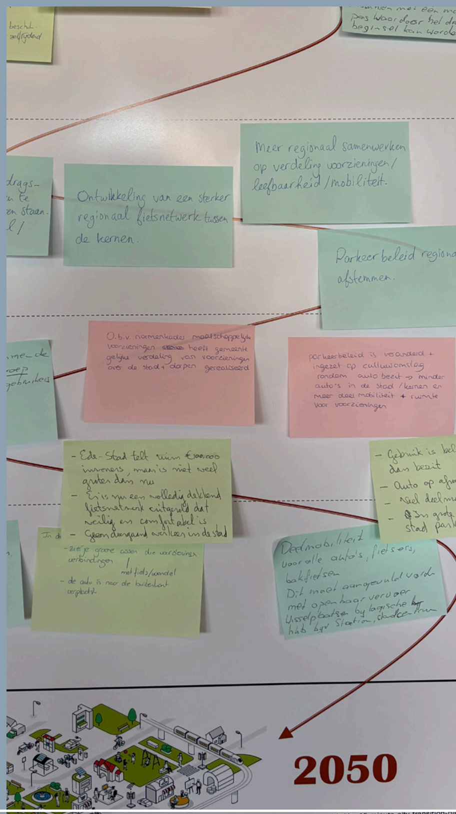


Photo 5: Workshop Netherlands

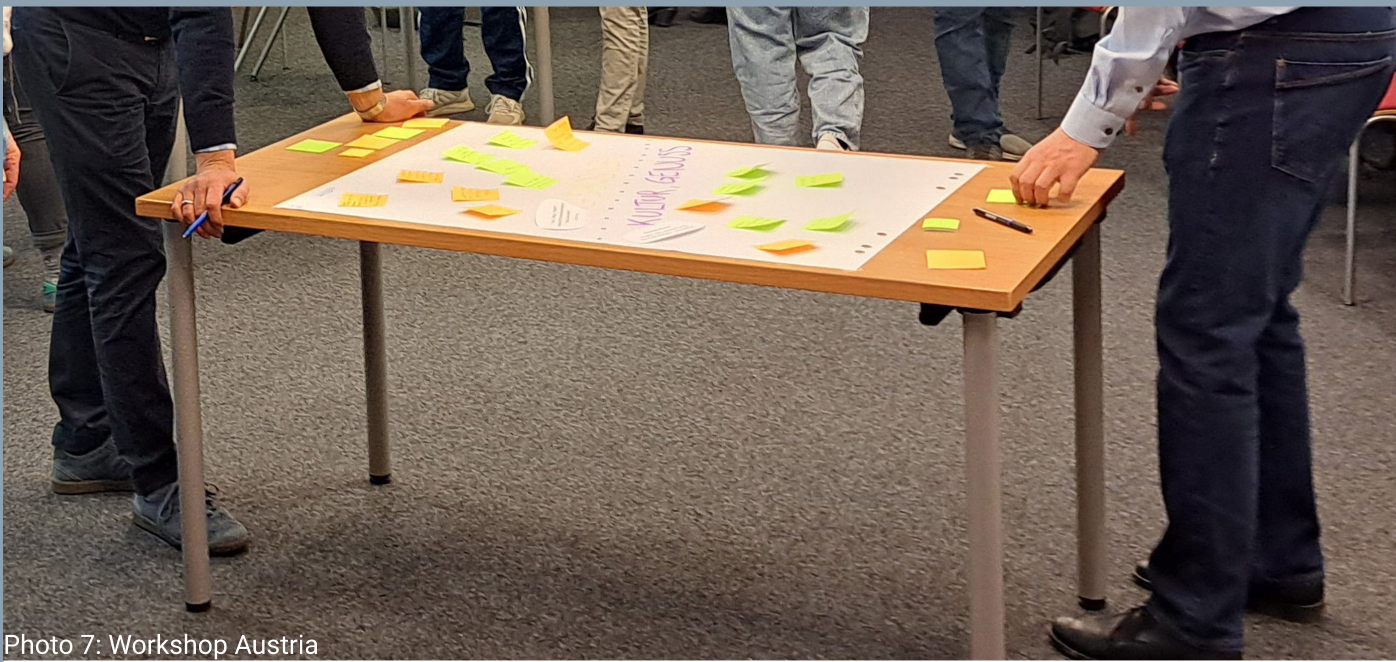


Photo 7: Workshop Austria

Imagined opportunity spaces

While peri-urban governance actors do not identify with an 'anti-urban' label regarding their adherence to 15mC principles, they often imagine the spaces of opportunity to realize these principles in different ways from their urban counterparts.

There is a strong focus on moving away from a car-first paradigm, seen as a central problem of peri-urban areas. Mobility innovation is envisioned in the form of shared vehicles, transport on-demand, revitalising unused infrastructure for active mobility corridors, and data platforms for planners and citizens. The perceived traits of peri-urban societies give rise to specific proposals beyond the uncritical reproduction of the 15mC model. Examples include embracing 'slowness' and spatial experiences rather than speed and efficiency in mobility planning, or reinforcing cycling in places where it is already embedded. In most cases the preference is to prioritise opportunities more likely to be quickly and widely accepted even if they only represent small steps. The symbolic power of concrete examples is considered central for behavioural change and political acceptability.

Another trend of peri-urban spatial imagination is a strong awareness of the need to strategically employ existing resources. There is an emphasis on the co-location of amenities as means to sustain small-scale proximity. Amenities sharing space provide greater economic feasibility, support a strategic activation of vacant spaces in town centres, and a more efficient allocation of public services. Approaches include temporality, with functions changing over a day, week or season. Alongside this consolidation, an opposite principle of 'mobile amenities' is also imagined, in which social care, medical or cultural functions travel across the region to serve communities with lower travel ability.

Participants also see the combination of multiple functions as a driver of social equity and encounter, supporting social cohesion as well as providing tangible improvements with enough critical mass for people to recognise and value. The diversity of activities in these locations can be leveraged to explore existing community ties, trigger more community-led initiatives, and improve the local social infrastructure.

The necessary conditions to implement these opportunities include activating publicly owned land, the ability to employ regulatory and fiscal instruments, and stronger roles for both large non-municipal actors (e.g. transport operators) and small players (civic groups, parishes).

PART IV

Cross-case analysis

Comparative Spatial analysis

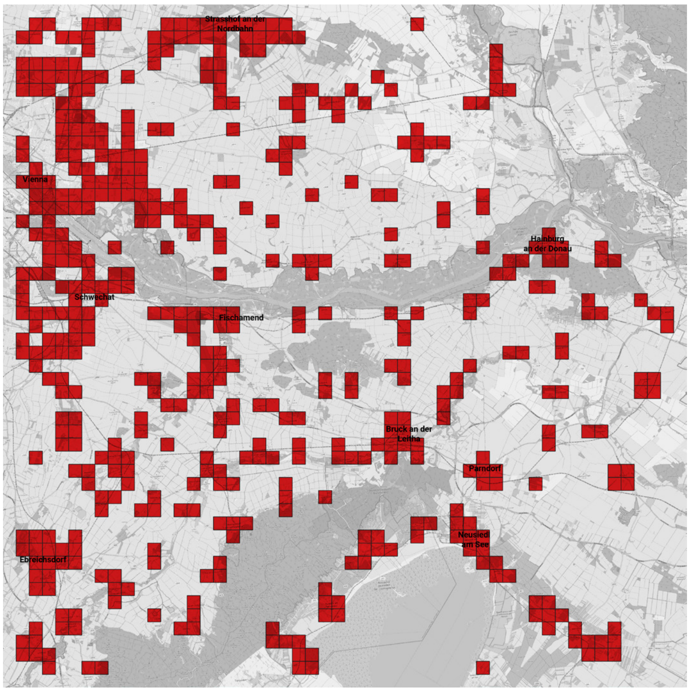
Definition of the peri-urban areas
Austria / Belgium / The Netherlands / Portugal

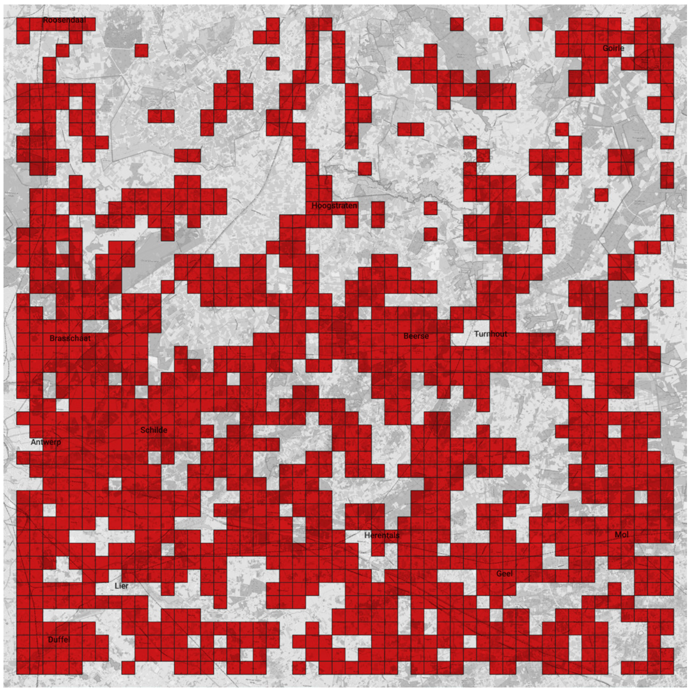
The four cases show very diverse patterns of the peri-urban. First, they differ greatly in the number of grid cells defined as peri-urban. The case study areas each have an extent of 50 x 50km, overlaid with the 1km x 1km EU grid. This results in a total of 2500 grid cells for each case study. Those with the highest share of peri-urban cells are the Portuguese (61,9%) and Belgium (53,3%) cases, followed by the Dutch (36,7%) and finally the Austrian (20,1%) case.

Peri-urban

Overview of the peri-urban in the case study areas

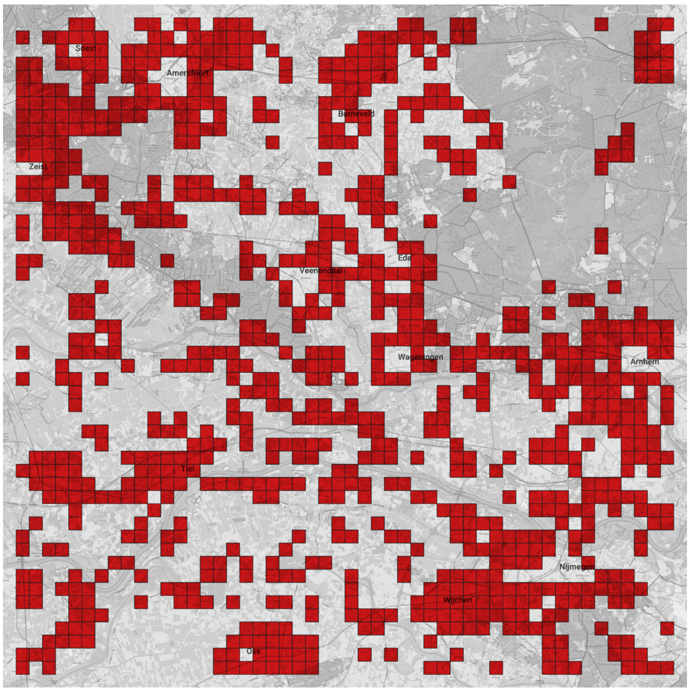
Austria / Belgium / The Netherlands / Portugal

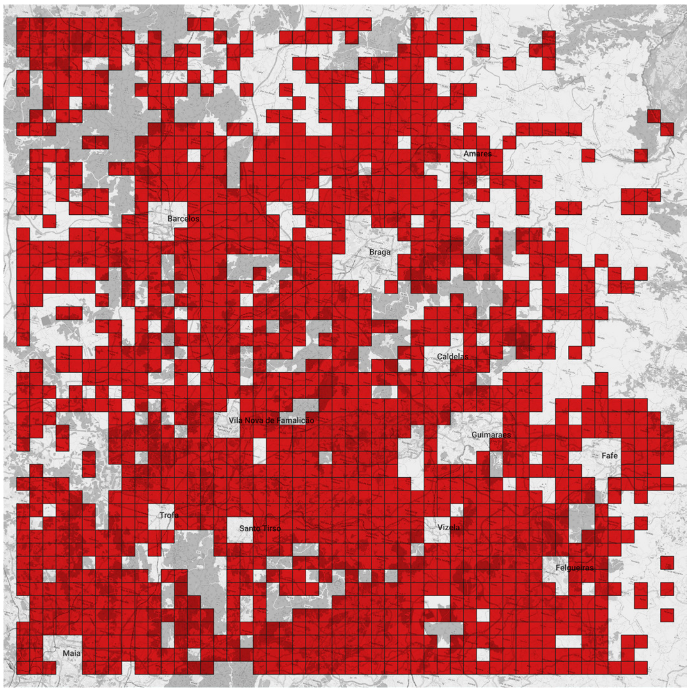




Austria

Belgium





The Netherlands

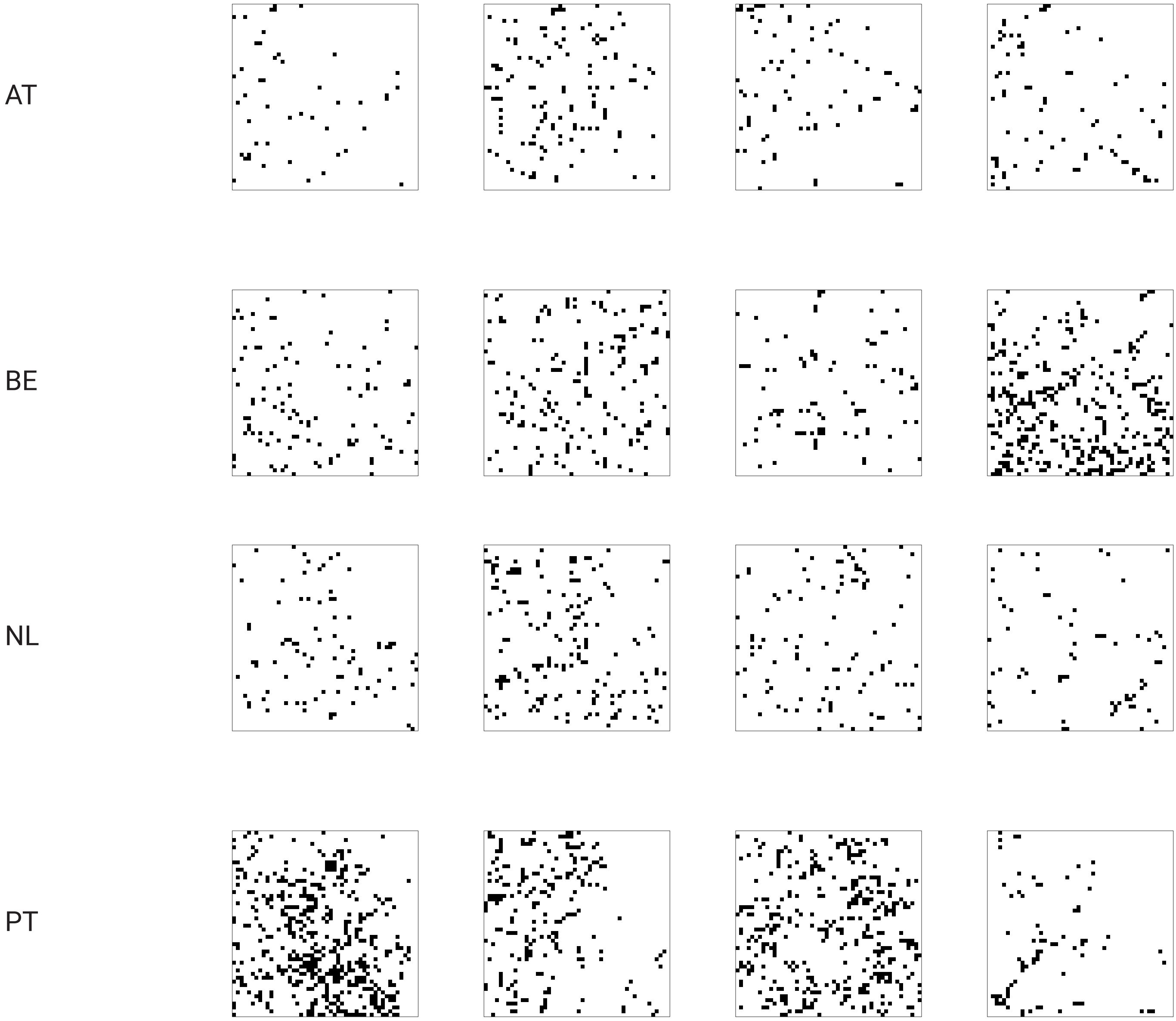
Portugal

Number of peri-urban grid cells per case

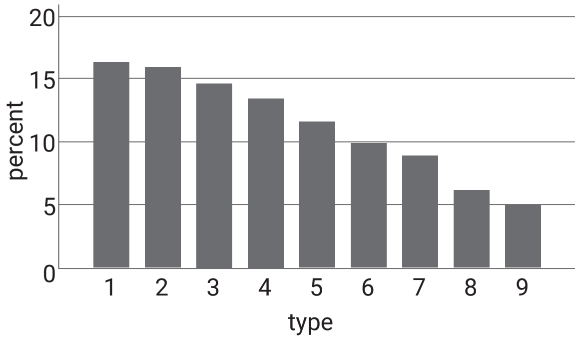
Austria	502
Belgium	1332
Netherlands	918
Portugal	1547
Total	4299

Distribution of peri-urban places
per spatial type across the four case study areas

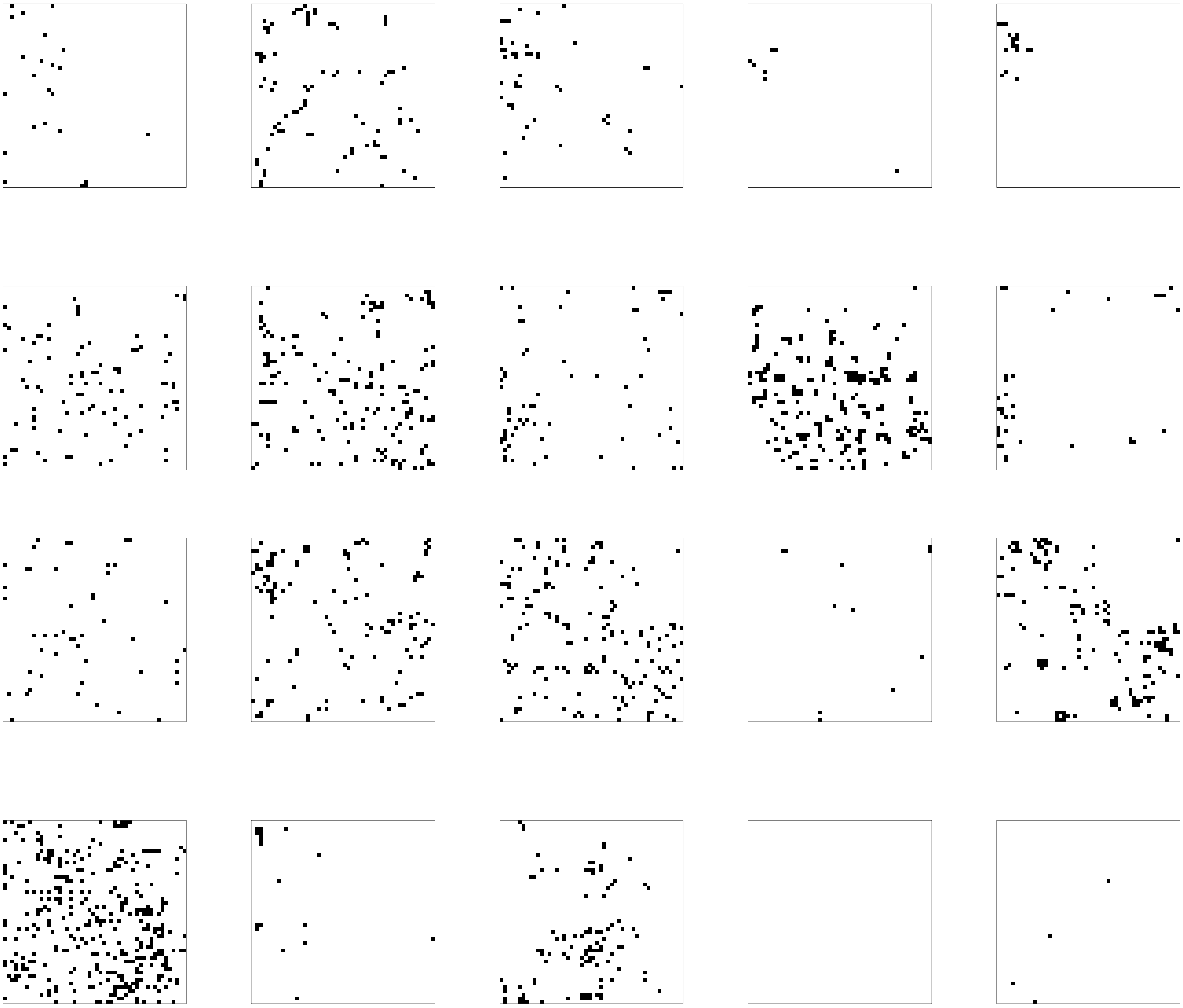
	Type 1	Type 2	Type 3	Type 4
centrality	medium	med-high	low-med	high
ground coverage	low	low	low	low-med
number of buildings	low	low	low	low-med
population density	low	low	low	low



Frequency per spatial type across the four cases

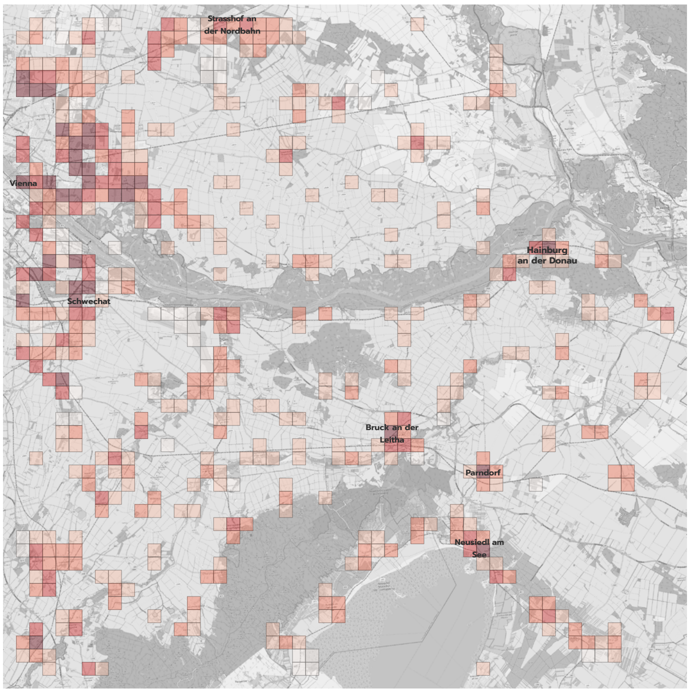


Type 5	Type 6	Type 7	Type 8	Type 9
low	high	med-high	high	high
low	low	low-med	high	med-high
low	low	low-med	high	high
low	low	medium	low-med	high

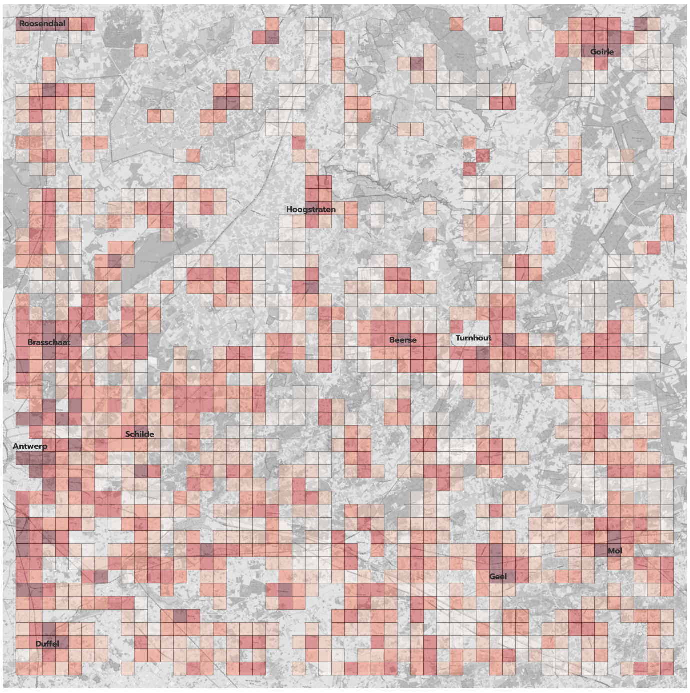


Comparison of demographic and spatial structural typology
Four cases

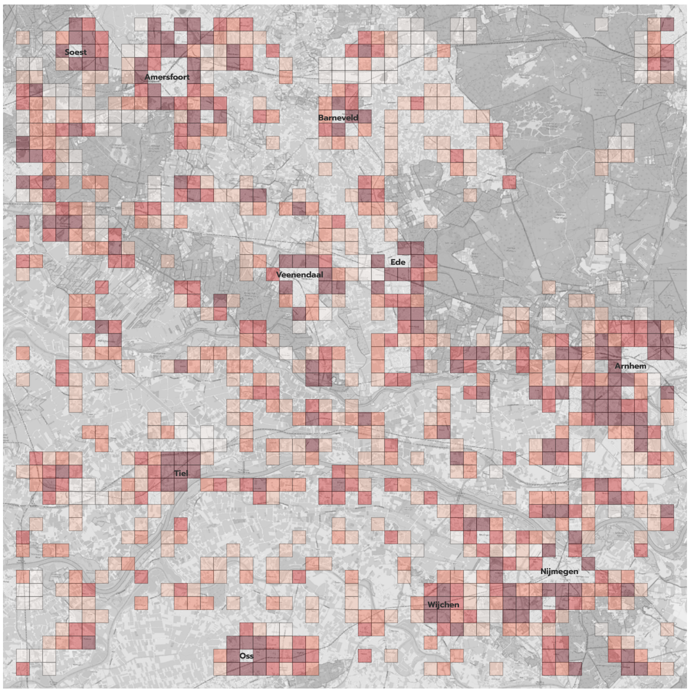
Demographic typologies



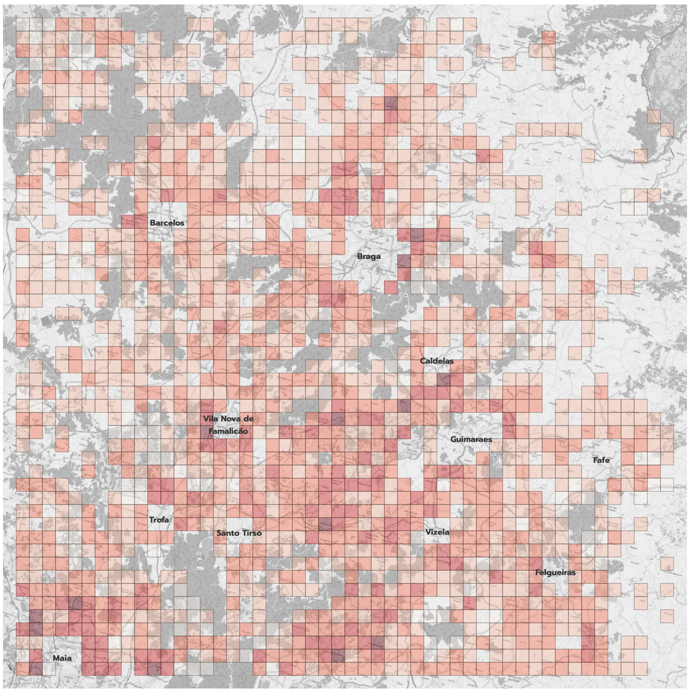
Austria



Belgium



The Netherlands

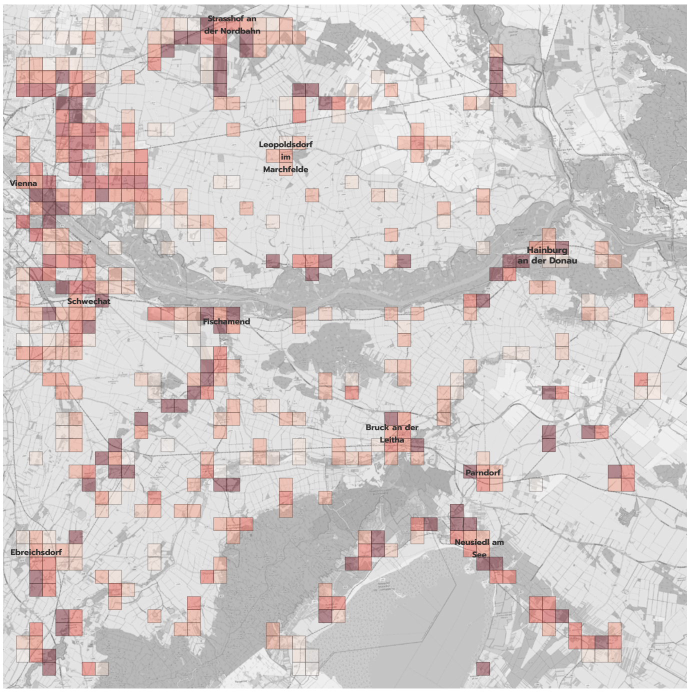


Portugal

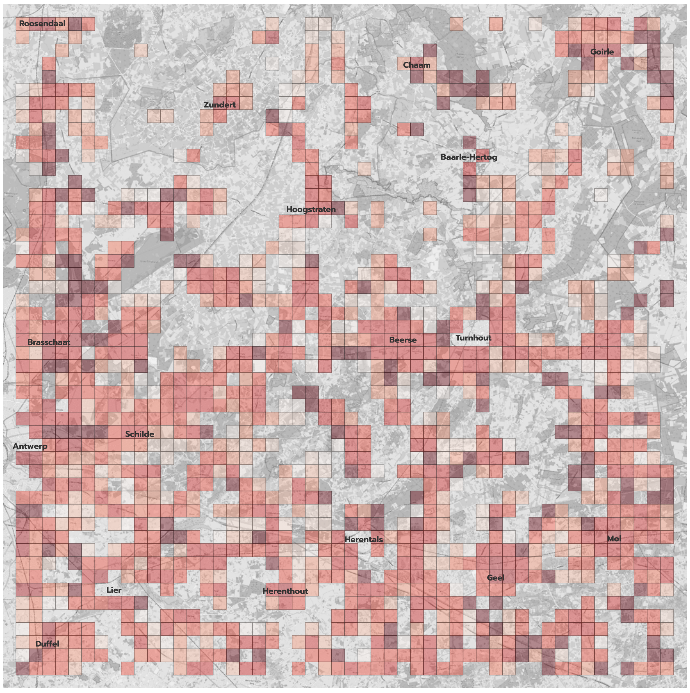
	POP_DENS	AGE <15	AGE 15-64	AGE >64	% EMP
3	32	12,5%	68,8%	18,8%	50%
1	258	13,8%	66,1%	20,1%	47,7%
2	649	14,2%	66,2%	19,6%	47,9%
4	1468	15,4%	65,1%	19,5%	48,9%
5	3248	15,6%	64,3%	20,1%	48,4%

Across all cases, the most densely populated type shows approximately 10 times more population than the least densely populated. The age distribution is relatively similar across the types, with similar percentages of people aged between 16 and 64, and a higher share of people over 65 years old than 15 or younger. Interestingly, there is a tendency that with increasing population density, the types also show an increasing share of young population, while the over 65 share remains rather similar. The most common demographic type is characterised by low population density and is one of the types with the highest share over 65.

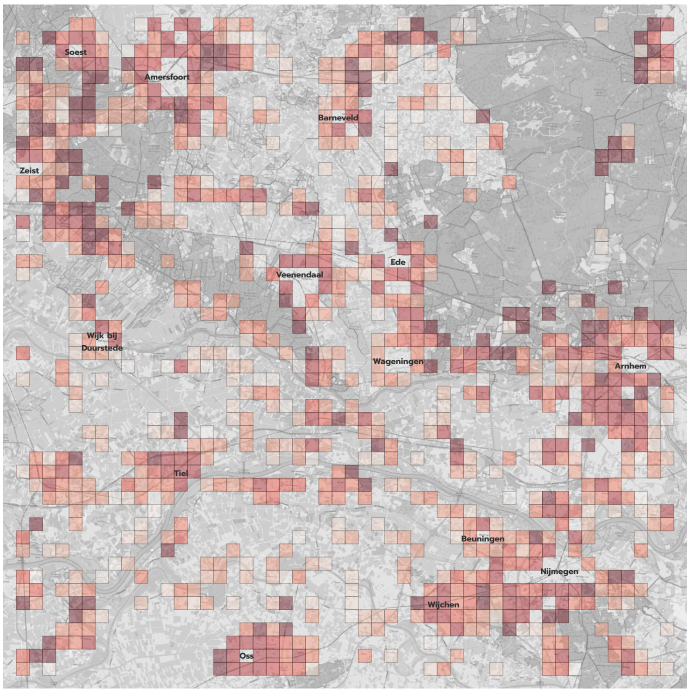
Spatial typologies



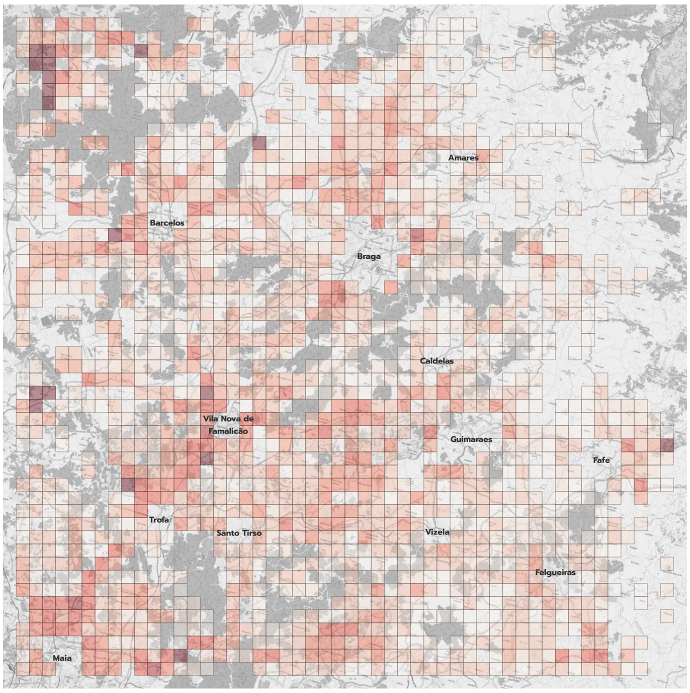
Austria



Belgium



The Netherlands



Portugal

	centrality	POP_DENS	GSI	number of buildings
5	low	low	low	low
3	low-med	low	low	low
1	medium	low	low	low
2	med-high	low	low	low
7	med-high	medium	low-med	low-med
4	high	low	low-med	low-med
8	high	low-med	high	high
9	high	high	med-high	high
6	high	low	low	low

The most common spatial types in peri-urban areas across all four case studies are those with low land coverage, built density and population density. The main difference between these more common types (1, 2, 3 and 4) is the varying centrality of the road network, which ranges from very decentralised to very centralised. The four types together account for 60% of all locations classified as peri-urban. Overall, spatial type 1 is the most common (16%). It is characterised by medium network centrality and thus has an average spatial accessibility in the region (via the road network). Locations of this type are sparsely populated.

Exemplary manifestations of spatial structural types

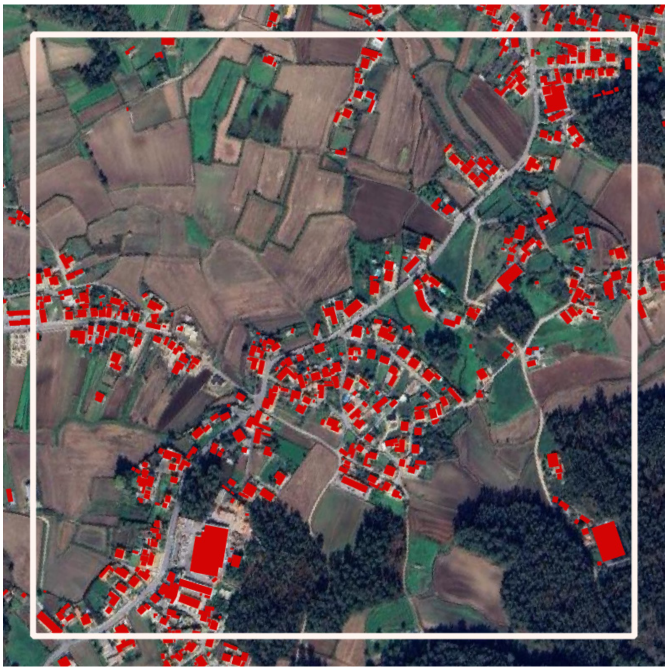
Spatial structure type C1

SC1	centrality	ground coverage	number of buildings	population density
	medium	low	low	low

AT 9.4%

BE 8.0%

NL 9.4%



PT 29.0%

This type has a medium centrality and low ground coverage, number of buldings and population. It is the most common in the Portuguese case (29% of all peri-urban grid cells), and appears less frequently in the other three peri-urban regions. Overall, this dispersed type adds up as the most common across all four cases, although this is strongly influenced by its very high representation in the Portuguese case.

AT

BE

NL

PT

Exemplary manifestations of spatial structural types

Spatial structure type C2

SC2	centrality	ground coverage	number of buildings	population density
	med-high	low	low	low

AT 24.1%

BE 13.4%

NL 18.2%

PT 13.5%

This type, which mainly differs from the previous one in terms of centrality, is the most common in the Austrian and Dutch cases (24% and 18% respectively), and also appears frequently in the Portuguese and Belgian case studies. Overall this type - low spatial density parameters but medium to high centrality - appears nearly with similar frequency (15,7%) as type 1.

AT

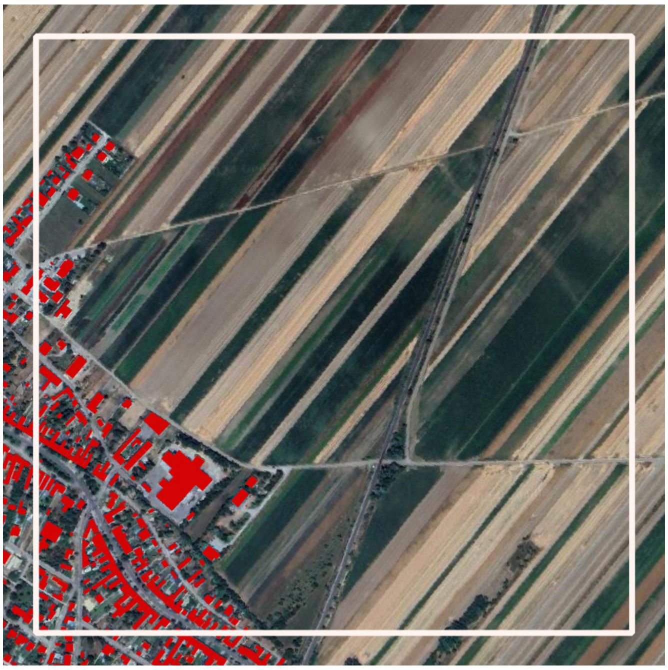
BE

NL

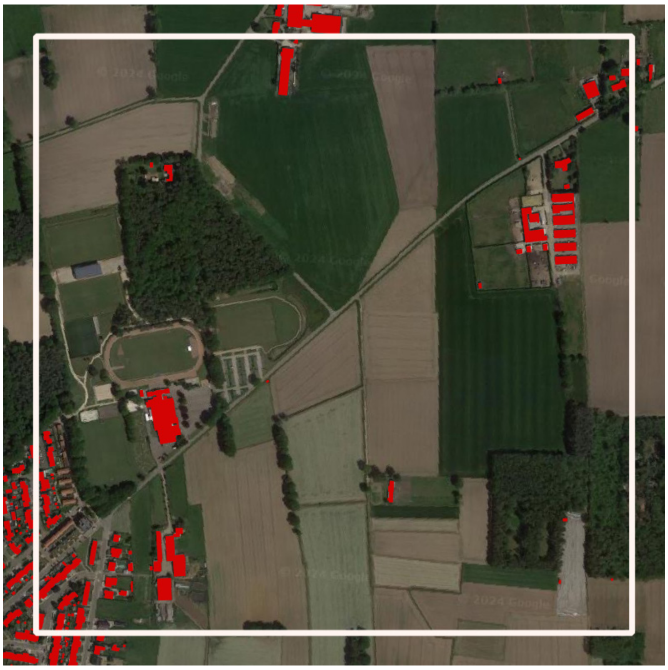
PT

Exemplary manifestations of spatial structural types
Spatial structure type C3

SC3	centrality	ground coverage	number of buildings	population density
	low-med	low	low	low



AT 15.3%



BE 6.8%

NL 10.6%

PT 23.1%

This type is the second most common in the Portuguese case, while it appears less frequently in the other three case studies. It is characterized by relatively low values across all spatial indicators, enjoying less centrality than types SC1 and SC2 above.

AT

BE

NL

PT

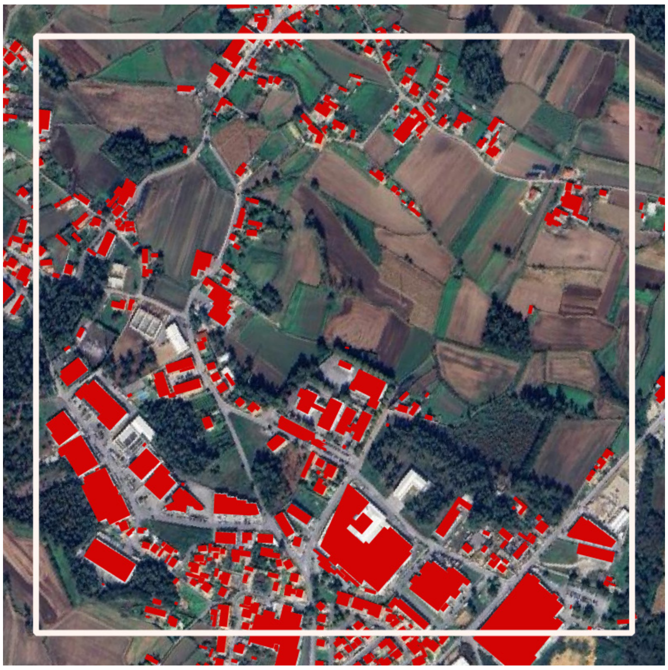
Exemplary manifestations of spatial structural types
Spatial structure type C4

SC4	centrality	ground coverage	number of buildings	population density
	high	low-med	low-med	low

AT 15.7%

BE 26.4%

NL 7.5%



PT 5,0%

This type is the most common in the Belgian case, appearing also frequently in Austria. It has a high centrality, being well served by the sponge-like road network in the peri-urban regions. While the population density remains low, the ground coverage and number of buildings (often non-residential) increases.

AT

BE

NL

PT

Exemplary manifestations of spatial structural types
Spatial structure type C5

SC5	centrality	ground coverage	number of buildings	population density
	low	low	low	low

AT 16.7%

BE 6.8%

NL 4.6%

PT 21.3%

This type is the third most common in the Portuguese case. It appears with some frequency in Austria and only occassionally in the other case studies. It is characterized by low values in all parameters and differs from the previous one by containing smaller (residential) buildings and a more village-like settlement structure.

AT

BE

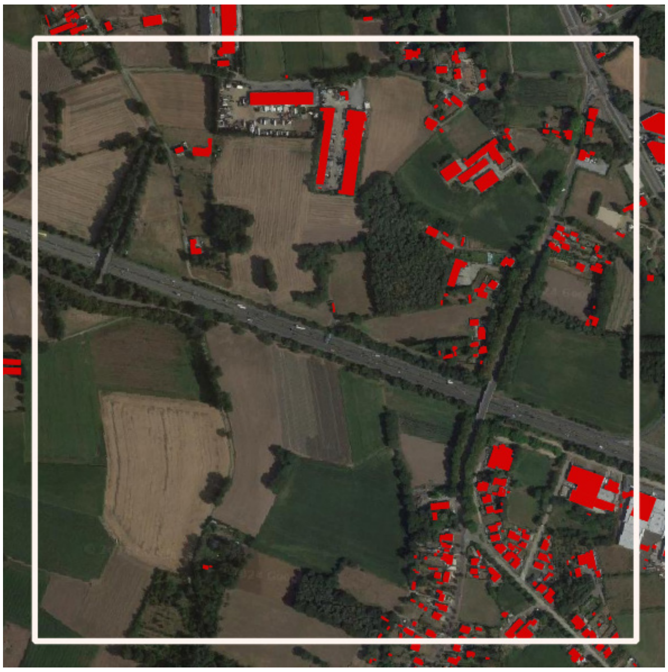
NL

PT

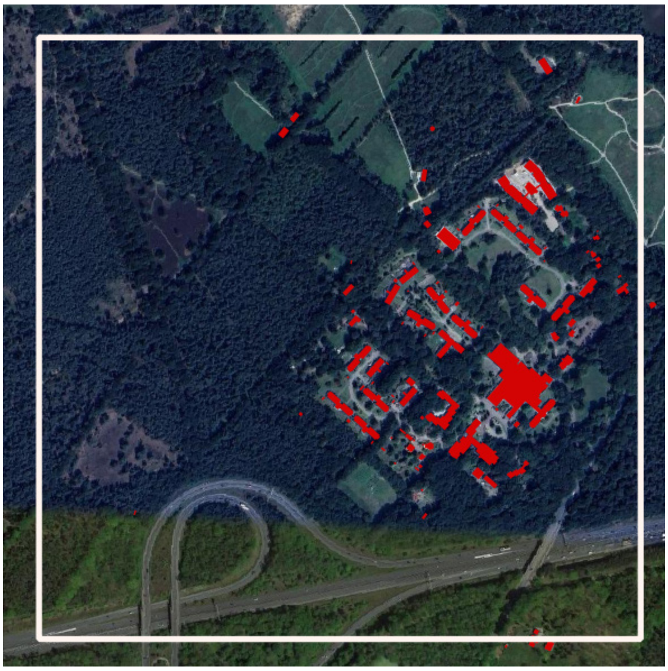
Exemplary manifestations of spatial structural types
Spatial structure type C6

SC6	centrality	ground coverage	number of buildings	population density
	high	low	low	low

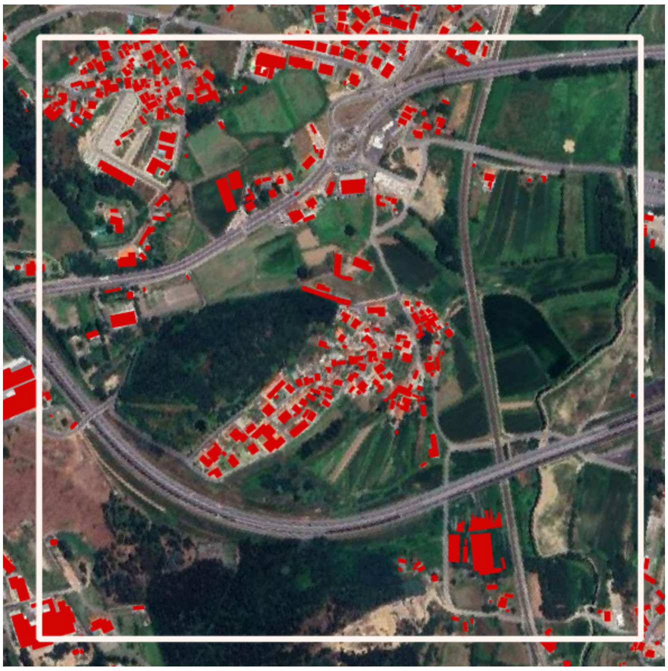
AT 16.7%



BE 12.7%



NL 13.7%



PT 1.2%

This type is the second most common in the Austrian case, and while it also appears frequently in the Dutch and Belgium case studies, it is almost inexistent in Portugal. It is a type where good access to the principal road network increases centrality but the ground coverage, number of building and population density remain low, closer to the typical patterns of the peri-urban region.

AT

BE

NL

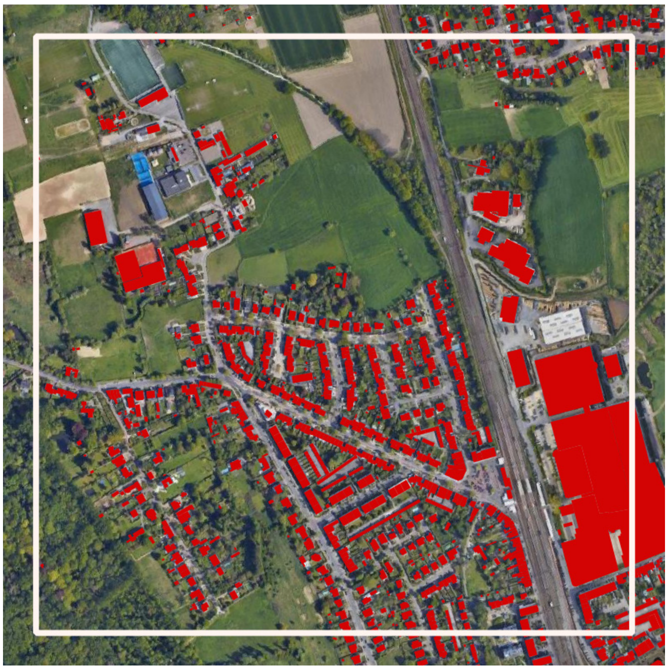
PT

Exemplary manifestations of spatial structural types

Spatial structure type C7

SC7	centrality	ground coverage	number of buildings	population density
	med-high	low-med	low-med	medium

AT 9.4%



BE 5.0%

NL 17.7%

PT 6.7%

This type is the second most common in the Netherlands, and appears less often in the other three case studies. It represents an increase of all spatial density parameters in comparison to the previous clusters and is characterized by relatively compact morphologies with medium to high centrality.

AT

BE

NL

PT

Exemplary manifestations of spatial structural types

Spatial structure type C8

SC8	centrality	ground coverage	number of buildings	population density
	high	high	high	low-med

AT 1.4%

BE 18.5%

NL 1.2%

PT 0%

This type is the second most common in Belgium, while it is rare in Austria and the Netherlands, and does not appear at all in the Portuguese case study. It features a dense morphology and high centrality, often mixing residential and non-residential buildings in a relatively structured grid. The population density remains low to medium as the type usually does not capture the densest population centres.

AT

BE

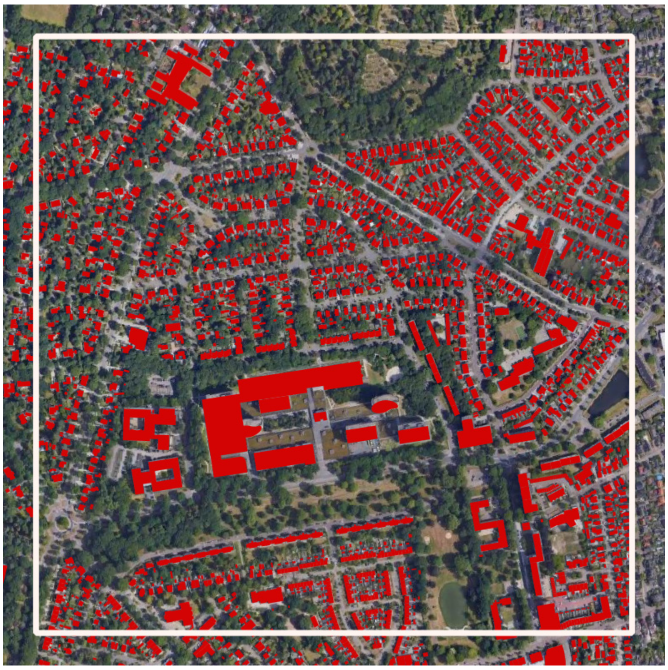
NL

Exemplary manifestations of spatial structural types
Spatial structure type C9

SC9	centrality	ground coverage	number of buildings	population density
	high	med-high	high	high

AT 3.4%

BE 2.6%



NL 16.6%

PT 0.3%

This type is the third most represented in the Dutch case study, while it is very rare in the other three case studies. It represents the closest type to a more typical urban setting, with high values across all spatial parameters. It is not a common type overall and, when it appears, it typically captures well-established town centres (AT, BE, NL) and/or dense new developments (PT) in the peri-urban region.

AT


BE


NL


PT


13 CLIMATE ACTION
11 SUSTAINABLE CITIES AND COMMUNITIES
9 INDUSTRY, INNOVATIO
AND INFRASTRUCTURE

Governance analysis

Introduction: the power of comparison

To cope with contemporary crises and develop future-proof solutions, cities and regions eagerly search for inclusive and just transformations of their territories. In that context, the principles of proximity, accessibility, liveability and inclusivity of the 15-minute city are gaining increasing relevance, not only in dense urban cores but also in peri-urban areas, where both the difficulty to translate these principles and the urgency to implement them may be greater. However, even if peri-urban areas have a strong incentive to develop effective governance solutions to pursue 15-minute city conditions, they struggle with specific challenges. These include fragmented governance structures with different levels of capacity and responsibility, and a mixture of local, municipal and regional instruments and initiatives focusing on highly contrasting types of land use and economic activity across the urban-rural spectrum.

Such a context of fragmented jurisdictions, layered roles and responsibilities, hierarchical and sectoral-dominated systems, and uneven capacity provides difficult conditions for the implementation of the 15-minute city that differ strongly from the more structured and resourceful institutional settings where the model has been successful. Generally, we know little about how cross-boundary cooperation between regions and municipalities, regional development plans with diverse levels of institutionalisation, and a crowded landscape of sectoral actors can work together to deliver coherent peri-urban spatial development. Moreover, these scattered governance structures are not only highly interdependent, but their processes are shaped by their national and regional contexts, including spatial planning traditions, political cultures, and institutional architectures. It is therefore critical to learn from a variety of context-specific and multi-scalar governance initiatives to understand to what extent the dynamics of peri-urban spatial governance may support, boost, hamper or neglect the development of 15-minute city principles, and, more broadly, enable social, spatial and ecological transformations that allow peri-urban societies to flourish.

In this chapter we engage in a critical comparison of the results of the governance analysis in the four case studies. The selected instruments and initiatives, alongside their actors and institutional frameworks, show commonalities and differences, and their wide range of processes turns simplistic comparisons in search for 'best practices' or standardised approaches inadequate. Therefore, we approach comparative research as exploratory and generative. The logic of generalised practices and decontextualised policy transfer is a common pitfall of the 15-minute city discourse, especially in peri-urban areas where spaces, institutions and societies vary widely. A comparison aimed at ranking 'who does better' risks erasing local specificity, neglecting decisive constraints to, or triggers of, spatial innovation, and alternative ways of organising proximity urbanism and daily life systems.

Here, we take inspiration from Robinson (2011) arguments about the 'comparative gesture', namely that comparative approaches should value learning across non-overlapping contexts, treating all places as equally relevant, rather than converging towards an universal model. Following Massey (2005), our approach aims to avoid the linear development trap which sees places situated along a trajectory of 'progress' where some have advanced and others lag behind. By assuming a plurality of causations and appreciating the complexity of cases rather than isolating common explanatory frameworks (Pickvance, 2001), we acknowledge that 15-minute city discussions have drifted away from such 'model city' logics, where successful cases were seen as benchmarks to emulate (Poorthuis & Zook, 2023). Accordingly, each peri-urban area is treated according to its own conditions, histories and values, and each governance context is seen as capable of offering insights. Peri-urban areas defy rigid planning categories, ranging between dense and dispersed settlements, intensive and scattered infrastructure clusters, urban and rural land uses, and formal and informal planning rules. This makes these areas ideal for exploratory comparison, aimed at expanding the portfolio of governance solutions, revealing under-explored pathways and experimental practices, and opening space for alternative futures beyond well-known models. The comparison that follows, therefore, aims to learn from these contrasting governance contexts as they progress, rather than prescribing a preferred way forward. While keeping a critical view towards potential governance failures and bottlenecks and informed by the previously discussed governance contexts, instruments and initiatives, we aim to compare how different societies situate, value and negotiate their own versions of peri-urban development.

In the following sections, we draw on the contexts of the Netherlands, Portugal, Austria and Belgium and the diversity of their governance styles, planning instruments and policy priorities when it comes to 15-minute city principles. We start by a characterisation of the alignments and misalignments of governance scales and actors, followed by an overview of country-specific governance features and institutional cultures. We then provide a synthesis of common challenges and opportunities related to the adaptation and adoption of 15-minute city principles, and conclude with a set of implications of the ongoing processes for improved 15-minute city governance in peri-urban areas.

General scalar contradictions: aligning horizontal and vertical governance schemes

The cross-case synthesis of peri-urban governance instruments and initiatives remains true to the comparative intent of this study - a divergent, exploratory analysis aiming at diversifying possibilities rather than a normative exercise. There is indeed no single set of best practices, despite some convergence in development goals and decision-making modes across countries, as planning policies become more influenced by models of urban development focused on quality of life issues (such as the 15-minute city) and by EU-level aspirations for urban liveability, mobility, and climate-smart infrastructure, among other transitions (Cotella, 2020). Still, the analysis reveals the rich diversity of governance pathways in peri-urban areas, together with challenges and opportunities for the expansion of principles of liveability, accessibility, proximity and inclusivity in these regions.

Governance is generally characterised across the four countries by proactivity coupled with lack of capacities at the municipal level (although with more decision-making autonomy and dimension in the case of the Netherlands and Portugal), a trend for non-binding coordination efforts at the inter-municipal and regional scales, and a national level (or upper-regional in the Flemish case) with abundant resources but little reflection of local knowledge. The national or federal scale holds most legislative capacities and controls the financial resources for projects whose goals and directions are often set transnationally, namely by European Union programmes (Interreg, LEADER, etc.). Local initiatives and voices are usually reflected in municipalities, yet the limited capacity of some of them to implement wider transformations tends to be tackled by (usually non-binding) regional or inter-municipal initiatives that coordinate strategic, spatial and mobility planning efforts.

Governance structures and types show a wide differentiation. The highly aligned, consensus-oriented, multi-level structure of the Netherlands, aiming at formal agreements across national, regional, provincial and local scales, contrasts with the Portuguese system, which connects the national and municipal scales, but leaves serious gaps in-between. These gaps are filled by inter-municipal bodies that lack operationalisation power due to a hierarchical system polarizing decision-making either at the national or the municipal level. This leaves fragmented implementation responsibilities in the hands of individual municipalities. Belgium and Austria, both with a federal state structure unlike the other two cases, tend to enable inter-municipal and regional coordination and involve actors at various scales, which can play a stronger planning role. Peri-urban regions in these countries are governed by a greater variety of dispersed, horizontally coordinated actors and programmes, not as vertically aligned as in Portugal and the Netherlands, but rather based on incentives for regional cooperation, decentralised decision-making models aimed at shared priorities, and a tradition of civic participation at local, sub-municipal scales, especially in Belgium. Nevertheless, the Belgian mode of participation is quite fragmented and lacks a spatial dimension, limiting the measures to localised, fragmented efforts rather than systematically addressing socio-spatial issues connecting local and regional agendas, such as public transportation networks between peri-urban locations. Governance fragmentation at the horizontal and vertical levels is common in all cases. In the Netherlands, vertical integration of governance scales is key and cross-domain negotiations are mandatory. However, conflicting sectoral priorities running horizontally across policy fields make coherent multi-functional planning very complex in terms of land use, distribution of activities and timing of interventions. Horizontal coordination in Portugal is more related to inter-municipal integration, where a poor track record of cooperation, lack of resources in municipalities, and low levels of civic participation contribute to uncoordinated interventions, despite recent efforts to develop cross-domain and cross-scale projects. However, important changes in processes and policies depend on the national government or the regional planning commission (CCDR) in whose administration mayors also have a say. In Belgium, there is a stronger track record of collaboration between municipalities and provinces. However, imbalances are spatially articulated by a high investment in radial development of public transport networks from city centres mirrored by disinvestment in transversal links between smaller settlements. The Austrian longstanding cooperative culture facilitates integrated solutions, both horizontally across locations and policy domains, and vertically across governance scales. However, the low density of the peri-urban region and the rather fragmented and complex funding schemes and planning instruments make large-scale, disruptive regional projects hard to implement. This stands in opposition to the Netherlands, where the strong alignment of peri-urban actors with national and regional ambitions and the availability of resources from higher state levels prioritizes the delivery of such large-scale projects but risks neglecting small-scale priorities targeting proximity, accessibility and liveability, especially in peri-urban areas outside the main cores.

This leads to a fundamental question about the appropriate scale to implement 15-minute city principles in peri-urban areas. We know that the original model's focus on proximity tends to privilege the neighbourhood scale. However, it becomes clear that in peri-urban areas, the low-density settlement types, the dispersion of activities and amenities across several locations, and the resulting scattered mobility patterns require that proximity and accessibility principles are realised on a larger spatial system across neighbourhoods, towns and municipalities - this is broadly the understanding in the Dutch and Belgian cases. But, on the other hand, if the liveability in places of residence and the spatial experience of moving daily across the region is to benefit from the principles of the 15-minute city, then the small scale should not be neglected.

This leaves many spatial policies unresolved. Cross-boundary regional planning facilitates 15-minute conditions at the large scale but may benefit already best-connected nodes and neglect the smaller scales of daily living, especially in countries with large municipalities which contain in the same administrative boundary dense town centres and lower density areas. Conversely, smaller context-specific interventions may improve such missing 15-minute city parameters at very local scales and respond to the more immediate expectations of the population, but the lack of resources to upscale beyond localities and the inability to articulate projects across the peri-urban area may fail to achieve a more complete retrofitting the region towards inclusive and sustainable development. As a result, peri-urban governance towards the 15-minute city may be stuck in inertia or patchy implementation.

Country specificities: do national contexts show distinct governance styles?

Peri-urban spatial planning governance in each country adopts a distinctive approach based on the constraints of each national planning system, continuity with embedded practices, and the most urgent policy aims. As a result, similar failures, bottlenecks, successes and opportunities in the different cases are nonetheless driven by different, context-specific factors. Dutch peri-urban governance relies on adaptive negotiation, in which actors at all scale levels navigate an evolving and iterative planning process under state coordination. The Portuguese model is less flexible, adopting a strongly hierarchical programmatic steering with municipal executives being central and intermunicipal actors essential intermediaries for delivery. Austria often tends towards consensus-building across broader coalitions of actors, combining provincial leadership with strong local powers. Belgium exhibits a mix of networked regionalism, a decentralised system of actors not always formally linked, with highly localised participatory niches, and higher-level planning of transport and other key infrastructure. This is what emerges from the cases analysed, which we assume to appropriately represent the conditions in our areas of interest, but is not necessarily valid for all planning areas, scales and domains in the four countries.

The adaptive negotiation frameworks typical of the Dutch governance approach come from a tradition of consensus-building, which, after decades of decentralization, has now morphed into a highly formalised multi-level governance system. Within that framework, the question is how much negotiation space exists between levels of governance. Where such space is available, founded on intermunicipal or cross-scale coordination, peri-urban governance frameworks use it actively - indeed, the analysis revealed that a large part of the time and resources of governance actors goes into procedural dimensions, rather than just into the content of the plans and policies. Having to rethink how to weigh the various voices during the negotiation, connect vision with implementation, monitor and adjust plans, and adapt established individualistic planning practices in provinces and municipalities to a new way of doing things, offers an opportunity to develop grounded and collaborative plans. But it is also a challenge to the funding, timely delivery and sectoral coherence of spatial policies.

Similar negotiation spaces exist in Austria, with national-level coordination replaced by the strong leadership role of the province, and highly formalised frameworks giving way to softer planning tools aimed at local learning, capacity-building and empowerment of various actors. Municipalities are small and diverse, and have a history of local autonomy, making them active co-producers of governance solutions, which also leads to limitations in larger-scale coordination, sectoral integration (e.g. multimodal transport) and local decision-making abilities. In practice, integrated governance requires a strong steering role by the province, effectively reducing formal negotiation space even if the crowded landscape of actors and initiatives provides many parallel platforms for informal sharing and learning.

Belgium (in this case, Flanders) has a similarly dense landscape of actors and initiatives, with a weaker steering role at federal and provincial level in regard to spatial planning (but not transport planning). This leads to greater governance fragmentation as well as flexibility, with actors showing a greater tendency for temporary, purpose-specific coalitions with various levels of formalisation. The context of fragmentation mixing cooperative and competitive claims (even at sub-municipal levels) makes the voices of smaller actors less relevant in large-scale integrated projects and broader regional investments, such as public transport. Moreover, while flexible alliances, village-level participation, and the variety of parallel negotiation platforms allow for multiple opportunities to incorporate local needs and knowledge into tailor-made solutions, their inability to articulate long-term visions and dependence on higher-levels funding may lead to frustrating outcomes.

Funding is also a dominant theme in Portugal, but dependence on structural funds (EU and national) runs across all governance scales, making the planning system more embedded in strict vertical funding schemes and national programmatic steering, with municipalities operating as implementing agents with limited flexibility and resources, especially the smaller ones. The intermediary actors (e.g. intermunicipal communities) help translate priorities to the local level but the strongly centralised national administrative system has not yet been able to devolve decision-making powers and financial resources to these entities, and create a culture of flexible cooperation. As a result, these entities can add a level of coordination to various context-specific development approaches, by transposing higher-level planning agendas or helping local actors adapt to funding eligibility rules. But they are still rarely able to move the opposite way, i.e. to synthesise and articulate priorities coming from their scale of action to influence programmes and agendas at higher levels.

To what extent these spatial governance styles provide support for the implementation of 15-minute city principles in the peri-urban areas under their purview? In general, adaptive, negotiated and multi-actor models are well-suited for peri-urban 15mC development, where trade-offs between functions, uses and scales requires continuous balancing and iterations. However, difficulties may arise from power imbalances and inability to articulate processes and mobilise resources. This is the case of the Dutch model, where sophisticated planning schemes enable adaptive thinking and cross-domain integration to develop multi-functional uses based on proximity and accessibility, but complex and conflicting spatial claims and different local delivery capacities make cross-scale integration challenging. The Belgian and Austrian cases similarly offer flexibility and adaptability, adding a strong participatory level that focuses on proximity needs and local liveability, but require greater spatial coherence, namely utilizing the 15-minute city principles to better integrate the regional scale in terms of mobility and functions. Strict, vertical models, like the Portuguese may be able to mobilise resources and achieve cross-scale coherence, but higher-level priorities (even if learning from EU-level priorities that may align with the 15-minute city) risk insufficient engagement with local socio-spatial realities, especially considering the focus on proximity urbanism and the needs of communities living in widely contrasting types of settlement.

Common challenges and opportunities (and different ways to tackle peri-urban blind spots)

In this context, several common challenges and opportunities could be detected across the analysis, despite the different nature of each case. First, all countries lack a balanced distribution of capacities at the local (municipal) level, with municipalities varying widely. In Portugal and the Netherlands, some larger municipalities may command considerable financial capacity and increased autonomy (in the Portuguese case in the context of a decentralisation process in a non-regionalised country). But in both countries, as well as in Austria, municipal limitations are more evident in their poor ability to influence higher-level guidelines, even if formally part of a consensus-oriented system. In Austria, the fiscal constraints experienced by many municipalities further limit their room for manoeuvre. In Belgium there is an arguably excessive dependence on non-local actors, such as agencies and consultancies, for expertise in municipal tasks. Such limitations combined with a lack of inter-municipal resource-sharing platforms are a common thread in the analysis. Local governments often face insufficient capacity - finances, human resources, decision-making power - to fully execute or adapt the usually quite ambitious regional plans.

This raises questions about why there are gaps between ambition and capacity. On one hand, the imperative to plan regionally to articulate sufficient critical mass (of people, activities, infrastructures, amenities), increase efficiency and reduce fragmentation (Ahrend et al., 2015) may deliver positive net results, but often builds upon a layer of intra-regional unevenness with resourceful winners and resource-poor losers. On the other hand, ambitious spatial planning innovations, especially when depending on large financial and infrastructural resources, are often designed with large, powerful urban centres in mind, in a privileged position to act on the challenges and typically framed as frontrunner crisis 'fixers' (Miller, 2020). This 'urban bias' is likely to make planning aspirations neglect the operationalization, implementation and delivery capacities of smaller cities and towns, and peri-urban areas generally, producing more territorial inequalities.

A related aspect of this challenge that runs through several cases is the persistence of blind spots in peri-urban areas when it comes to a just and equitable implementation of spatial principles of liveability, proximity, accessibility and inclusivity. These blind spots can happen at two levels. First, the urban-centric models of growth, amenity and mobility distribution risk leaving many smaller settlements and low-density territories underserved. This is not a plea for having everything everywhere, but rather for establishing a coherent link between mobility networks, the functional organization of the territory and the daily needs of people and organizations. The public transport in the Netherlands and Belgium, where, respectively, the increasing reduction of 'unprofitable' bus lines and the insistence on radial connections from larger centres contribute to public transport failures in many locations is a case in point. The low-density urban expansion in Portugal without a corresponding coherent planning of amenities and transport, and the difficulties of town centre retail to compete with large shopping centres at peripheral edges in Austria are further examples of spatial patterns that leave several inhabited areas neglected and underserved. These areas later become very hard - and more expensive - to retrofit in terms of walkability and proximity.

A second way to understand peri-urban blind spots has to do with the difficulties of cross-sectoral integration, namely what happens at the boundaries of (partly) incompatible land uses and the role of the local, non-state actors, such as civil society groups, which are likely affected by these incompatibilities. 'Blind spot' is an apt term here because sectoral thinking in planning policy may pay attention to the spatial and infrastructural quality of individual functional areas - mixed-use programmes, housing, green areas, mobility nodes, etc. However, as the Dutch case exemplifies most of all, limited space and resources combined with competitive spatial claims do lead to conflicts. If new mixed-use housing schemes cannot be designed coherently with sufficient scale, density and connections due to certain areas being earmarked for nature protection, water management or agricultural production, the result is likely to be incomplete, fragmented and poorly connected areas with poorly resolved relations with the surroundings. By contrast, if these naturally determined spaces for green and water cannot be preserved due to development pressures, greater ecological risks will emerge and the urbanisation process is likely to need emergency adaptations later. Again, the uncertain boundaries between these spaces suffer the greatest competitive pressure from these conflicting claims.

The other cases explored here do not experience comparable levels of spatial competition, but governing mobility, land use, housing policy, energy policy, among other sectors, as partially disconnected systems at different scales increases the risk of misalignments. This is particularly relevant in peri-urban areas, whose functional and spatial organization is more dispersed, fragmented, and likely to incorporate activities that are incompatible with urban areas (see for example, the 'unwelcomed' spatial needs demanded by the 'welcomed' circular economy in Dabrowski et al., 2024). While this is hard to govern from a large-scale perspective, as the implications of each spatial conflict are nuanced and context-dependent, the actors who could eventually provide grounded and specific knowledge about the local trade-offs, namely civil society groups, knowledge organizations, and businesses, remain poorly integrated in peri-urban governance frameworks. Despite some local-scale initiatives (see e.g. Resilient Towns in Flanders), in all the cases analysed here these actors can participate - more actively in diagnosis and 'wishlist' phases - but rarely have a structured influence in higher-level decision-making.

Nevertheless, opportunities for a more developed operationalization of 15-minute city principles emerge as peri-urban governance becomes more professional, citizens more demanding, and knowledge about successful practices and development models more disseminated. First, at the aspiration level, the content of policy instruments and initiatives is certainly moving towards greater adherence to 15-minute city parameters. While no peri-urban governance programme explicitly mentions this model as inspiration, reducing car-dependence and improving public transport are key aims in most policy documents. Similarly, regeneration of existing settlements by expanding cyclability and walkability and introducing new (social) amenities are widespread approaches for mixed-use developments with concerns of sustainability, spatial justice and quality of life.

Another set of opportunities emerges at the level of procedures and processes. All cases somehow mobilize hybrid governance models, where formal regulations are combined with process-oriented approaches, often based on adaptive frameworks that incorporate knowledge over time and lead to continuous adjustments of strategies. The most explicit example in our analysis is arguably the Dutch NOVEX, but most other instruments embrace the need for adaptability and learning, often by enabling the participation of specialised actors and building 'variable geometry' coalitions focused on specific goals and periods. In such coalitions, a track record of cooperation and the need to deliver complex, long-term projects can create new institutional habits and unlock previously unknown collaboration opportunities (Giezen et al., 2015). Examples are the Austrian KEM3 coalition, the Dutch Regioarrangements, the Portuguese Urban Quadrilateral group (recently a Pentagon, after incorporating a new city), and the Flemish Kordia. These initiatives have been adding new dossiers, initiatives, programmes and actors, expanding their space of possibilities and going beyond the original intentions that led to their formation.

Still, the weak institutionalization and poor participation rates of civil society remain an obstacle to the implementation of place-appropriate and more widely accepted peri-urban development models. The 15-minute city became an unexpectedly controversial topic in some policy arenas, and the principles behind it are not decoded in the same way by all types of peri-urban inhabitants (see the Social Analysis chapter). The specific land use and density features of peri-urban areas lead to the need to implement 15-minute city parameters at inter-municipal rather than neighbourhood scales and to a complex management of coexisting uses and activities throughout large territories. This requires the incorporation of a high level of local knowledge, in the form of locally specific priorities, needs, trade-offs and preferences, suggesting the need to expand participatory models beyond consultation in places where civil society roles remain modest. Some initiatives in the analysis do provide adaptive models specific to local challenges, but policymakers need to explore formalized participation channels that allow real influence on higher-level planning, enable platforms or other mechanisms of articulation at various scale levels, and encourage the embeddedness of societal actors in learning-oriented governance structures.

Key implications for 15-minute city governance

The spatial, social and governance analysis of our four peri-urban areas demonstrate clearly that the 15-minute city is not a model to apply or a policy package to implement. It is a governance process to cultivate over time. It emerges in all cases that urbanism based on proximity, accessibility and liveability requires simultaneous negotiations across domains of housing, mobility, infrastructure, amenities, economy and nature. However, sectoral thinking remains dominant in many cases, and even when integration is attempted, it often remains at the level of efficiency-oriented technical planning rather than integrated visionary thinking. As discussed, this may lead to coexisting incompatible uses that harm the capacity to create liveable and interconnected places. See, for instance, the cases of clustering of energy infrastructure and residential areas in Austria, which may be quite disruptive for the liveability of these areas, or the fragmented and self-contained new 'area development' expansions in the Netherlands that must navigate between many other pre-earmarked spatial claims.

Sectoral silos also depend on the power and resources of different sectoral policy actors, especially when some domains are framed as higher-level priorities. Several cases express the role of national actors (e.g. ministries) with greater political visibility or regulatory power, and a hierarchical framing of planning priorities, where, for instance, housing and climate are seen as national emergencies and local livability becomes a secondary concern. The resulting asymmetries at the negotiation table lead to several negative impacts on the delivery of 15-minute city principles. First, spatial trade-offs between priorities do not reflect integrated planning values. For instance, housing can dominate location choices using criteria of mere land availability (e.g. spread out developments in Portugal) or political acceptability (e.g. housing deal negotiations in the Netherlands), harming spatial quality; in other cases, public transport may prioritize high-efficiency corridors over fine-grained accessibility (e.g. Flemish Transport Regions), affecting inclusiveness.

Second, there may be temporal gaps between the delivery of elements that the 15-minute city concept requires to be developed simultaneously. For instance, the pressure to quickly build more housing in response to the housing crisis aligns with the traditional perception of developers of what constitutes 'demand' and the tendency to invest mainly on low-density single family housing. This model not only consumes more (scarce) land than necessary, but also discourages high-frequency public transport and limits the viability of many amenities that depend on density. As a result, such developments tend to fast-track monofunctional residential areas that precede public transport and amenities by several years, entrenching car dependency and making these areas harder to retrofit later as liveable neighbourhoods based on proximity and accessibility. Such a quantity-led approach to urban development is especially hard to understand in the case of Portugal, where there are more that 700.000 vacant houses for a population of 10.5 million (INE, 2022), an estimated rate of 12.5% of the national housing stock, compared to 2.5-5% in the other countries.

Governance models can therefore focus on negotiations that change over time in terms of scale and purpose and provide space for diverse actors, rather than simply on instruments and initiatives. Models that provide a coordination framework for strategic alignment, such as NOVEX, have the potential to create that space, if they also focus on facilitating bundled funding of interventions and adopt evaluation metrics that reflect integrated quality indicators. More generally, intermunicipal cooperation frameworks can also be a central governance scale to co-design and sustain such negotiation arenas. Although they take different models, shapes and sizes in the various countries and struggle with funding streams, power voids and internal conflicts between actors, intermunicipal platforms are on the rise in all cases. They can translate higher-level agendas into local policies (and vice-versa), acquire greater political voice to influence multi-scalar planning, and engage in coordination to articulate the interests of the peri-urban area as a whole. The analysis highlighted some promising (small-scale) procedural innovations that can complement or move faster than legislative reforms, which shows the advantages of adaptive frameworks and encourages a culture of learning and experimentation which matters as much as formal instruments.

The tension between serving the peri-urban area as a whole and local priorities and needs is a fundamental difference between the conventional 15-minute city model and what could be a peri-urban version of the concept. Indeed, not every settlement can or should fully replicate a proximity model. We have seen how a focus on hyper-local priorities may reduce the capacity to articulate across locations the components of urban development that require a regional approach in low-density areas, such as coherent public transport or high-level amenities. This leaves some settlements more self-sufficient to some extent, but unable to explore opportunities to benefit from larger-scale developments. We also discussed how an excessive focus on large-scale, high-investment projects is likely to benefit a handful of 'winning' locations in the peri-urban area, namely those with greater economic promise and better connectivity. Since municipalities typically include some of these peri-urban cores alongside other dispersed, poorly connected settlements, this approach to planning may reproduce the core-periphery bias in this context, leaving some areas underserved and increasing the levels of socio-spatial inequality within municipalities. Peri-urban spatial governance can therefore explore tiered proximity and accessibility models (Wang et al., 2024) that respond to the diversity of local conditions but integrate them into a continuous, 'zonal' view of the entire peri-urban territory, rather than taking a 'nodal' approach where the nodes are favoured but the spaces in-between remain neglected (Cardoso & Meijers, 2020).

A final point relates to the role of non-state actors, which, as previously mentioned, remain weakly integrated in institutional processes. We highlighted the weaknesses of some participatory initiatives, namely parochialism, lack of interest or ability to articulate with larger planning frameworks, and little capacity to envision disruptive transformations. Especially in peri-urban areas, where a territorially integrated view is needed to ensure that all the elements of proximity, accessibility and liveability come together, this is a limitation to a more complete implementation of the 15-minute city. And yet, the lack of systemic influence of the civil society (and often businesses and knowledge actors) in higher-level decision-making is a problem for the inclusivity dimension of the concept, as important sources of knowledge and imagination are neglected. In the cases analysed, civil society actors only symbolically or minimally influence planning but participatory bottom-up initiatives in the four countries are gaining critical mass and discussion capacity. Policymakers should therefore focus on understanding community-led experiments of collective governance and explore ways to embed these societal actors into adaptive governance structures that are becoming more widespread, mature and effective. In this way, the recognition dimension of spatial justice - central to the 15-minute city - is also incorporated in peri-urban spatial governance.


EASTPAK

Socio-spatial analysis

Comparing basic mobility habits

We start by providing a comparative overview of how different focus groups travel in the peri-urban region. We review trends regarding car use, public transport, cycling and walking, according to the socio-demographic categories used in the focus groups and highlighting both common trends and stark contrasts between the four countries.

Car use dominates daily routines in most places. In Austria, Belgium and Portugal, 60% to 90% of people use the car on a daily basis or multiple times a week. In the Netherlands we see a different image as more than 80% of participants reported cycling daily, and 40% use cars several times per week or month. In the more car-oriented countries, routine car use clusters around workers, older adults and caregivers, while in the Netherlands, car use is more confined to workers and seniors for occasional, longer trips, while the youth and some workers are more often passengers than drivers.

However, the survey conducted with participants reveals walking as equally significant. In all locations, around 80% of respondents report walking on a daily or weekly basis, except for Portugal where over 80% of participants report rarely or never walking. Despite being such a common mode, walking was not a main point of discussion in focus groups in the Netherlands and Belgium, which we assume to be related to the generally adequate state of the respective infrastructure. However, in Portugal, there were complaints about poor infrastructure (e.g. lack of sidewalks) and in Austria there were concerns about pedestrian-unfriendly sidewalks (narrow, height differences).

Across all cases, most participants only use public transport several times a month or even less and only some people use it more regularly (e.g. for commuting to school, university or work). The bike is especially common in the Netherlands followed by Belgium, where most people use it daily or multiple times a week. It is noteworthy that this applies also for the youth, while young people in Portugal and Austria rarely cycle.

These are the perceived advantages and disadvantages of the various transport modes in our case studies:

Car

For: Perceived as convenient and flexible, especially when daily routines require combining several places and activities and can be completed in a shorter time. Saving time is a reason for travelling by car in all cases, with alternative means of transport described as unsuitable. Transporting goods, children or other people are also cited. In individual cases, other reasons include the existence of a car-friendly infrastructure (AT), a necessity for senior citizens (AT) or a tradition of company cars (BE).

Against: Difficult and expensive parking are cited as a reason against car use. Other modes may be preferred for journeys to larger cities, as train travel is faster and more comfortable. Traffic jams often occur during rush

Figure 61: Use of travel modes by focus group participants in the 4 countries

hours or near schools. In Belgium, they are exacerbated by bascule bridges and bus stops on the traffic lane. In Austria and the Netherlands, other factors include ecological aspects, a negative impact on liveability, and the high cost of using and maintaining a car.

Train

For: In several cases (AT, NL, PT), the train connections to the larger cities are well timed and fast. In Austria and the Netherlands, it was emphasized that it is easy to combine the train with a bike to reach the station or even to take it on the trip. In the Netherlands, public transport is free for students and in Austria it offers flexibility for young people. Therefore, some see it as more convenient than commuting by car.

Against: Delays, cancellations, poor infrastructure at (new) stations and the location of the stations themselves are often cited as problems. In addition, trains are often overcrowded during rush hour. In Austria and the Netherlands, they are considered unsuitable for shorter journeys to smaller towns due to low frequency, as the schedules are poorly organised, which requires a greater effort for coordinating the journeys.

Bus/Tram

For: Buses are seen as a good alternative if they go directly to the destination or if they are rapid buses using the motorway. In cases where buses have their own lanes (BE), they can be faster than the car. Buses are also used by people without a car, such as young people. Improved on-demand-transport is seen positively.

Against: Buses and trams are less used if the schedules connecting some locations have a limited frequency and lack connections besides peak hours. Common difficulties are overcrowded buses, bad infrastructure at bus stops, longer trip duration and often poor reliability. Feelings of insecurity during the night were also addressed.

Cycling

For: The approach to cycling varies greatly between countries. Positive factors are the existence of a safe and extensive cycling infrastructure, the habit of leisure cycling and the need to travel short distances. Developments such as e-bikes and e-scooters (AT, NL) or cargo bikes (BE) are also considered useful. In the Netherlands, the bicycle is the default choice for short trips and physical activity is perceived positively.

Against: The most important reasons not to cycle are lack of appropriate infrastructure and safety concerns, especially during winter when it gets dark early and bike lanes are insufficiently lit. Other safety issues concern accidents with other vehicles due to bad road maintenance, visibility in crossings and roundabouts and cycling conditions for children. The weather is mentioned in Austria and Belgium, while in Portugal, the steep topography makes it difficult to use bicycles as a viable mode of transport.

Walking

For: Walking is a common mobility mode for short distances (e.g. to local amenities), and recreational purposes. In a focus group in Austria it was positively mentioned that people meet each other in public space when walking.

Against: Safety concerns are common across all the cases. Some issues concern bad infrastructure or dangerously designed crossings. Others relate to (verbal) assaults and feelings of insecurity.

In summary, flexibility, duration of trip and comfort speak in favour of using different means. Safety concerns and poorly developed infrastructure are the most common reasons for not using a certain kind of mobility. Some improvements have been made to in recent years, not always to the satisfaction of users.

Social behaviours, preferences and expectations and the 15mC question

Our project explores contextualised 15-minute city approaches according to the spatial, institutional, social, economic and cultural specificities of each place. As discussed, this is particularly important in highly diverse peri-urban areas that lack a complete set of conditions to simply import such a model of spatial development. Peri-urban areas tend to be low-density and (often) low-resource contexts where choices must be made about which amenities and mobility connections will have priority, where to develop them, which communities they will serve, and at what scale they will be rolled out. These choices, and the question whether they enable a just and accessible use of space for everyone, are political and will make a difference to society, as their interpretation by policy actors may or may not satisfy the needs of the communities. To better understand these needs, we now discuss whether the societal discourses observed in the focus groups reveal priorities, desires, oppositions and perceptions that may guide the development of an appropriate combination of 15-minute city principles.

Are there claims and priorities about mobility, amenities and liveability common to all cases?

Despite the differences between the four cases, in terms of spatial organization, institutions, and cultural habits, several themes appear in all case studies, such as the lack or insufficiency of public transport and cycling infrastructure, and the declining provision of amenities in smaller towns. In terms of public transport, the bus service was criticized. In many cases - across all countries and groups - frequency, stations, routes and delays were mentioned, alongside comfort and safety. There were hardly any reports that the bus infrastructure had been improved or that there were ambitions to do so, highlighting the fact that these peri-urban areas face transport disadvantages. People in transport-poor areas have been shown to take up to three times as long to access the same level of opportunities as those in well-connected urban areas (Wang and Loo, 2024), which, combined with other socioeconomic factors, can increase exclusion by impeding individuals to participate in societal activities.

Besides car ownership, such social risks can be mitigated by cycling, and even though the habit is more widespread in the Netherlands and Belgium than in Portugal and Austria, the improvement of infrastructure is desired everywhere. Concerns about safety due to accidents or poor road conditions came up in several focus groups, on one hand highlighting the complexity of multi-modal networks in peri-urban areas lacking dedicated lanes, and, on the other hand, suggesting a geographical inequality of public investment in infrastructure maintenance (Wales, 2007). Notably, in Austria it is mainly children and young people who cycle often and parents would like to encourage this if the perceived safety was greater. Cycling would allow young people to travel to school regardless of other transport alternatives but that cultural habit is still uncommon.

Another common problem is the closure of local supermarkets in small town centers, limiting proximity and access to a basic range of daily necessities. This happens more in small communities close to a larger municipality, as concentrating retail amenities in the larger centre is economically more viable. In other locations, there is a basic offer, but the participants indicated they would like more social and leisure activities.

Place attachment also follows a common pattern in all cases. Many people in peri-urban areas travel across various towns and villages to access spatially dispersed daily needs, which in some cases leads to a redistribution of the sense of identity and attachment across larger spatial scales (Kübler, 2018). This was, however, not revealed in the focus groups and, in general, the sense of belonging is stronger at the municipal than the regional level. Echoing the findings by Westin (2015) in Swedish regions, the participants often attributed this to a satisfactory social life provided by the number of events, clubs and meeting places within the municipality.

To what extent do social discourses reveal potential resistance to the 15-minute city principles?

The main limitations to the potential implementation of 15mC principles in the regions studied are not due to explicit resistance to the concept by inhabitants, but to ongoing dynamics that normalize car use, including poor public transport systems, limited cycling infrastructure, compared to more developed car infrastructure, and lack of nearby amenities, particularly in smaller places. Policies that promote purely residential low-density areas also play a role in entrenching car dependency.

Figure 62: Distance to amenities, participants in the Dutch focus groups

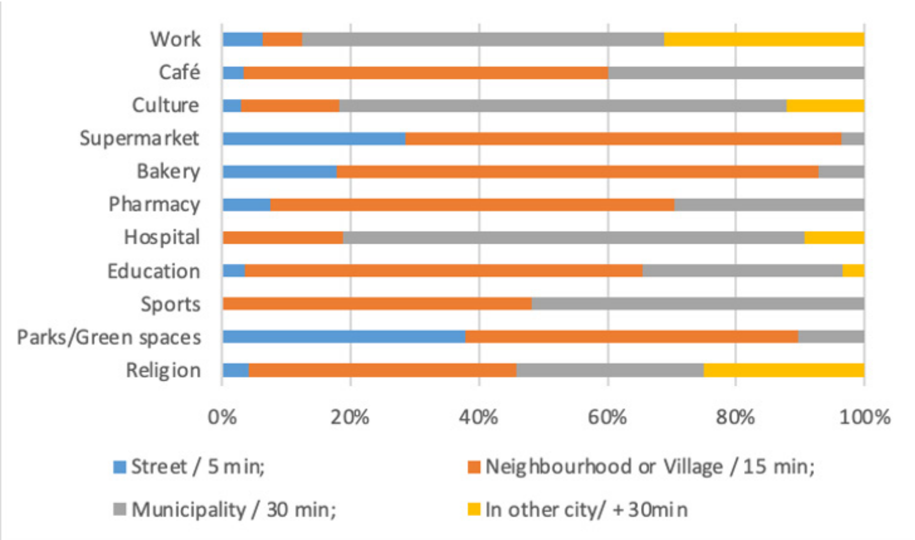
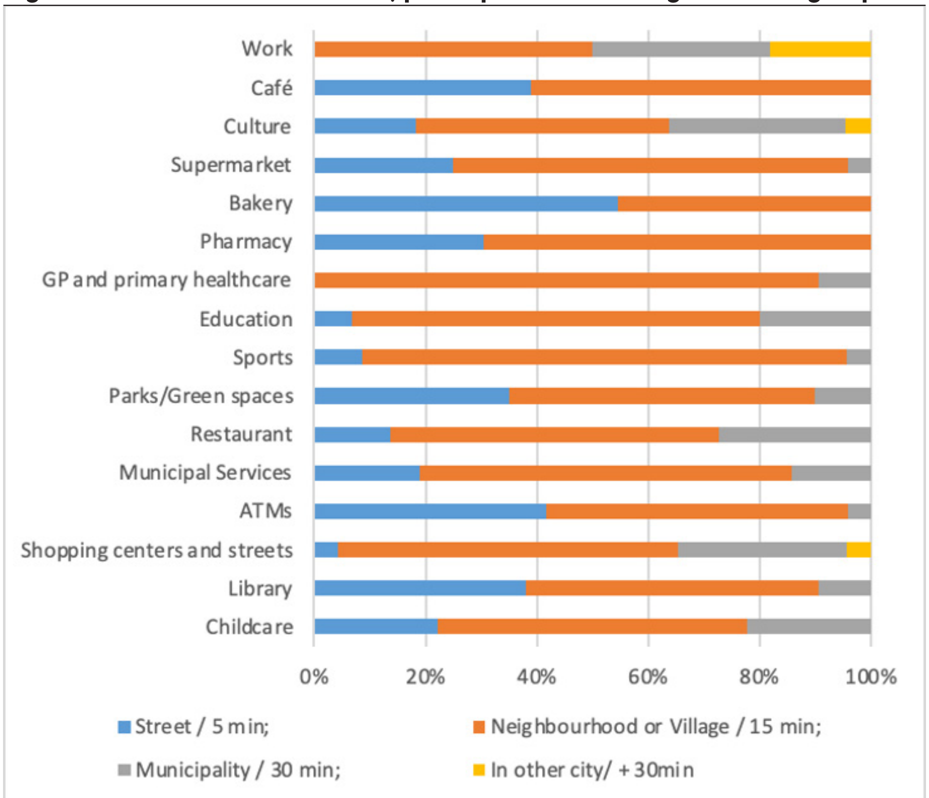


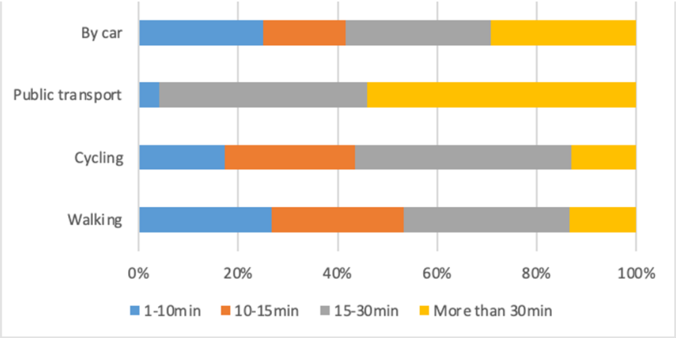
Figure 63: Distance to amenities, participants in the Belgium focus groups

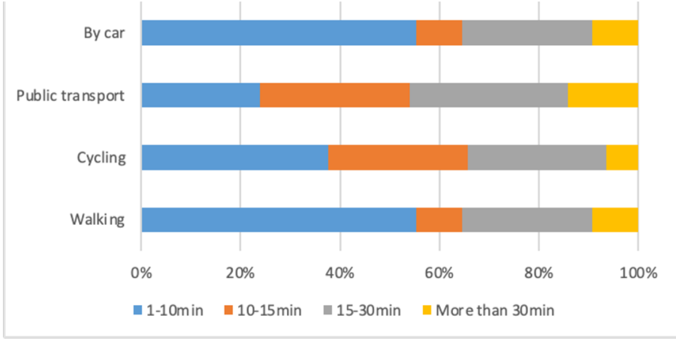


Nevertheless, many people appreciate these quiet neighbourhoods and their proximity to nature. Among some residents in Belgium, Netherlands and Austria there is resistance to potential densification and fears that their calmness is threatened. In one focus group in Belgium, participants reported that a planned tram extension from Antwerp was rejected, as it was perceived to bring unwanted aspects of urban life to the quiet periphery. Across all cases, the influx of new residents is associated with negative consequences such as congestion and overcrowding. This perception could hamper the acceptance of densification interventions that support a 15-minute region context.

Safety concerns are particularly important in the low adherence to active mobility modes, such as cycling and walking. Routes that are perceived as dangerous prevent people from using them for cycling. Adults report this about themselves as well as their children. Regarding walking, young people often report safety concerns related to other people (insults, discomfort).

Figure 64: Acceptable travel time per mode of transport, AT and BE:





Other safety concerns also affect the usage of public transport. It is seen as particularly annoying that newly renovated or built railway stations often offer poor infrastructure, such as faulty lifts, differences in level and ramps to overcome or poor lighting leading to discomfort. Young people occasionally report mistreatment by others when traveling by bus, and schoolchildren and commuters in particular report unpleasant feelings on public transport, in line with the literature that explores the effects of age and gender on perceived safety in public transport (Abenoza et al., 2018). In all cases, overcrowded trains and buses during rush hour are considered negative. Delays, cancellations, poor information, and long transfer and journey times are often reported.

While previous research suggests that merely owning a car discourages public transport use more than perceptions of its quality (Delbosc and Currie, 2012), our findings suggest that the lived experience of travelling by public transport remains significant. Indeed, the negative associations reported by the focus group participants contribute to their consideration of the car as the only alternative. The car is seen as more flexible and convenient, and therefore many people are satisfied with this mobility mode. Over time, car use becomes so normalized that people use it as the standard option, even for short trips. In one example from Portugal, a participant in the focus group indicated that driving to cafés located within 500 meters of home is a common behavior associated with convenience. Additionally, there may be a cultural dimension and an element of social status linked to the use of cars for such short-distance travel.

However, there is an awareness of the problems associated with cars, such as through traffic, lower quality of life in town centres, traffic jams and lack of space. In Austria and Portugal, the car is often used for bulk shopping, whereas in the Netherlands and Belgium daily shopping is often done by bike and groceries are carried in bike bags. This routine is enabled by the possibility of cycling a short distance to a supermarket a couple of times a week versus only having time for shopping once a week, further away and therefore buying larger quantities. Another important trend is the shift towards online shopping and delivery services, which has two implications for accessibility and proximity in peri-urban areas. First, the focus of residents is no longer on having shopping amenities close by, since the supplier covers the distances, which may disencourage retailers to locate stores near residential areas. Second, over time more and more small local shops may close and local social infrastructure may decline.

What cultural attitudes and norms locally influence the choice of transport mode?

Consolidated attitudes about perceived distances and convenience influence the choice of transport modes. In several cases, the car is primarily used when several activities are linked. Although the distances are short, organising multiple destinations without a car is perceived as complicated. The situation is similar when travelling with children. As soon as children have to be driven somewhere, the car becomes the most convenient choice, even for short journeys. Especially in Portugal, but also in Austria, people drive short distances (from 500m), if there is no other consolidated alternative. In Belgium and Austria, participants mentioned that the car is mainly used because the amenity distribution is designed for it. Longer journeys are sometimes made by car to reach higher quality amenities. However, an extra 20-minute drive is considered too far.

In the Netherlands, while some larger cities can be reached within 10 minutes by train, with some people even choosing the e-bike for these routes, it is difficult to reach some smaller, neighbouring municipalities by public transport, which is why respondents indicated they preferred to travel by car. Negative narratives and disappointing lived experiences of unreliability, overcrowdedness and inconvenient routes limit the use of the bus. Even though these problems are mentioned in all cases, the subsequent choices are different. While people in Portugal and Austria are more likely to choose the car, in the Netherlands and Belgium they may switch to cycling. In both countries, it also is common for youngsters to cycle to school. While the school is usually in the area or within 20-30 min, there were a few cases where students cycled 50 minutes. This is culturally established and accepted, even if youngsters forced to longer commutes would appreciate having the school closer or a public transport connection.

What travel times do people find acceptable when using different transport modes and accessing different amenities?

In Belgium and the Netherlands, participants were asked at what distance they would like to have certain amenities and given the following options:

- around the corner (5 minutes)
- in the neighbourhood or village/town (15 minutes)
- in the municipality (30 minutes)
- in another municipality (more than 30 minutes)

Longer distances are generally more accepted in the Netherlands than in Belgium. In both cases, travelling times to work are rated as the longest. These are also longer in the Netherlands, where more than 25% of respondents feel that travelling more than 30 minutes is appropriate. Although the focus groups lack representativeness, the fact that the Dutch participants mostly worked part time, while in Belgium most people worked full time might contribute to this difference, as studies have shown that having to travel less often (by working part time or from home) increases the willingness to accept longer commutes (De Vos et al., 2018). In a context of increasing diversity of work schedules and remote working, this makes the cross-case comparison of work trips more complex when it comes to assumptions about desirable travel modes.

And, indeed, amenities related to everyday liveability tend to follow simpler patterns. Parks and green spaces are a high priority both in Belgium and the Netherlands, with around 90% of participants wanting to reach them in less than 15 minutes. Around 40% of the Dutch group want to reach them within 5 minutes. Bakeries and supermarkets are also a priority, with almost everyone expecting to reach them within 15 minutes. Regarding healthcare, in the Netherlands, most people want to reach the local hospital within 30 minutes but a pharmacy should be within 15 minutes. In Belgium, around 90% want to find both primary healthcare and a pharmacy within 15 minutes.

The participants in Austria and Portugal were asked what journey time per mode of transport they found appropriate for everyday journeys. It is striking that except for public transport, people expect to spend similar amounts of time travelling, independently of the transport mode. The percentage of respondents who prefer to reach their destination within 30 minutes independently of driving a car, walking or cycling, is between 60% and 85% in Austria and over 80% in Portugal. In the Portuguese focus groups, 60% of participants would like to reach their destination within 15 minutes, whether using a car, a bike or walking. The fact that 55% of the Portuguese respondents stated that they would like their car trip to take a maximum of 10 minutes, suggests that cars are often used for very short distances.

Regarding public transport, longer journey times are expected in both cases. More than half of the Austrian participants consider a journey time of over 30 minutes acceptable, and only 5% expect it to last 10 minutes. In Portugal, 20% expect to travel 10 minutes by public transport. In summary, the Austrian participants accept longer journey times across all modes of transport. Around 55% of the Portuguese group do not want to take longer than 10 minutes to reach their amenities. In Austria, this figure is around 25%. In the context of a peri-urban region with lower density than the Portuguese case that probably requires more daily travel between residence, work, school and amenities, it can be assumed that participants in Austria are used to longer journey times.

Mapping the focus group interpretations onto Lefebvre's spatial triad

As argued in the methodology section, constructing a spatially just and locally suited version of the 15-minute city requires an understanding not only of how people navigate daily the structural, material conditions of each peri-urban area (perceived space), but also how they subjectively experience and give meaning to their spaces of activity (lived space), and how they reflect on the conceptions and priorities by decision-makers (conceived space). Therefore, we now add an interpretative layer to the focus group findings where we attempt to map the results onto the spatial triad of Lefèbvre (1991). Focus groups are by no means representative but we treat them as more than just anecdotal evidence. Specifically, we interpret them as situated spatial knowledge that can be used in planning processes (Petrescu et al., 2022), namely by revealing the potential gaps between what peri-urban space is planned to be, how it is used, and how it is critically experienced by residents.

Our interpretative mapping is guided by a series of thematic questions. It is important to note that they were not explicitly asked to the focus group participants and are rather analytic lenses to interpret the discussions.

More specifically, these questions were developed after the fact, based on recurring themes and narratives that emerged from the data. They help us structure the residents' experiences onto the spatial triad:

- To what extent is car-dependence internalized and/or seen as inevitable as the default condition of peri-urban mobility?
- Which places, organisations and events are more associated with peri-urban identity and sense of belonging?
- What spatial qualities are more valued by peri-urban residents and what improvements are more urgent?
- In what contexts were local governments mentioned and what general sentiment can be inferred?
- Do people relate their critical views on mobility and amenities to the performance of governance institutions?

Perceived space

Structurally speaking, perceived space is highly car-dependent, as both the spatial distribution of amenities and the daily organisation of activities are often designed around the car. This leads to a general condition of spatial and social fragmentation, especially affecting those who do not have access to a car or have to care for others, which is nevertheless mitigated by a general appreciation of existing amenities, spatial qualities and interaction opportunities. In their daily life, people navigate their spatial environments quite pragmatically, putting household convenience before other social or environmental concerns, but they do it with a sense of structural constraint, especially regarding mobility options, and clear ideas about what could be different.

Indeed, while car use is the preferred default condition, the tendency to frame it as unavoidable does not mean that its negative impacts are invisible. Long travel times, congestion, logistical stress, lack of autonomy of children or groups with limited mobility are commonly mentioned, together with a highly critical view of the limitations of public transport and active mobility infrastructure. Such 'softer' mobility modes are desirable, even if not explicitly stated as such within the general car paradigm; in fact, they seem well-aligned with the small-scale, proximity-based amenities that residents perceive as contributing to their sense of belonging, such as local associations, festivals, community centres, markets and cafes. This type of nearby amenities are associated with walking or cycling, while the car, in most cases, is more linked to daily commuting and chores.

Moreover, the most valued spatial qualities in the four peri-urban areas also suggest a preference for slower, more proximate (and eventually car-free) environments. People stress their positive views of calmness, green space, nearby work and services, and autonomy for children, for instance. The desired improvements tend to focus on 'more' of what they already recognise as valuable. This includes more activities and (age-appropriate) meeting spaces, safer active mobility, and better local services. Public transport improvements are also a common priority, suggesting openness to a gradual change of paradigm, while better car infrastructure was only occasionally mentioned. Other improvement needs include critical views on unevenly distributed services and neglected infrastructure maintenance, and local governments are sometimes referred negatively in delivering better quality spatial development, albeit in unspecific ways.

Conceived Space

The world of planning and policy is perceived in many cases as distant, vague and occasionally irrelevant. This is especially the case when it does not result in tangible spatial improvements (perceived space) or represent the meanings and attachments of local communities (lived space). Peri-urban spatial policy often reflects car-first biases and city-oriented investments and infrastructure, overlooking other users in planning visions and not representing well the mobility needs of more peripheral locations. Planning imaginaries may be biased towards default neoliberal solutions (e.g. car use, prioritising cost efficiency in public transport planning, investing in amenities in places where there is 'demand' rather than social need, etc.), which leaves grounded, everyday community life largely absent from formal planning logics.

Sometimes there is alignment between conceived space and the spatial qualities that people appreciate and contribute to a sense of belonging. Green spaces, well-designed and quiet streets, community centres, and cultural amenities are typically part of spatial planning visions. However, these amenities may be underfunded and remain secondary in comparison with growth and efficiency-oriented priorities, especially when large-scale regional planning takes precedence over local needs. Indeed, citizens praise some participatory initiatives taken by local governments, but the desire for more participation in planning is limited to local interventions. There is no real emotional attachment to space conceived at larger scales, as people do not consider such developments as tangible as their local daily experiences. As a result, there is some distrust, disinterest and resistance to large-scale visions about densification, long-distance mobility or (arguably misplaced) economic ambitions. Rather than abstract future visions, residents are more engaged in their desire for recognition of local identities and more immediate needs and in aspirations for a visible connection between plans and visible change.

Lived Space

Lived space has a powerful significance for residents, who express attachment to local landscape qualities, civic associations and cultural events. Belonging is often expressed as detached from (municipal) administrative boundaries but rather framed around the village and community. A sense of civic pride is tied to concrete spatial qualities such as tranquility and nature which people aim to protect, and the scale of peri-urban living, with tightly-knit neighbourhoods where residents know each other and (some) social infrastructure nearby, provides emotional security, especially for the elderly.

Nevertheless, the interaction between the persistent structural conditions of perceived space and the priorities of conceived space can play a negative role in the formation of spatial meanings and identities in peri-urban areas. Car-dependence as a convenient default condition can lead to isolation and lack of autonomy of some groups, who are not able to fully experience the positive associations of their environment. Indeed, the centrality of the car can marginalise non-drivers and lower inclusion, especially in places where there is no culturally embedded default option, such as cycling.

As the reflections on conceived space also highlight, people do not fully engage with externally-produced, large scale visions, which may trigger fears of losing identity or local character. Seen from outside, these fears may border on parochialism, but the explicit aspirations stated by the participants are much more about a desire for more social infrastructure, places to meet, interact and belong. Although government roles are often perceived in distant, vague terms, a mostly negative sentiment emerges about feelings of neglect or invisibility, especially in smaller localities. In these places, the sense of institutional absence can grow stronger over time, which erodes civic trust.

Conclusion

The focus group discussions across the four peri-urban regions reveal both convergences and contextual differences in how residents experience daily mobility, access to amenities, and questions of liveability. Car dependence emerges as the dominant and often unavoidable feature of everyday life, reinforced by spatial structures, institutional priorities and the perceived inefficiency or inadequacy of public transport. Yet this dependence coexists with awareness of its downsides, such as congestion, cost, environmental impact, and reduced autonomy for non-drivers. This suggests that, at least for some groups, car reliance is less an expression of cultural attachment than a pragmatic response to systemic limitations.

Despite variations between national contexts, the focus groups point to similar priorities: better mobility infrastructure, safer walking and cycling conditions, improved local amenities, and public transport that is both reliable and comfortable. These aspirations reflect an appreciation for proximity, accessibility and social interaction, which are key principles of the 15-minute city model, even if participants do not use that terminology. The findings therefore suggest that these principles already resonate with people’s everyday aspirations, though they remain constrained by current planning and investment patterns. Indeed, the analysis of perceived, conceived and lived spaces highlights a gap between residents’ daily realities and the spatial imaginaries of planning and policy. Local governments are often seen as ineffective, and larger-scale planning visions are perceived as disconnected from lived experience. Nevertheless, the affective and social attachment to local landscapes, community institutions and neighbourhoods provides an entry point for developing more contextual and inclusive approaches to proximity-based planning.

In sum, the empirical evidence points to a dual challenge for implementing 15-minute city principles in peri-urban contexts: addressing infrastructural deficits that limit choice and accessibility, while simultaneously engaging with the social meanings, habits and values that underpin everyday mobility. Integrating the situated knowledge of residents into spatial governance processes can help move peri-urban areas toward more inclusive and liveable forms of proximity.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PART V

Conclusions


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Discussion and Conclusions

In this report we analysed four European peri-urban regions using spatial, socio-spatial, and governance perspectives. Their similarities and differences are reflected not only in their spatial and functional configurations but also in the various governance approaches and lived experiences of residents. The multiple analytical lenses allowed us to uncover interdependencies between spatial, institutional and social conditions that would remain invisible from a single perspective. In this discussion, we reflect on the implications of our findings for the transformation of peri-urban regions into more accessible, proximate and liveable environments.

The spatial analysis provides a detailed differentiation and characterisation of peri-urban places, shedding light on territories that are too often dismissed as generic. Their diversity in terms of centrality, density, and granularity reframes peri-urbanity as a place of spatial variation and specificity. Indeed, the settlements in the different countries vary between well-connected compact areas on the verge of becoming urban and dispersed, low-density fabrics served by diffuse and fine-grained local mobility networks or struggling with poor accessibility. In every case, geographical features, such as rivers, valleys and forests, play an important role in shaping spatial arrangements. Context-adapted morphologies (clusters, ribbons, fragments) are common across the four regions, as are complex combinations of residential, industrial and agricultural settlement types influencing spatial quality and proximity between activities. Accessibility by active modes (walking and cycling) varies widely both between peri-urban clusters and by type of amenity, partly depending on spatial consolidation or dispersion of the settlements. This is visible in the mapping of the peri-urban types: some cases have fewer peri-urban grid cells which are dense, close together and surrounded by other dense areas (as in the Netherlands). In other cases, settlement structures hardly consolidate and peri-urban areas are more numerous, less dense, and more dispersed (as in Portugal). Still, the quality of the infrastructure for active mobility is generally low in most cases, leading to a divergence between theoretical and effective accessibility.

The variety of unique spatial conditions is to some extent mirrored in distinctive governance contexts. While governance initiatives increasingly converge on goals related to proximity, accessibility and liveability, for instance by focusing on active mobility or improved public space, governance systems vary in terms of formalization, power hierarchy, orientation towards negotiation and consensus, and capacities of municipalities and regional platforms. Common challenges include a bias to prioritize investment in central areas in the peri-urban region leaving behind local blind spots, problems with cross-sectoral policy integration, and poor integration of participation by non-state actors, resulting in communities viewing governance actors as detached from local lived experiences.

Social habits are responsive to the spatial and institutional contexts. For instance, car use is seen as a necessity emerging both from the peri-urban spatial structure and the legacy of planning policies that establish car travel as the default mobility mode. People do not aspire to abandon the car, yet they are acutely aware of the need to improve the quality of public transport and, in many cases, walking and cycling infrastructure. They prioritise nearby amenities, convenient connections and more widespread social infrastructure, reflecting the 15-minute city principles of proximity, accessibility and liveability even if not adopting its terminology. However, peri-urban residents do not converge on a single image of how these principles can be materialized. They experience a variety of spatial conditions - partly because they travel between different types of peri-urban settings in daily life - and focus on practical aspects of convenience, comfort and safety.

In response to these differences, both populations and institutional actors imagine opportunity spaces to develop improved amenities, mobility and broad liveability in different ways. For instance, aspirations for gradual lifestyle shifts aligned with the 15-minute city do not necessarily translate into expectations of urban-like density. Especially in the Netherlands and Belgium, inhabitants tend to resist the perceived implications of densification and large-scale infrastructure, such as traffic congestion and loss of natural areas. Although more widespread and diverse amenities are usually welcome, people express a strong attachment to the spatial and social qualities of their place of residence. As a result, unorthodox imaginations emerge about how proximity and accessibility can be materialized in these territories, suggesting that the principles of the 15-minute city require processes of adaptation and transformation, developed with close attention to localities. We point out some of these expansions of 15-minute city scholarship in the next section.

Creative expansions of the 15-minute city model: what can we learn from the peri-urban?

The analysis reveals strong contrasts between the imagination of residents, professional planners and academics when it comes to the materialization of 15-minute city principles. When spatial, morphological and functional conditions, governance capacities and priorities, and sociocultural preferences and aspirations are taken together, the opportunities for peri-urban development of proximity, accessibility and liveability lie outside orthodox 15-minute city planning models. We now discuss these divergences and use them to expand the scope of possibilities for peri-urban spatial development.

The extended scale of proximity and the central role of public transport

The first peri-urban specificity concerns scale. Rather than aiming at the consolidation of proximity and accessibility at the neighbourhood scale, existing density, settlement and mobility patterns (both from morphological and functional perspectives) shift these aspects to the inter-municipal level. Peri-urban residents tend to travel comparatively large distances to access daily amenities, reinforcing car dependence, and low density is both structurally embedded in the territory and culturally valued by communities. Consequently, any facilitation of 15-minute city conditions in these areas must make public transport central. While walkability and cyclability have been the focus of urban versions of 15-minute city models, based on short distances and clustering of amenities, and public transport often took a secondary role, the peri-urban condition largely inverts this logic.

However, the quality of the spatial experience seems to be more important than strict time efficiency in shaping adherence to alternative mobility modes. More than the poor quality of amenities, low quality and unreliable public transport was constantly noted in our findings. Moreover, in most cases, both the responses of residents about their travel preferences and the structure of the mobility networks indicate the opportunity to combine car use, public transport and active mobility (walking and cycling). The use of these different modes depends not only on the quality of the infrastructure but also on the purpose of travel, time of day, and whether travel involves children, among other factors. In general, peri-urban communities have adapted to varying travel times, which are accepted as part of the trade-off with preferred low-density lifestyles. Therefore, the purpose of 15-minute city strategies in these areas should not be reducing travel time per se but encouraging intermodality and improving the travel experience.

Functional and social travel purposes coexist in different registers

A second extension of the 15-minute city model identified in peri-urban areas emerges from this apparent ‘naturalness’ in using different transport modes for different purposes observed in the residents’ mobility choices. Indeed, car use in peri-urban areas is deeply embedded in the more functional social routines. People experience driving as the most convenient way to run errands - getting to work or to school, shopping, or accessing necessary amenities. However, they also engage in other types of mobility that are less functional and more social such as visiting friends and family, interacting with neighbours, and enjoying various leisure activities. These sociability purposes are common reasons for travelling that have not been sufficiently considered in 15-minute city scholarship, which focuses on traditional amenities allocated to functional categories (Poorthuis and Zook, 2023).

The important point is that functional and social movements operate in distinct cultural and spatial registers - people are neither willing nor able to abdicate of the car to run their daily errands, but at the same time they find it natural and desirable to adopt slower and more active forms of mobility for social purposes, particularly if these occur more locally and contribute to mitigating risks of social isolation. As a result, social proximity (by cycling or walking) and functional proximity (by car and potentially public transport) can coexist and be characterised by different spatial and temporal thresholds in peri-urban areas, suggesting a complementarity strategy rather than a mere replacement of car use by other modes. 15-minute city principles in these areas can mean that people still use their cars for commuting but not necessarily for (close by) sociability purposes. In practice, this means combining edge parking with pedestrian connectors and small-scale meeting places in car-oriented shopping areas, or inserting new social infrastructure of proximity (care centres, leisure areas, social clubs, cafes, community centres, etc.) along greenways and active mobility axes, thereby turning incidental everyday mobility into social opportunities.

There will still be the need for longer social travel, for instance to visit friends and family living in other towns, which keeps public transport a core feature of the peri-urban model. Still, for many other everyday life needs, rather than adopting a disruptive approach to swift peri-urban transformation and behaviour change, a careful insertion of elements that facilitate incremental change may help increase liveability and support community resilience while aligning with embedded social habits, institutional resources and the permanence of built forms.

Development of accessible amenities can bypass density

The principles of coexistence, adaptation to local conditions and incremental change lead to the third lesson from the peri-urban for 15-minute city scholarship. In peri-urban areas, opportunity spaces for proximity and accessibility improvements can be found independently of density and compactness. While these are taken as enabling conditions for 15-minute city environments in urban areas, our spatial analysis clearly shows that the provision of amenities is better distributed across peri-urban areas than the concentration of people. There is limited correlation between denser peri-urban clusters and accessibility to a sufficient number of amenities, and places with low population and built density are often quite well served by functions reachable by walking or cycling. This can be due to functional location logics more based on (low-density) motorway access than (high-density) central high streets, as in the Austrian case, for instance. In other cases, such as Portugal, unplanned development over time led to a non-hierarchic hyperdiversity in which main amenity locations became more random. As such places often perform well in centrality measures, they have capacity for targeted densification, namely by expanding amenity clusters and other residential and non-residential functions.

Interestingly, these spatial characteristics of some peri-urban areas often lead to well-established but unorthodox solutions to amenity access and provision. In our case study regions, there are abundant examples of mobile retail services serving remote locations; multi-purpose locations combining diverse amenities (e.g. childcare and library, post office and pharmacy) or changing functional use on daily, weekly or seasonal cycles; shared civic infrastructures between villages and municipalities; natural areas overlapping with recreational activities; and itinerant cultural events, among other variations of conventional amenity distributions. These arrangements emerged over time as adaptations to morphological and mobility constraints, historical settlement pattern logics, efficient responses to limited economic and institutional resources, and community practices evolving outside formal planning schemes. Digitalisation and the variety of collaborative models of retail and services further expand this repertoire, showing that envisioning the peri-urban 15-minute city requires planners and academics to learn from these unorthodox yet effective solutions. A locally endorsed version of proximity and accessibility depends more on engaging with attributed meanings and diverse mobility adaptations than assumptions about the 'right' morphological elements.

Integrated chains of amenities and the production of lifecycle-proof environments

The fourth observation stresses that access to amenities is more than an efficiency-led imperative. Studies of 15-minute city 'performance' often assess travel times to separate amenity categories (following Moreno and others) but the problems of this approach become clearer in amenity-poor conditions such as peri-urban areas. First, the value and attractiveness of a given amenity lies not only in its individual presence but also in the chain of amenities in which it is integrated. A park may be reachable from any residential building within minutes, but it becomes attractive and valuable if there is a cafe or a community centre nearby, if it allows a parent to visit the local supermarket or pharmacy while children play, or if it borders the primary school and becomes part of the daily school commute routine. The concept of an interdependent chain of amenities receives less attention in dense urban areas because most amenities are typically near each other as well as near residential areas. This is often not the case in low density and fragmented peri-urban areas, therefore spatial planning must not only consider accessibility between home and each amenity but also between amenities.

Focusing on integrated chains of amenities also addresses a broader critique of the 15-minute city. The model implicitly assumes a standard set of needs and a normative daily life pattern which is relatively stable over time. Yet, many peri-urban residents value long-term permanence in their place of residence and do not aspire to relocate as their needs change - as we have seen, priorities differ between teenagers, working adults, parents and elderly people, but most share a strong attachment to their localities and expect that they serve them across multiple stages of life. In addition, in some countries there is in-migration from new residents looking for quieter or more affordable places to live. In such contexts, the relevance of spatial and functional conditions derives not only from efficient daily accessibility but from its ability to sustain well-being across successive life stages.

This requires reframing the peri-urban 15-minute city beyond the limitations of a fixed bundle of amenities towards a lifecycle-oriented approach to functional completeness. Such an orientation prioritises diversity and flexibility of amenities over mere presence, and emphasises adaptability and change in places with greater social need rather than with greater centrality. While 15-minute city scholarship frames the question as whether people live X minutes from a certain amenity package, a more pertinent question is whether a place of residence can support the next X decades of life transitions. Understood in this way, the 15-minute city principles become a way to support long-term habitability in peri-urban areas.

15-minute city principles as a policy framework for peri-urban cohesion

Many peri-urban regions in Europe have experienced decades of policy and planning neglect, as successive governments have prioritised ‘national champion’ cities (Crouch and LeGales, 2012), investing their resources in the places already well-performing in international competition. Increasingly, that imperative has made large metropolitan areas aim for governance autonomy and peripheralise places not interesting to their competitive networks, rather than focusing on redistributive priorities and cohesion across their regional hinterlands (Herrschel, 2021). While many peri-urban regions gradually witnessed a decrease in connectivity, amenities and quality of life as a result of this exclusion process, others now find themselves at the centre of new economic ambitions for Europe in fields like food industry, energy and circularity, among others.

The caveat of this apparent good news is that the inevitable prospect that some peri-urban regions are more prepared than others to engage with these opportunities might repeat the patterns witnessed during the transitions of post-industrialisation, in which some cities successfully transformed their economic regimes and others remained structurally locked in outdated sectors, leading to social and economic decline. Dedicated policies to tackle such unequal departure conditions in peri-urban areas and monitor their progress are therefore needed, even more so as it becomes apparent that slow, persistent decline is tightly related to disillusionment with democracy (Dijkstra et al., 2020).

While the peri-urban regions studied here face social and economic risks, none are notably lagging regions at the moment, especially considering their national contexts. The Groenemetropool/Foodvalley region is at the centre of relevant national economic ambitions around food and technology, the Campine region in Belgium is characterised by relatively high income and activity levels within the sphere of Antwerp and Turnhout, the district of Bruck/Leitha benefits from the Vienna-Bratislava development corridor, and the Braga-Guimarães-Famalicão region lies close to important urban cores and a relatively dynamic industrial ecosystem. However, space is not isotropic and a promising economic ‘net result’ at the regional level may mask pockets of deep inequality and vulnerability. In our cases, intra-regional inequalities abound in terms of quality of life as experienced by the population, namely in terms of proximity, accessibility, liveability and inclusivity. As these peri-urban areas find ways to increase their prosperity, the perception of these close-by contrasts can matter to satisfaction with democracy, the potential rise of extremisms, and institutional trust (Rodriguez-Pose, 2018). Moreover, as a sense of fair distribution of power, benefits and burdens decreases, so does the willingness to cooperate between actors, both at civic and governmental levels (Feiock, 2007).

Could the adaptation and adoption of 15-minute city principles in these areas contribute not only to general well-being and quality of life but also to satisfaction with government and institutional trust? Can positive and tangible processes of spatial development that communities recognize in their daily life and where they feel heard and represented increase the perceived value of functioning democratic institutions? Research on post-politics has stressed the rise of ‘policy without politics’ (Schmid, 2006): as long as the services and infrastructures work, their democratic legitimacy becomes secondary. But democratic institutions are evaluated through tangible daily interactions and trust in governance is based on perceived competence and a sense of fairness and care, which ultimately drive trust (OECD, 2024). As peri-urban areas become more visible in European spatial planning, multiple initiatives emerge to improve quality of life through proximity, accessibility, and liveability measures, requalifying spaces that have been neglected so far. When adapted to local realities, the 15-minute city framework can support such equitable and visible development outcomes. But its deeper potential lies in helping rebuild public trust by demonstrating that spatial planning can respond to people's needs not in abstract, but in the places where those needs are felt most concretely.

Moving forward: insights for further research in the InPUT project

The InPUT project will continue to involve local societies (both residents and policymakers) in the process of translating aspirations, priorities, capacities and resources into strategies and interventions that take peri-urban areas closer to the principles of inclusive accessibility, proximity and liveability of the 15-minute city. The analysis conducted so far provides three types of insights on how to move forward - how to frame participation in the research, how to engage with but also expand the imagination of communities, and how to promote the integration of multiple perspectives, sectors and types of measure.

Across all peri-urban areas in the study, civil society participation is limited but generally desired by both residents and institutions. Non-state actors are largely absent from planning decision-making processes. Research should therefore encourage citizens and civic associations to engage in co-design activities. However, participation often remains weak because people do not expect their efforts to lead to tangible outcomes. Institutions should therefore signal that they take participatory input seriously. To support this, co-design activities in InPUT can promote dialogue between communities and policymakers and help clarify connections between people's needs and concrete policy conditions, making participatory processes more grounded and tangible. As discussed, even if the term "15-minute city" is not used, people tend to support its underlying principles, especially when framed within values of quality of life, safety and convenience. However, the structural conditions of peri-urban areas generate very diverse and adaptive practices regarding access to amenities and multimodal travel, which vary across age groups, social profiles, household composition, and other factors. Consequently, the inputs of residents who are deeply embedded in these contextual models of living can shed light on the meanings attributed to the 15mC principles in peri-urban areas.

Still, applying a critical lens to participatory inputs remains vital. It was clear across focus groups and interviews that even if people travel widely across the region, their sense of identity remains attached to their place of residence. Larger spatial scales are acknowledged and improved regional connectivity, for instance, is important to many, but the primary focus is 'home', which limits the spatial imagination. On one hand, residents tend to concentrate on concrete, small-scale problems and solutions and struggle to visualise large-scale interdependencies, especially when these are immaterial. On the other hand, they frequently privilege familiar spatial forms and interventions, leading to a demand for more (and better) versions of what already exists rather than for more fundamental transformations. Allowing these insights to define the scope of possibilities risks converging on simplistic hyper-local schemes which do not tackle large scales or mobilize structural change. Therefore, co-design activities within InPUT should employ communication tools that help participants acknowledge multiple scales and interests beyond their place of attachment. They should also encourage speculative, what-if questions that expand community imaginations and allow more disruptive, future-oriented solutions.

Opening up the imagination to alternative futures is harder when many of the barriers to improving conditions of liveability, accessibility and proximity are immaterial and long-term - involving, for instance, strategic planning, institutional reforms, and socio-cultural adaptations. Discussions with residents must therefore present clear and tangible examples of spatial transformation together with the non-spatial conditions required for their implementation. Because integrating these conditions across scales and sectors is complex, policymakers play a vital role and their expertise can help steer the discussions from the realm of the possible towards the plausible. At the same time, preferred practices and interventions will differ across cases, as the interpretation of similar aims, needs and values is materialised in context-specific ways. However, learning between cases allows for more creative what-if questions, as well-established practices in one setting can be interpreted as inspiring innovations in another, supporting transferable forms of imagination.

PART VI

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