

The Brussels Edge

Spatial strategies for integration at the metropolitan fringe

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Colophon

The Brussels Edge
Spatial strategies for integration at the metropolitan fringe

Graduation thesis report
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More than a final answer, this thesis should be understood as a contribution to a broader conversation about metropolitan integration in and around Brussels.

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Abstract

The Brussels metropolitan area is characterised by a strong mismatch between functional interdependence and institutional fragmentation. While mobility flows, housing dynamics, employment patterns and social relations increasingly operate across the boundary between the Brussels-Capital Region (BCR) and its surrounding Flemish periphery, planning competences, governance structures and territorial identities remain largely organised according to administrative borders. This produces spatial discontinuities, uneven accessibility and limited coordination in a territory that already functions as a shared metropolitan system.

This graduation project investigates how spatial design and institutional strategies can mediate the integration of the Flemish periphery into the Brussels metropolitan system. Rather than treating integration as a purely physical or infrastructural challenge, the research approaches it as a multidimensional process involving spatial systems, social dynamics and institutional frameworks. The Flemish periphery is therefore not understood as a homogeneous suburban belt, but rather as a collection of differentiated interplaces, where municipalities such as Vilvoorde, Tervuren and Sint-Genesius-Rode each relate differently to Brussels through mobility, landscape, identity and governance.

Methodologically, the project combines spatial analysis, governance research, pattern-based thinking and Research-by-Design. The pattern language translates the analytical findings into a flexible set of intervention principles organised around connectivity, centrality, borders and cooperation. These patterns structure both the institutional and spatial proposals, allowing regional strategies and local interventions to be understood as part of the same metropolitan process.

The project proposes a shift from fragmented planning towards a more relational and cooperative metropolitan approach. At the institutional scale, this is explored through soft governance mechanisms, project-based partnerships and funding incentives that can support collaboration without requiring a new metropolitan authority. At the spatial scale, the design strategies test how mobility corridors, peripheral centralities, productive landscapes, border zones and social infrastructures can become mediating interfaces between Brussels and its Flemish periphery, with Vilvoorde serving as the main case for local design exploration.

By linking spatial design with soft institutional strategies, the thesis reframes the Brussels edge not as a marginal buffer zone or a fixed line of separation, but as an active metropolitan interface. The project argues that integration should not imply the absorption of the periphery into Brussels, but rather the construction of stronger relationships between differentiated municipalities, communities, infrastructures and institutions.

Keywords: Metropolitan integration; Brussels periphery; Mobility; Governance; Spatial planning; Urban design; Research-by-design

01

INTRODUCTION & POSITIONING

Positioned between administrative borders and everyday metropolitan realities, the Brussels periphery reveals how proximity and separation can coexist within the same territory.

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.1 Motivation & project positioning



Figure 1 - Brussels-south Station, Belgium (Unsplash, 2024)

Metropolitan context

Brussels functions increasingly as a metropolitan system that extends far beyond the boundaries of the Brussels-Capital Region (BCR). Daily mobility, housing dynamics, and economic relations connect the city closely to its surrounding municipalities. However, planning and governance frameworks remain fragmented along regional and linguistic lines. This mismatch between functional realities and institutional structures produces a metropolitan condition marked by discontinuities rather than cohesion, particularly visible at the urban edge. In this context, Brussels exemplifies a broader metropolitan paradox in which interconnected territories lack integrated spatial and governance frameworks (Cardoso & Meijers, 2021).

Personal motivation and lived experience

This research is also informed by personal experience. I grew up in Rhode-Saint-Genèse (Sint-Genesius-Rode), a municipality in the Flemish periphery of Brussels with linguistic facilities. Although located on the Flemish side of the regional border, my daily life was oriented toward Brussels. I commuted to the city on a daily basis, mainly by car, and remained socially and culturally connected to Brussels rather than to the surrounding Flemish context. Despite close spatial proximity, interactions with Flemish communities were limited, revealing a form of everyday separation that contrasts sharply with the intensity of metropolitan connectivity.

The Flemish periphery as an interface

The Flemish periphery of Brussels is a key space where this paradox becomes tangible. Rather than operating as a simple suburban belt, it functions as a metropolitan interface shaped by infrastructures, administrative borders, and linguistic divisions. Large-scale mobility systems structure daily life, while political and cultural boundaries continue to influence social relations. As a result, the periphery emerges as a hybrid condition: neither fully urban nor fully suburban, but a zone where proximity and separation coexist. These in-between spaces offer a critical lens through which to understand how metropolitan fragmentation is produced and maintained.

Project positioning

This experience highlighted a broader issue: spatial closeness does not automatically lead to social interaction or integration. The project positions itself at the intersection of this lived condition and urban research. Rather than proposing a comprehensive metropolitan plan or a purely policy-driven solution, the project approaches the periphery as a spatial condition to be explored through urbanism and design. Design is used as an investigative tool to reveal frictions, interfaces, and opportunities within fragmented metropolitan systems. By linking personal observation with metropolitan theory, the project establishes a framework for examining how spatial and infrastructural interventions might contribute to more integrated metropolitan relations.

.2 Societal and ethical relevance

Metropolitan fragmentation as a societal issue

Metropolitan fragmentation is not only a spatial or institutional condition, but also a societal challenge. In metropolitan regions where daily life extends across administrative boundaries, fragmented governance structures can result in unequal access to opportunities, services, and infrastructure. When functional interdependencies are not matched by coordinated planning frameworks, disparities tend to emerge at the urban edge. In this sense, metropolitan fragmentation affects how different groups experience the city and its surrounding territories, shaping everyday practices and long-term socio-spatial outcomes (Cardoso & Meijers, 2021).

Infrastructure, mobility, and responsibility

Mobility infrastructures play a central role in shaping these conditions. Systems designed to optimise movement and accessibility also influence patterns of inclusion and exclusion. In the Belgian context, large-scale infrastructures such as road networks and orbital systems have historically structured metropolitan development while simultaneously reinforcing spatial separation. As Ryckewaert (2011) demonstrates, infrastructures are never neutral: they reflect societal priorities and have long-lasting effects on territorial organization and daily life. From an ethical perspective, this implies a responsibility to critically assess how infrastructural systems shape metropolitan relations beyond their technical performance.

Social separation and everyday coexistence

In the Brussels metropolitan context, fragmentation is closely intertwined with social and linguistic dynamics. The Flemish periphery of Brussels is characterized by strong functional ties to the city, combined with limited social interaction across linguistic and cultural boundaries. Research has shown that proximity does not necessarily lead to integration, and that social relations between Brussels and the surrounding Flemish municipalities often remain partial and uneven (De Maesschalck, De Rijck, & Heylen, 2015). This situation raises ethical questions about coexistence in metropolitan regions, where communities may share space without sharing access, encounters, or collective frameworks.

Ethical positioning of the project

This project engages with these societal and ethical challenges by adopting a reflective and non-normative stance. It does not aim to eliminate linguistic, cultural, or institutional differences, nor to impose a single model of metropolitan integration. Instead, it seeks to make visible the frictions and asymmetries produced by fragmented metropolitan systems and to explore how spatial and infrastructural design can contribute to more inclusive and intelligible relations. By focusing on interfaces rather than boundaries, the project positions urbanism as a mediating practice, attentive to the ethical implications of spatial interventions in complex metropolitan contexts.



Figure 2 - Institution building with Belgian & Flemish flag (Unsplash, 2022)

02

METROPOLITAN CONTEXT & STRUCTURAL FRAGMENTATION

The Brussels metropolitan area emerges as a complex territory shaped by interconnected spatial systems, diverse communities and multiple administrative realities.

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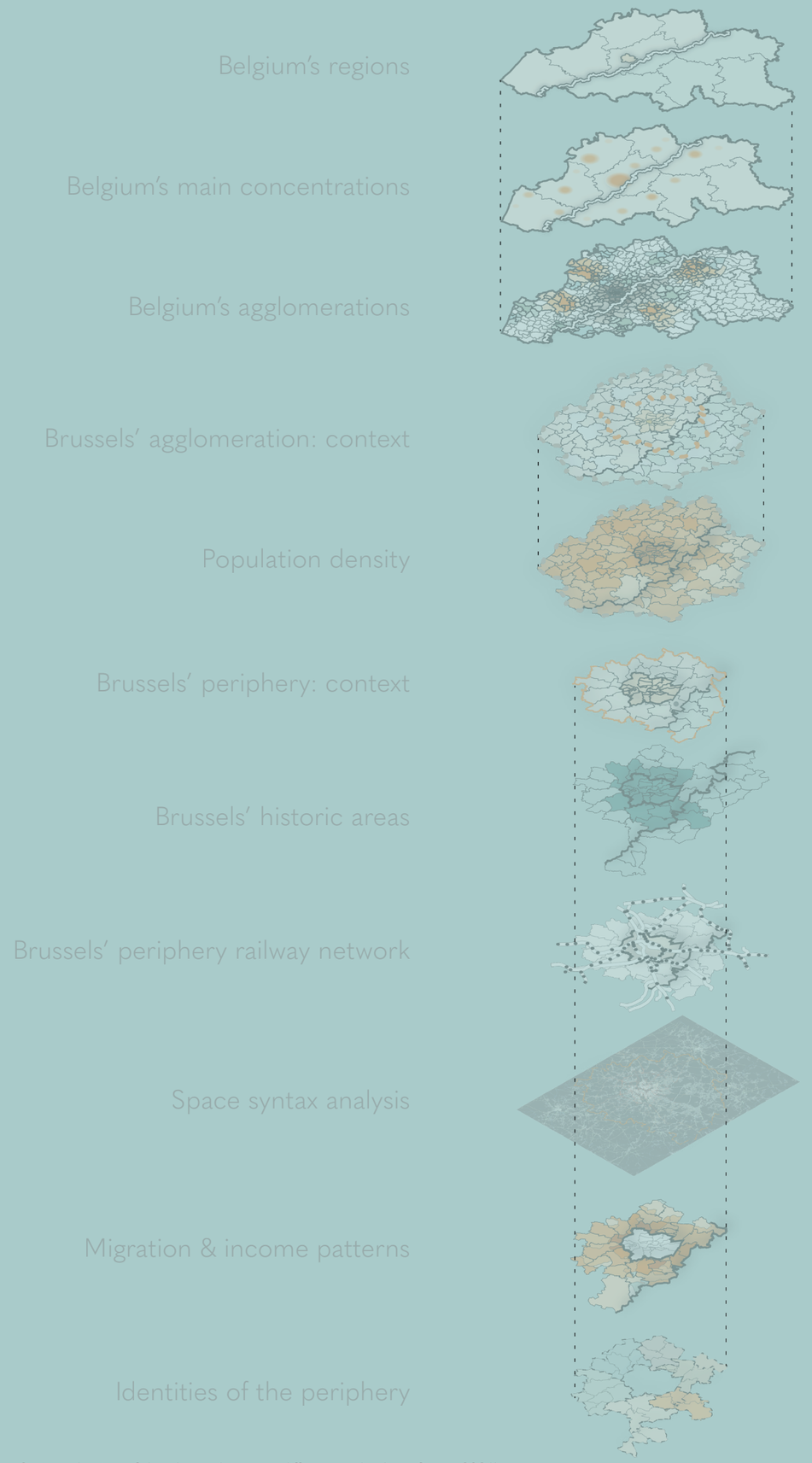


Figure 3 - Introduction of the chosen layers on different scales (own figure, 2026).

.1 Brussels in a multi-scalar metropolitan system

Brussels within the European metropolitan network

As illustrated in figure 4, Brussels occupies a strategic position within the European metropolitan system, located between four major metropolitan regions: London, Paris, the Randstad, and the Rhine-Ruhr area. Rather than functioning as an isolated urban centre, Brussels is embedded in a dense network of large metropolitan regions, connected through economic, political, and infrastructural flows. Its central position highlights a role as an interface between these metropolitan poles, positioning Brussels as a connector within North-Western Europe that operates beyond its national boundaries.

Figure 5 situates Brussels in relation to the four largest metropolitan regions in Europe, as identified in the legend: Greater London, Île-de-France, Rhine-Ruhr, and the Randstad. These metropolitan regions concentrate population, economic activity, and infrastructure at a continental scale. Within this configuration, Brussels stands out not by its size, but by its strategic position between these major urban systems. In addition to its role as the political capital of Europe, Brussels emerges as a key intermediary space, facilitating transit and interaction between Europe's largest metropolitan regions.

This positioning highlights that Brussels should be understood not only as a Belgian capital, but also as part of a broader network of European metropolitan regions facing similar challenges of coordination, mobility and governance.

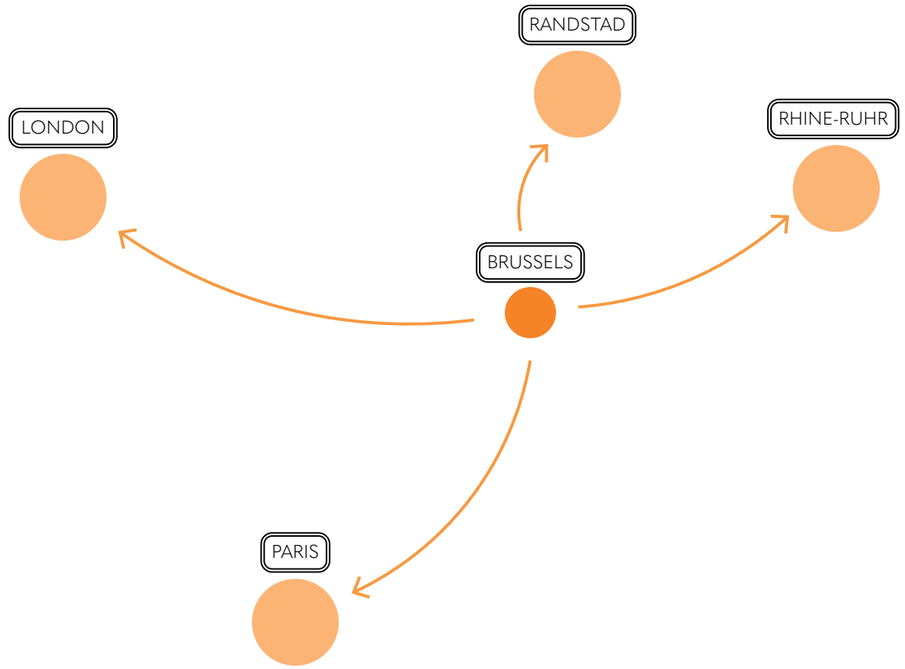


Figure 4 - Brussels surrounded by 4 biggest metropolitan areas (own figure, 2026).

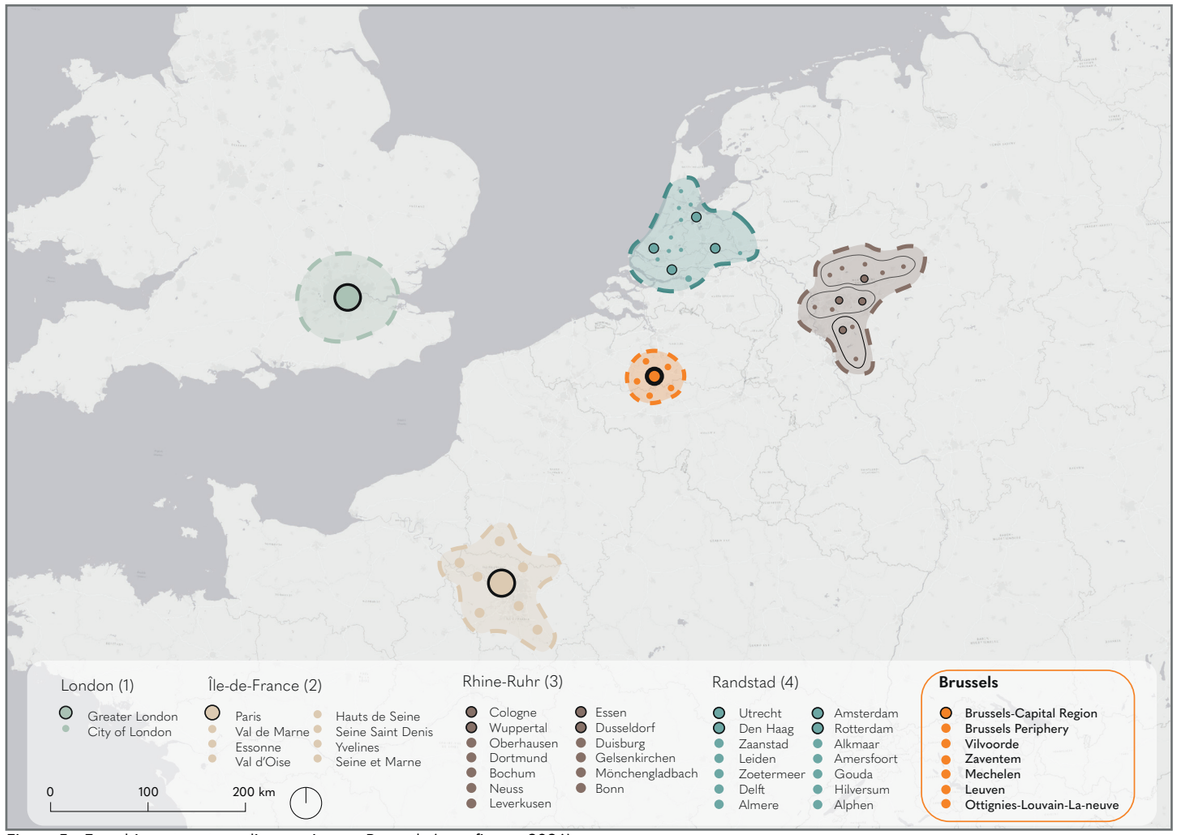


Figure 5 - Four biggest metropolitan regions + Brussels (own figure, 2026).

Working across scales

This project adopts a multi-scalar approach to relate metropolitan dynamics to their local spatial consequences (figure 6). The analysis moves from the national scale to the Brussels agglomeration and its periphery, before focusing on selected local zoom-ins, allowing comparable patterns and tensions to be examined across different territorial contexts. The reasons behind specific zoom-in choices are explained in more detail in section 4.4.

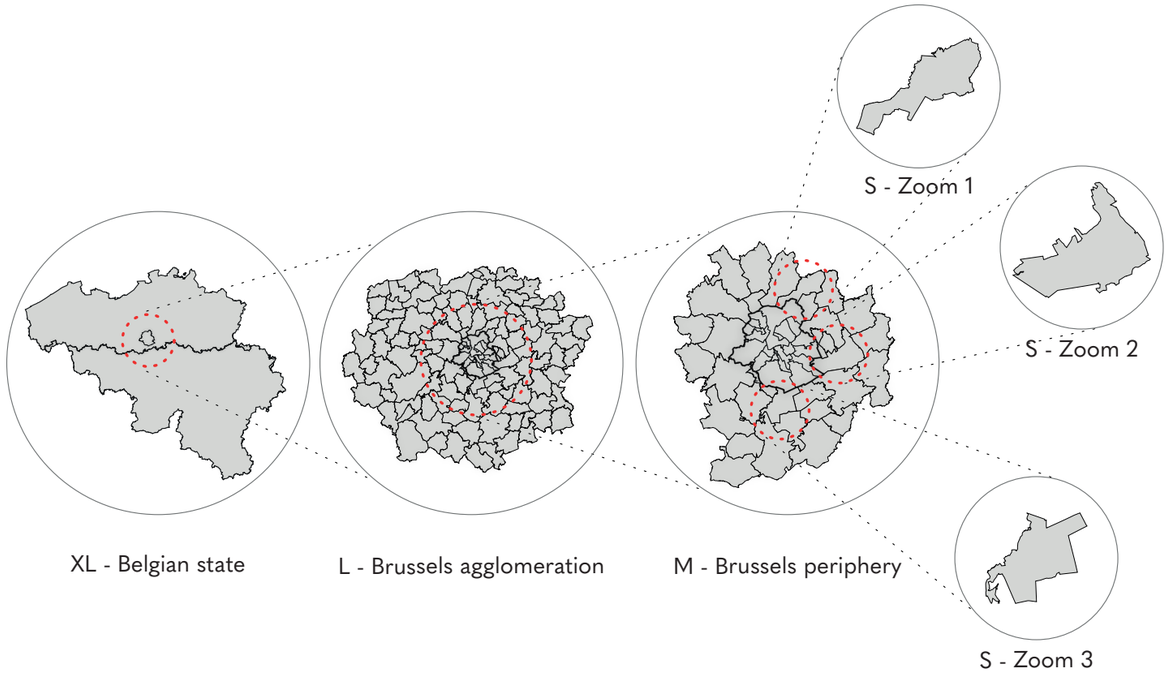


Figure 6 - Thesis scales (own figure, 2026).

Belgium's regions

Belgium is a federal state composed of multiple levels of government that are legally equal and non-hierarchical (Figure 7). Successive state reforms transformed Belgium from a unitary system into a federal one in which competencies are distributed between the federal state, the Regions, and the Communities (Istaz, 2000).
The three Regions: Flanders, Wallonia, and the Brussels-Capital Region (BCR), are primarily responsible for territorial competences, including spatial planning, mobility, housing, and economic development, while the Communities focus on person-related matters such as culture and education (Istaz, 2000).

Brussels occupies a specific institutional position within this structure. Limited to 19 municipalities and operating under a bilingual regime, the Brussels-Capital Region produces ordinances rather than decrees and relies on particular institutional arrangements that reflect both its metropolitan role and its complex governance context (Istaz, 2000).

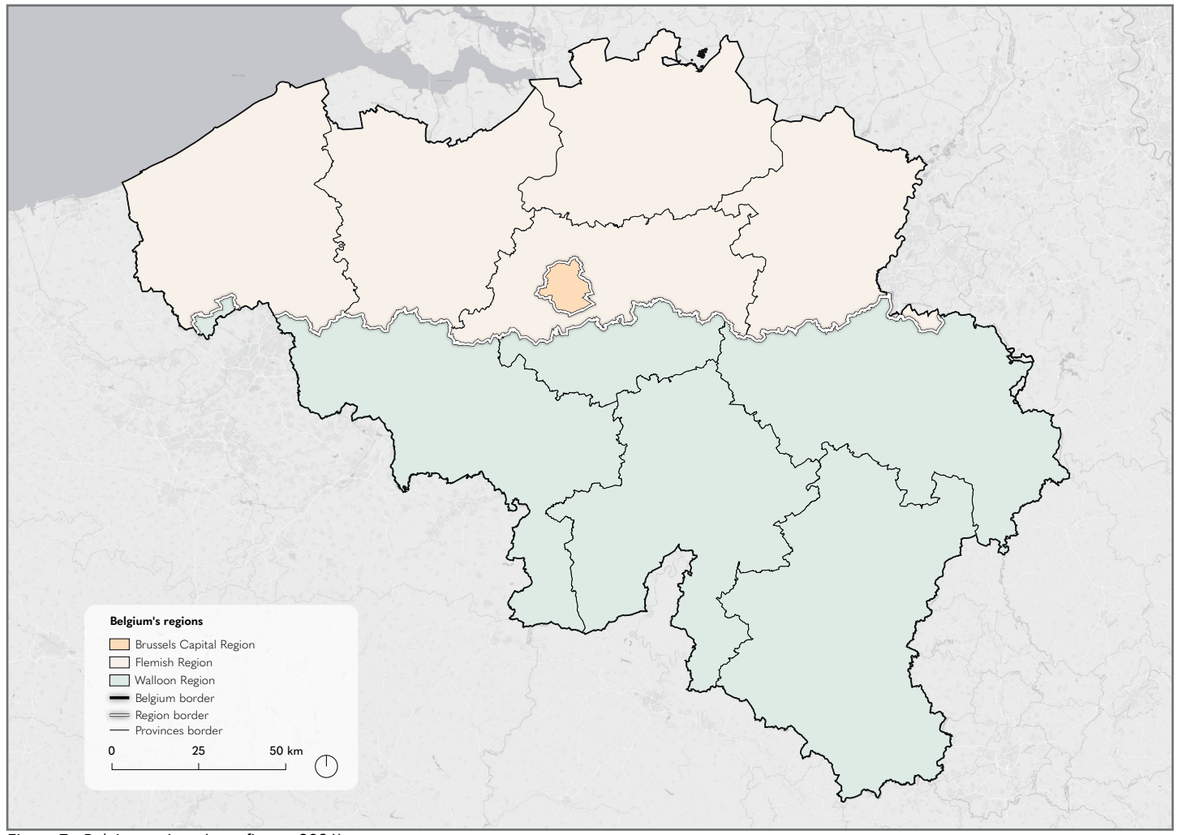


Figure 7 - Belgian regions (own figure, 2026).

Population concentration in Belgium

This map (figure 8) shows a highly uneven population distribution across Belgium, characterised by a strong concentration in a limited number of urban centres. Brussels clearly stands out as the largest demographic concentration, while other cities such as Antwerp, Ghent, Liège, and Charleroi form secondary poles at a significantly lower scale. This pattern reflects a structurally hierarchical urban system rather than a balanced territorial distribution.

The spatial spread of population beyond core cities also highlights long-term processes of suburbanisation and peri-urban growth, particularly around major urban centres. Population concentration therefore does not align strictly with administrative boundaries but follows functional urban regions shaped by housing markets, infrastructure, and employment structures (Ryckewaert, 2011). At the national scale, the map underlines the persistent dominance of a small number of urban cores within Belgium's settlement system.

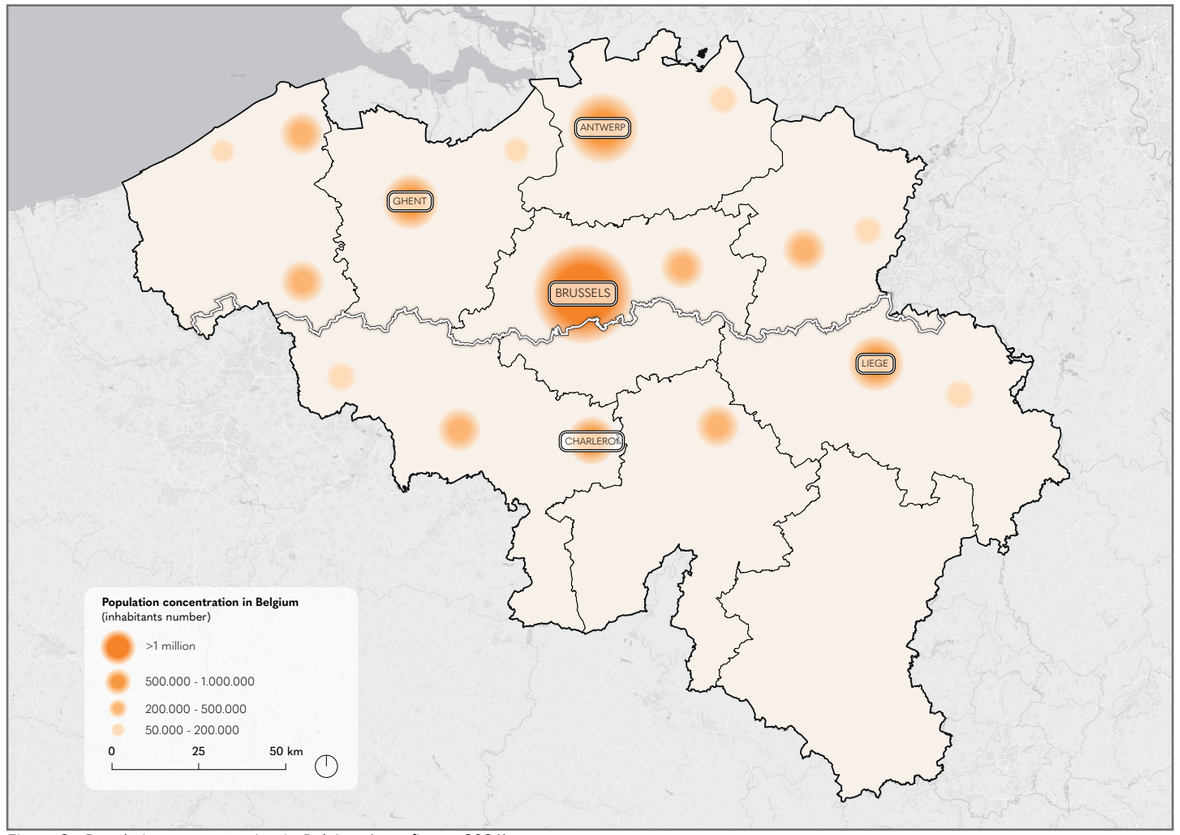


Figure 8 - Population concentration in Belgium (own figure, 2026).

Urban agglomerations in Belgium

The agglomeration map (figure 9) illustrates Belgium's urban system as polycentric, yet clearly hierarchical. While multiple urban centres coexist, they differ markedly in size, function, and spatial influence. Brussels occupies a unique position, while other main cities structure regional urban networks, and secondary and tertiary cities serve more localised roles. Rather than forming independent urban regions, these agglomerations are embedded in overlapping spheres of influence, producing a system of asymmetric polycentricity.
Such configurations are typical of advanced metropolitan regions, where urbanisation is driven less by isolated cities than by interconnected urban networks operating across multiple scales (Cardoso & Meijers, 2021). The map therefore highlights how national urban structures emerge from relational dynamics between centres rather than from administrative hierarchies alone.

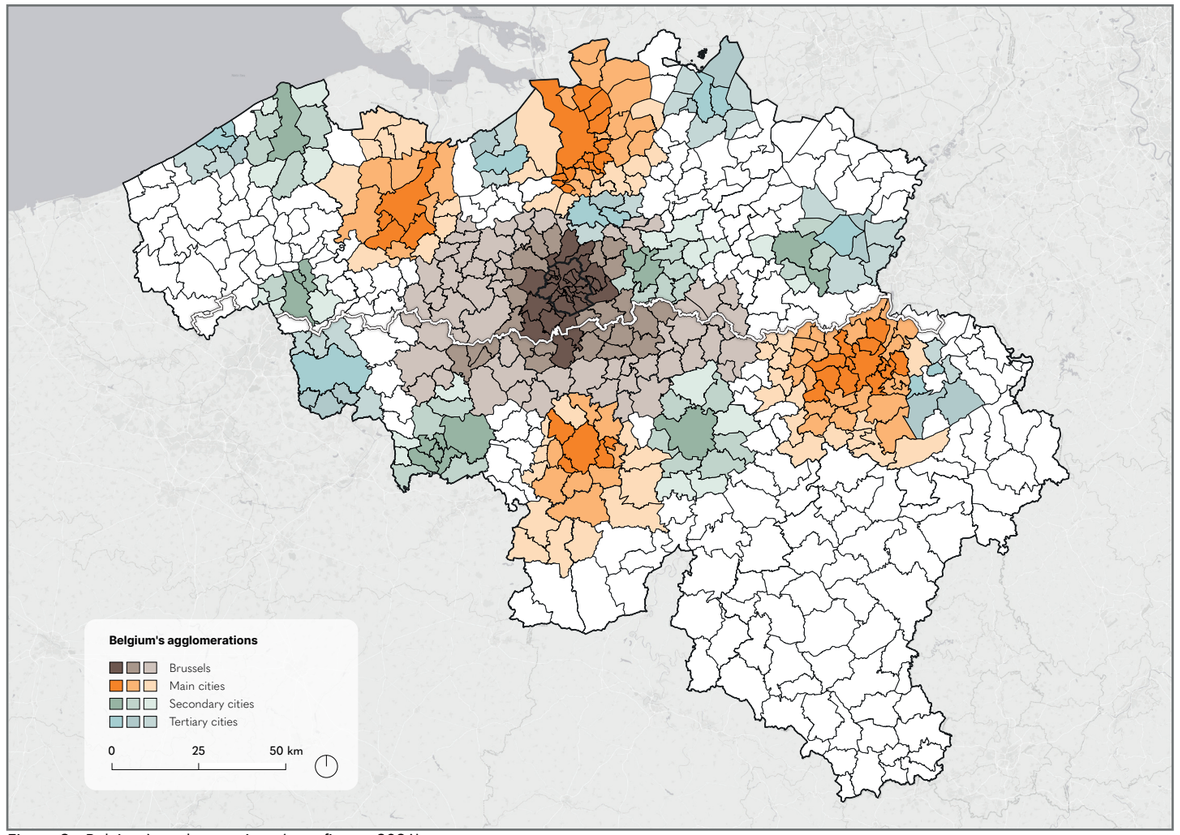


Figure 9 - Belgium's agglomerations (own figure, 2026).

.2 Territorial structure & fragmentation

Agglomeration & regional boundaries

This map (figure 10) focuses on the Brussels agglomeration and makes explicit the contrast between official regional borders and the way the metropolitan area is commonly perceived and described. While the boundaries of the Brussels-Capital Region (BCR), Flanders, and Wallonia are clearly defined administratively, the agglomeration extends beyond these limits through everyday functional relations such as commuting, housing, and service use.

The map also highlights the main municipalities structuring this agglomeration, which play a key role despite belonging to different regions. The distinction between the core, the immediate periphery, and the wider agglomeration reflects commonly used, but non-official, spatial categories that help describe metropolitan dynamics. These perceived zones underline the gap between formal governance structures and the spatial reality of the Brussels metropolitan area.

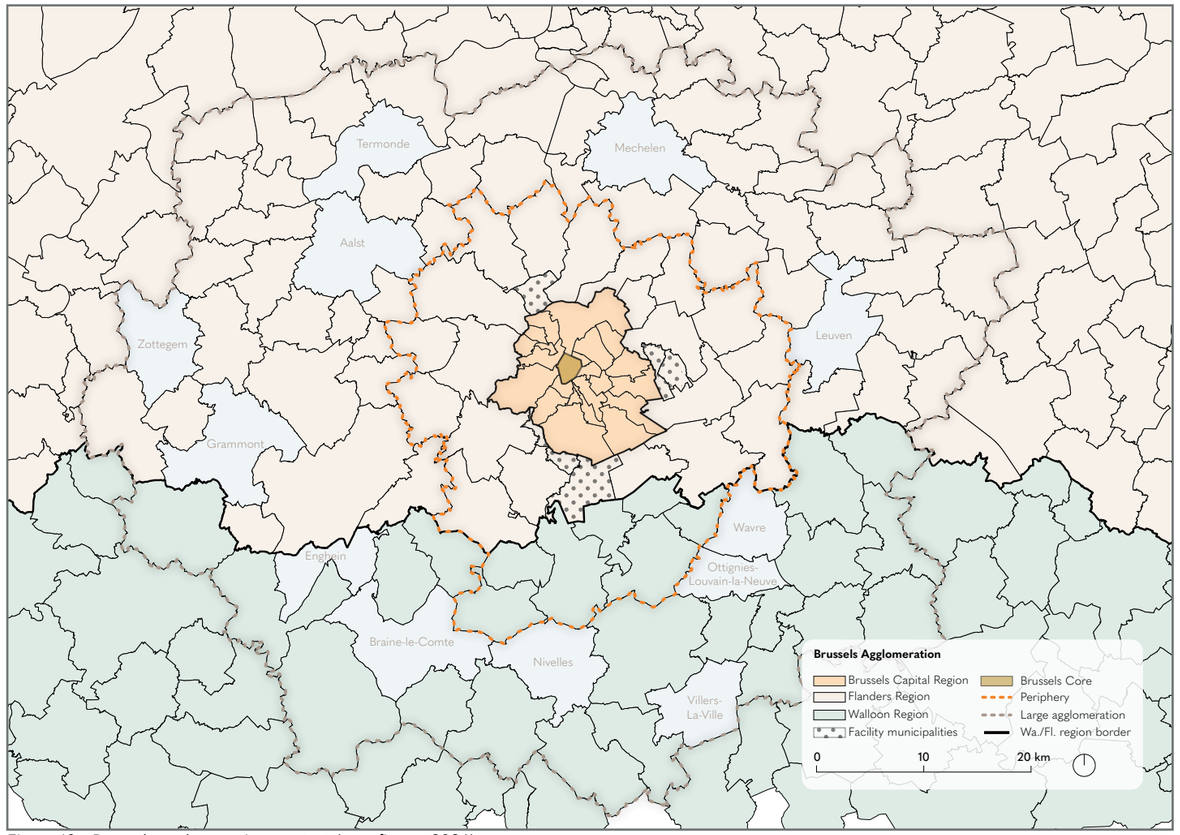


Figure 10 - Brussels agglomeration context (own figure, 2026).

Population density

The population density map (figure 11) reveals a strong concentration within the Brussels-Capital Region, followed by a gradual decrease toward the surrounding agglomeration. Despite this gradient, several peripheral municipalities display relatively high densities, indicating a continuous urban fabric that extends across regional borders. The spatial distribution of density confirms that the agglomeration functions as a coherent demographic system rather than as three separate regional entities.

At the same time, the sharp change in density at certain borders illustrates how administrative boundaries still coincide with different urban development patterns. This reinforces the idea that demographic dynamics operate at an agglomeration scale, while planning and policy frameworks remain territorially fragmented.

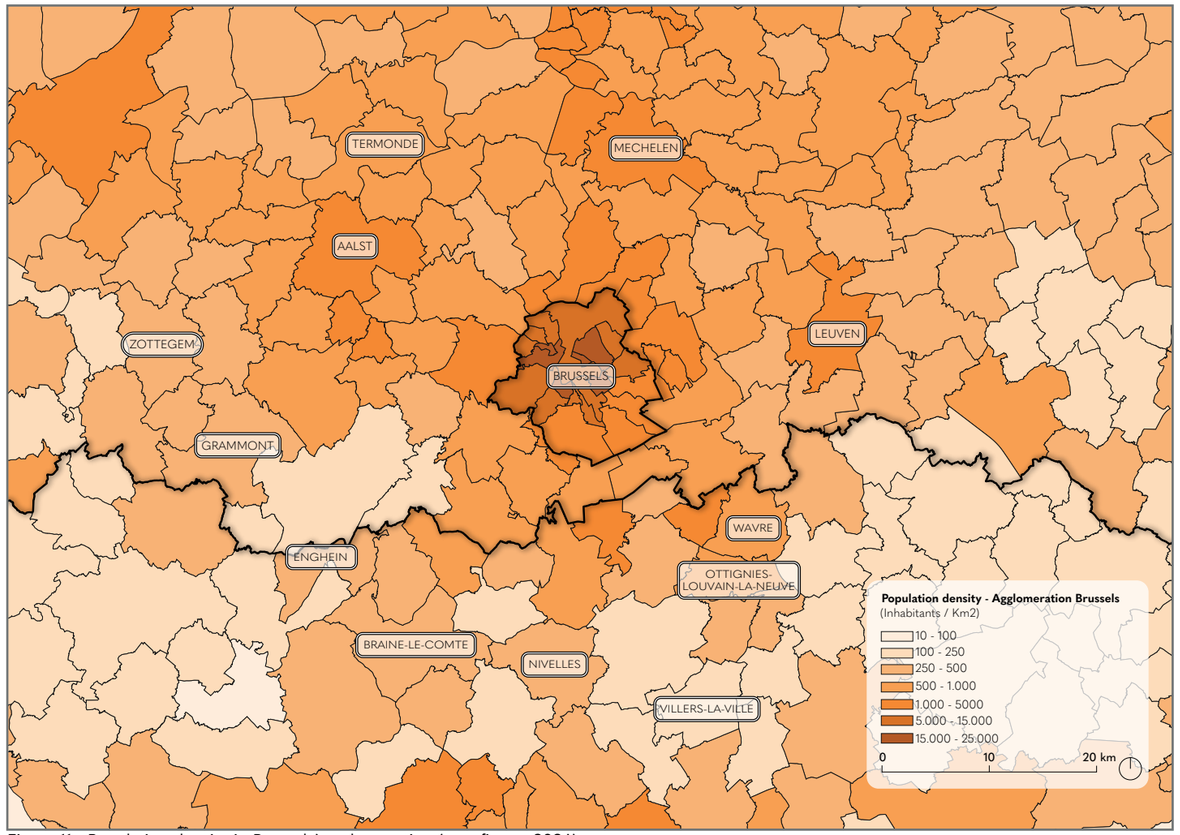


Figure 11 - Population density in Brussels' agglomeration (own figure, 2026).

.3 Spatial and Societal Fragmentation

The Brussels periphery

The Brussels periphery is introduced here (figure 12) as a spatial construct that is widely used in practice but not formally defined in administrative terms. The dashed orange line represents a commonly perceived boundary of the metropolitan periphery, extending beyond the Brussels-Capital Region into both Flanders and Wallonia. Rather than marking an official limit, it reflects shared understandings based on mobility patterns, daily commuting, housing dynamics, and socio-economic relations with Brussels.

The highlighted municipalities with language facilities underline the specific institutional role of these areas within the Brussels periphery. These six Flemish municipalities provide administrative language facilities for French-speaking residents, allowing the use of French in public services despite being located in Flemish territory. In contrast to surrounding municipalities that maintain a stronger Flemish linguistic framework, these municipalities function as key interfaces for French-speaking populations living outside the Brussels-Capital Region. Together, these elements provide a spatial and political context for understanding the periphery as an interface zone, where administrative borders, functional relations, and identity-related issues overlap.

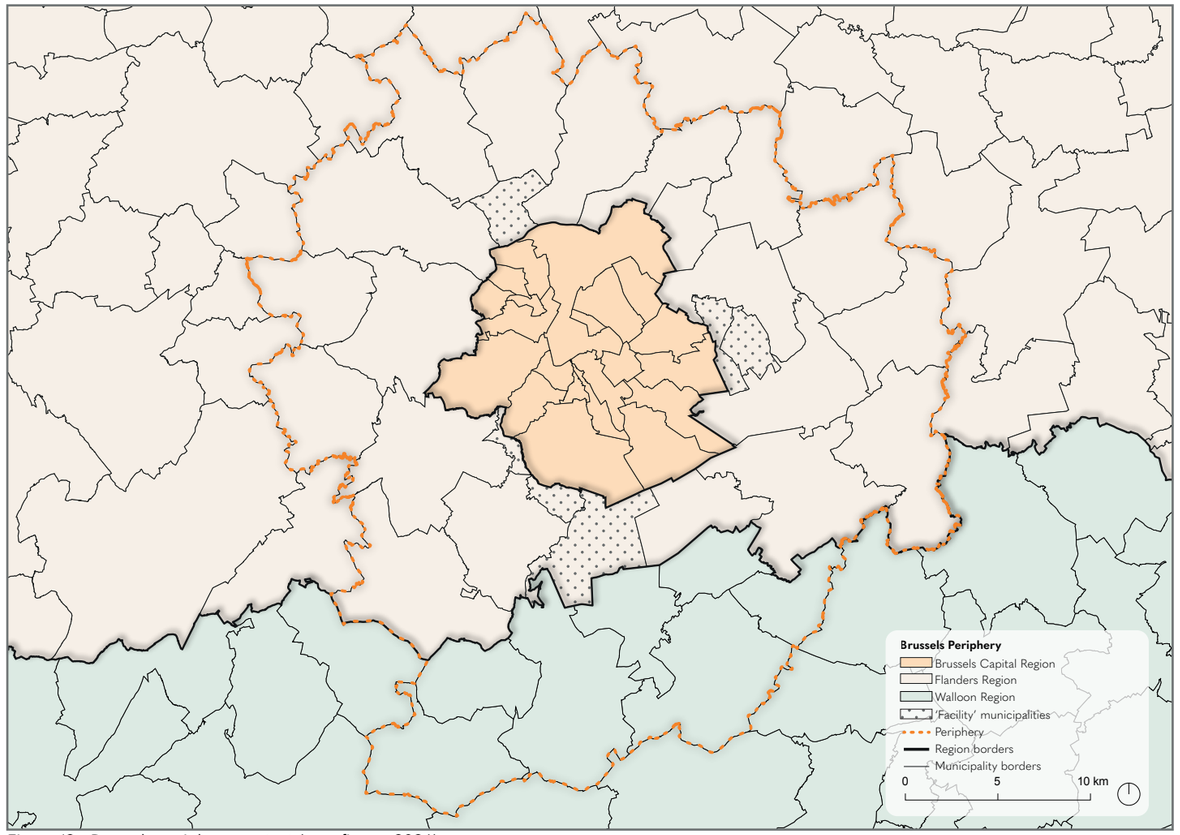


Figure 12 - Brussels periphery context (own figure, 2026).

Historic connections with Brussels

The historical depth of connections between Brussels and its surrounding municipalities is highlighted in figure 12. Darker shades indicate areas that have been more strongly linked to Brussels over time, through population movements, economic development, and urban expansion. Lighter shades represent municipalities that remain connected, but in a less direct or less intensive manner. This representation could show that the Brussels metropolitan area is not the result of recent dynamics alone, but of long-term processes that have gradually shaped a wider urban region.

The spatial pattern suggests continuity rather than rupture, with varying degrees of integration that reflect different trajectories of development. These historic connections help explain why the periphery cannot be understood as a uniform space, but rather as a differentiated territory with layered relationships to Brussels.

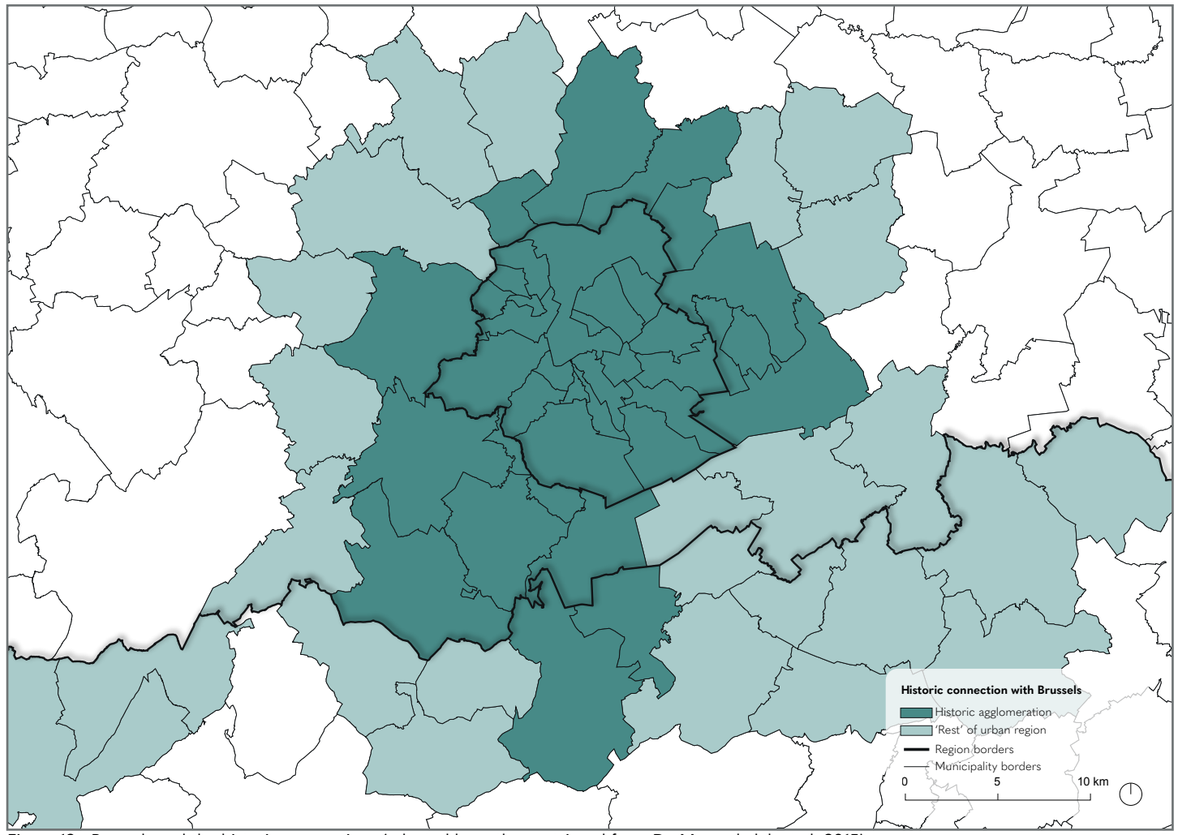


Figure 13 - Brussels and the historic connections (adapted by author, retrieved from De Maesschalck et al. 2015).

Railway station frequency in the periphery

The map in figure 14 highlights a differentiated pattern of rail usage across the Brussels periphery. Passenger volumes are not evenly distributed but concentrate in a limited number of stations located along major radial corridors. These stations function as key access points between the periphery and the Brussels-Capital Region, while many intermediate or secondary stations show significantly lower frequencies.

This contrast reveals a selective use of the rail system, where proximity to Brussels alone does not guarantee high demand, and where service intensity, network position, and intermodality play a decisive role.

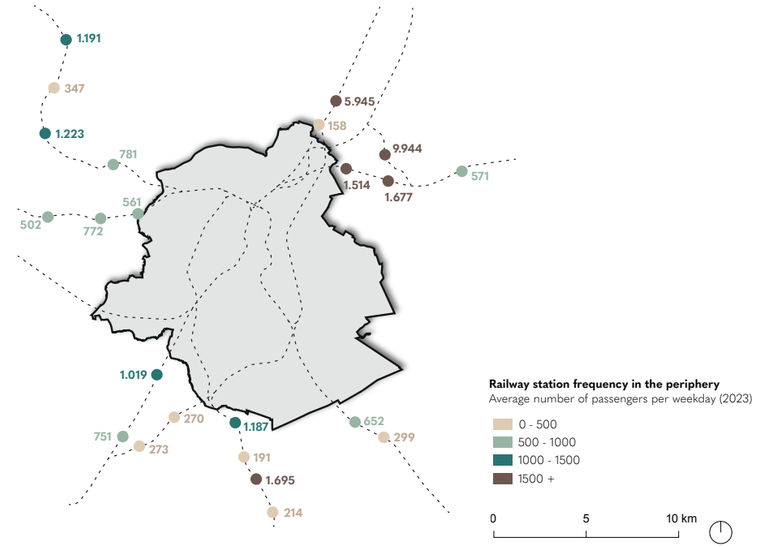


Figure 14 - Stations frequency in the periphery of Brussels (own figure, 2026).

Structure of the railway network

On figure 15, the map situates these usage patterns within the broader structure of the railway network. The periphery is primarily served by radial lines converging toward Brussels, reinforcing a strongly monocentric configuration. While the network is dense in infrastructural terms, transversal connections between peripheral municipalities remain limited. As a result, the railway system is highly effective for trips oriented toward Brussels but less adapted to lateral or intra-peripheral mobility, contributing to functional dependencies on the capital and uneven accessibility across the metropolitan area.

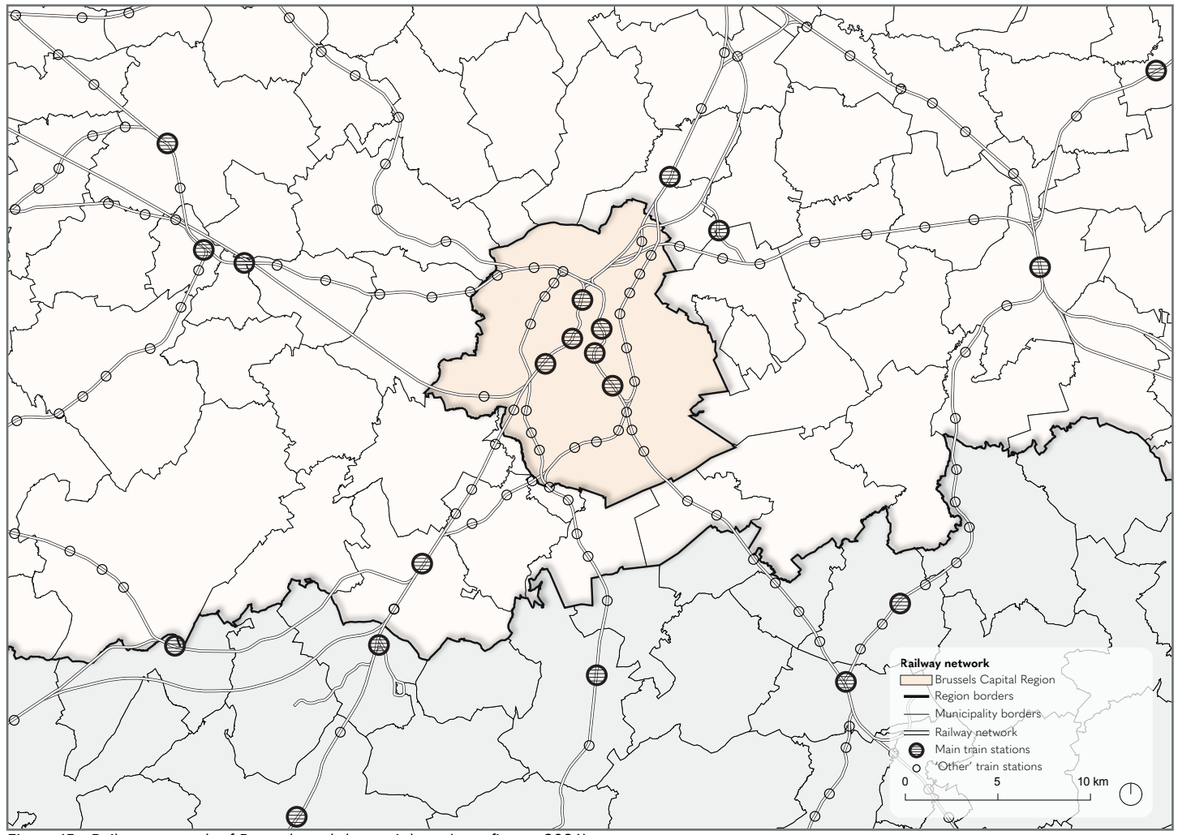


Figure 15 - Railway network of Brussels and the periphery (own figure, 2026).

Education within the Flemish Community

Commuting flows between Brussels, the periphery and the regions (education)

Figure 16 illustrates daily educational mobility within the school system of the Flemish Community. The diagram reveals significant flows between Brussels and the large periphery, with more than 7,500 pupils from the periphery attending Flemish-speaking schools in Brussels, compared to fewer than 3,500 travelling in the opposite direction. The figure highlights Brussels' role as an important educational centre within the metropolitan area and demonstrates how administrative borders do not correspond to lived educational geographies. While the largest exchanges occur between Brussels and the surrounding Flemish periphery, connections with the wider Flemish Region are also visible. These patterns underline the continued importance of Brussels as a destination for education and daily cross-border mobility within the metropolitan system (De Maesschalck et al., 2015).

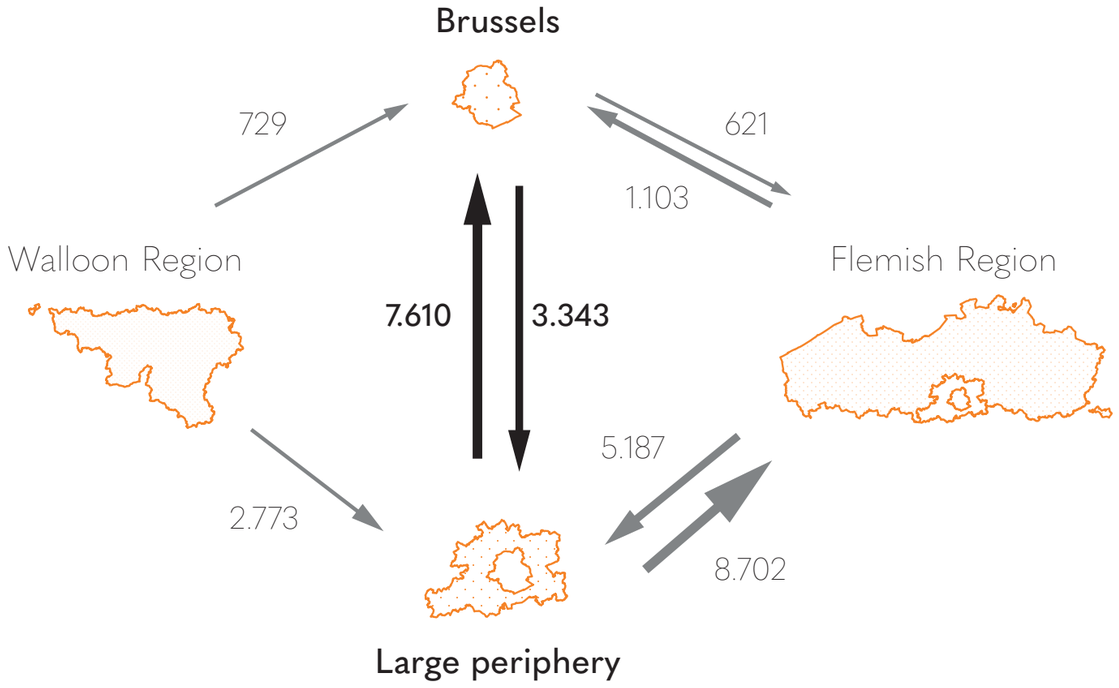


Figure 16 - Education commuters without French Community (adapted by author, retrieved from De Maesschalck et al., 2015).

Education including the French Community

Commuting flows between Brussels, the periphery and the regions (education)

Figure 17 expands the previous diagram by including both the Flemish and French Community school systems in Brussels. Once French-speaking education is taken into account, the educational pull of Brussels becomes substantially stronger. The net flow from the large periphery towards Brussels increases dramatically, revealing that a significant share of pupils from the surrounding municipalities attend schools in the capital. This is particularly evident in municipalities with language facilities, where French-speaking education plays an important role. The figure therefore illustrates how educational networks extend far beyond administrative boundaries and reinforces the central position of Brussels as the dominant educational hub of the wider metropolitan region. Compared to the previous diagram, it demonstrates that educational relations between Brussels and its periphery are considerably more intensive than what is visible through the Flemish school system alone (De Maesschalck et al., 2015).

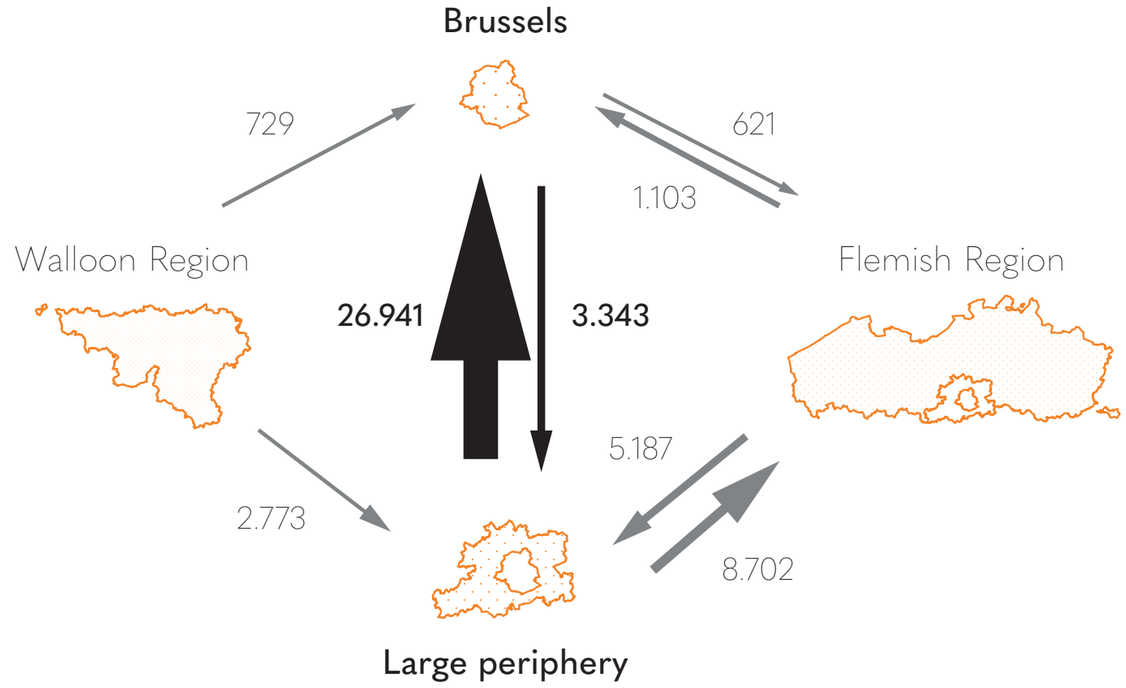


Figure 17 - Education commuters with French Community (adapted by author, retrieved from De Maesschalck et al., 2015).

Population exchanges shaping the large periphery

Figure 18 details the population exchanges between the large Flemish periphery and other areas (foreign countries, BCR, Flemish region, Walloon region or natural growth), distinguishing between different sources of growth. The diagram shows that population increase is driven primarily by migration flows, particularly from the Brussels-Capital Region and foreign countries, while exchanges with the rest of the Flemish and Walloon Regions play a secondary but still significant role.

The figure makes clear that the periphery functions as a demographic buffer zone for Brussels: households relocate outward while maintaining strong functional ties with the city. Natural growth plays a more limited role compared to migration, indicating that demographic change in the periphery is closely linked to broader metropolitan and international dynamics rather than internal reproduction alone (De Maesschalck & Van Cappel, 2023).

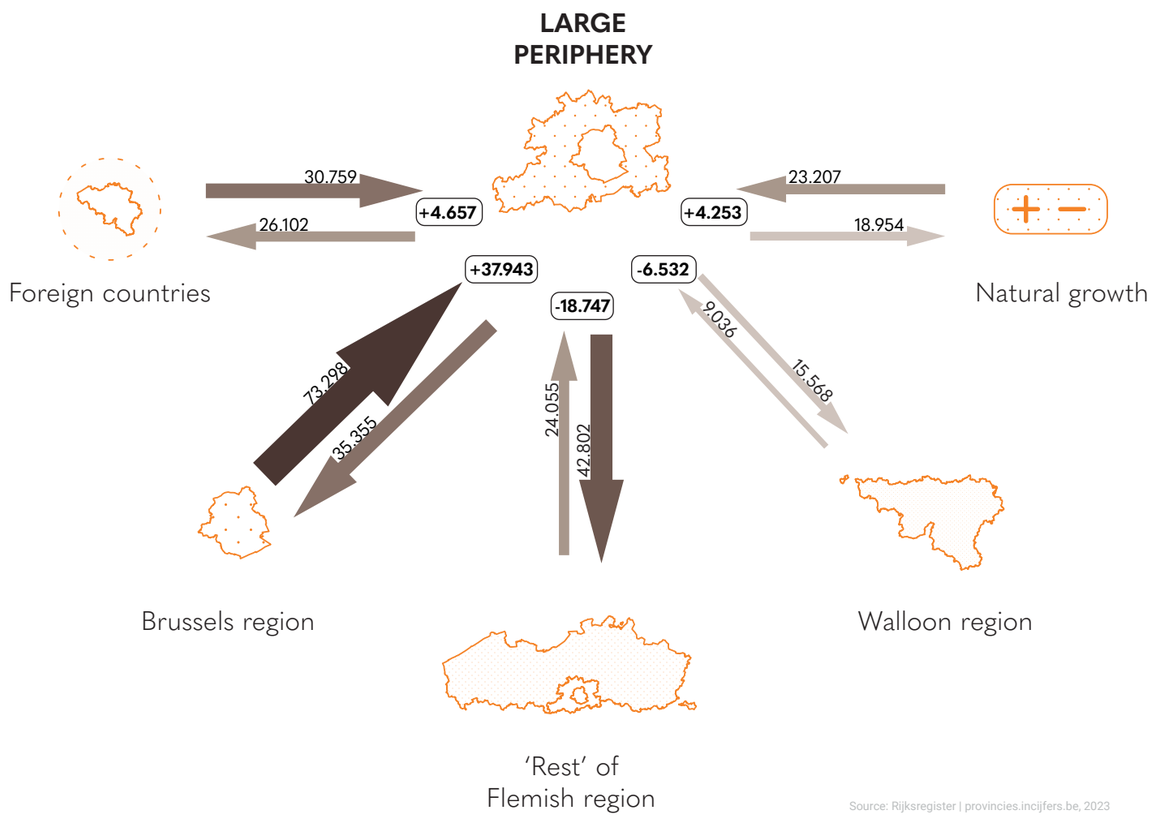


Figure 18 - Migration movements to/from the Large Periphery (adapted by author, retrieved from De Maesschalck & Van Cappel, 2023).

Long-term population growth in the Flemish periphery

Figure 19 complements this analysis by showing the long-term evolution of the population in the Flemish periphery. The steady upward trend since the 1990s confirms that the periphery is one of the fastest-growing parts of the metropolitan region. This sustained growth reinforces pressures on housing, mobility networks, and public services, while deepening the functional interdependence with Brussels. Read together, Figure 17 and 18 highlight how demographic growth in the Flemish periphery is not only quantitative but also structural: it reshapes commuting patterns, intensifies cross-border dependencies, and contributes to the gradual expansion of the metropolitan system beyond formal administrative limits. These dynamics provide essential context for understanding current spatial and infrastructural challenges in the Brussels periphery (De Maesschalck & Van Cappel, 2023).

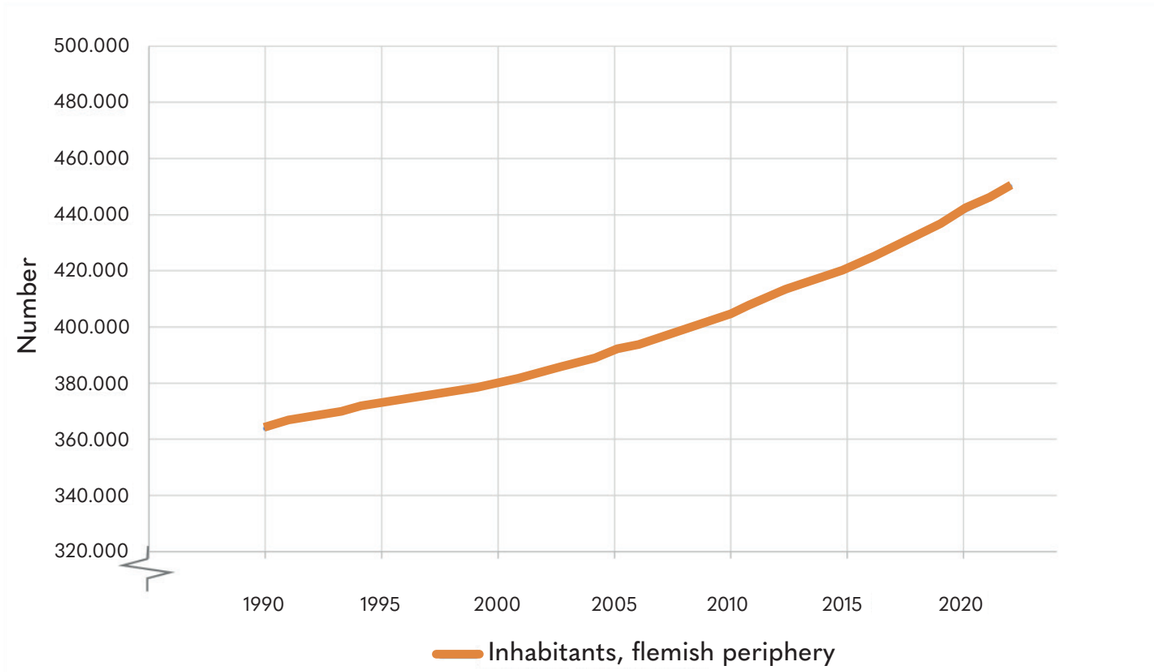


Figure 19 - Population evolution of the Large Periphery (adapted by author, retrieved from De Maesschalck & Van Cappel, 2023).

Space Syntax: Angular integration (15 km radius)

The angular integration map at a 15 km radius highlights the broader structure of metropolitan accessibility across Brussels and its periphery. High integration values concentrate in and around the Brussels core, extending along major radial corridors that structure everyday movement at the metropolitan scale. These corridors cut across administrative borders, revealing a functional spatial logic that does not align with regional or municipal boundaries.

When read together with the continuous and discontinuous urban fabric, the map shows that the most integrated spaces largely coincide with dense, continuous settlements and historically urbanised axes. Discontinuous urban fabric and more fragmented settlements tend to appear less integrated, even when geographically close to Brussels. This suggests that accessibility is not only a matter of distance, but also of spatial continuity and network structure, reinforcing a strong centre-periphery gradient at the metropolitan level.

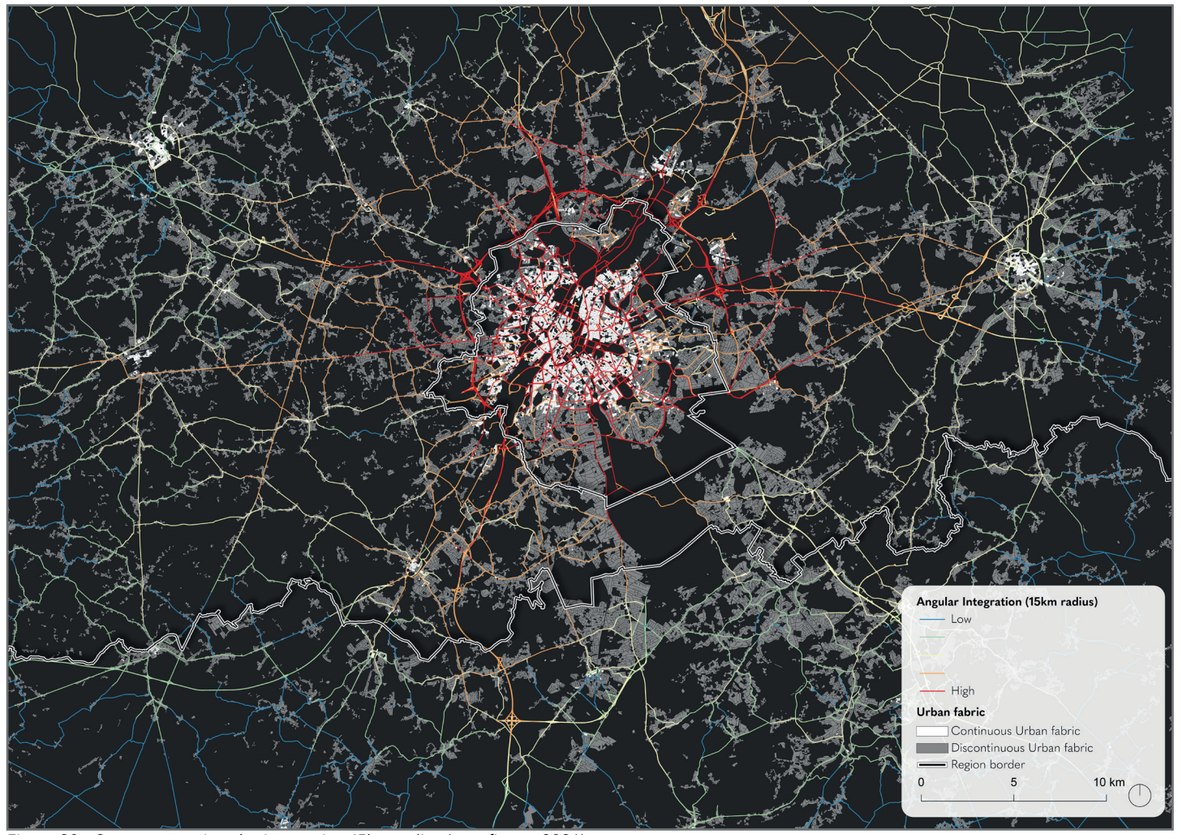


Figure 20 - Space syntax Angular integration 15km radius (own figure, 2026).

Space Syntax: Angular choice (15 km radius)

The angular choice map at a 15 km radius reveals a complementary logic focused on through-movement and strategic routing. High choice values highlight a limited number of corridors that function as metropolitan connectors, capturing long-distance and cross-regional flows rather than local accessibility. These routes often skirt the Brussels core or pass through specific gateways, reinforcing their role as movement infrastructures rather than urban spaces.

Overlaying angular choice with the urban fabric makes visible a clear distinction between places that are central to movement flows and places that are central to everyday accessibility. Some areas with relatively low integration still show high choice values, indicating their role as transit corridors rather than destinations. This contrast between integration and choice underlines a key metropolitan tension: spaces that carry movement are not necessarily those that benefit most from it, a pattern that becomes particularly visible in the peripheral settlements surrounding Brussels.

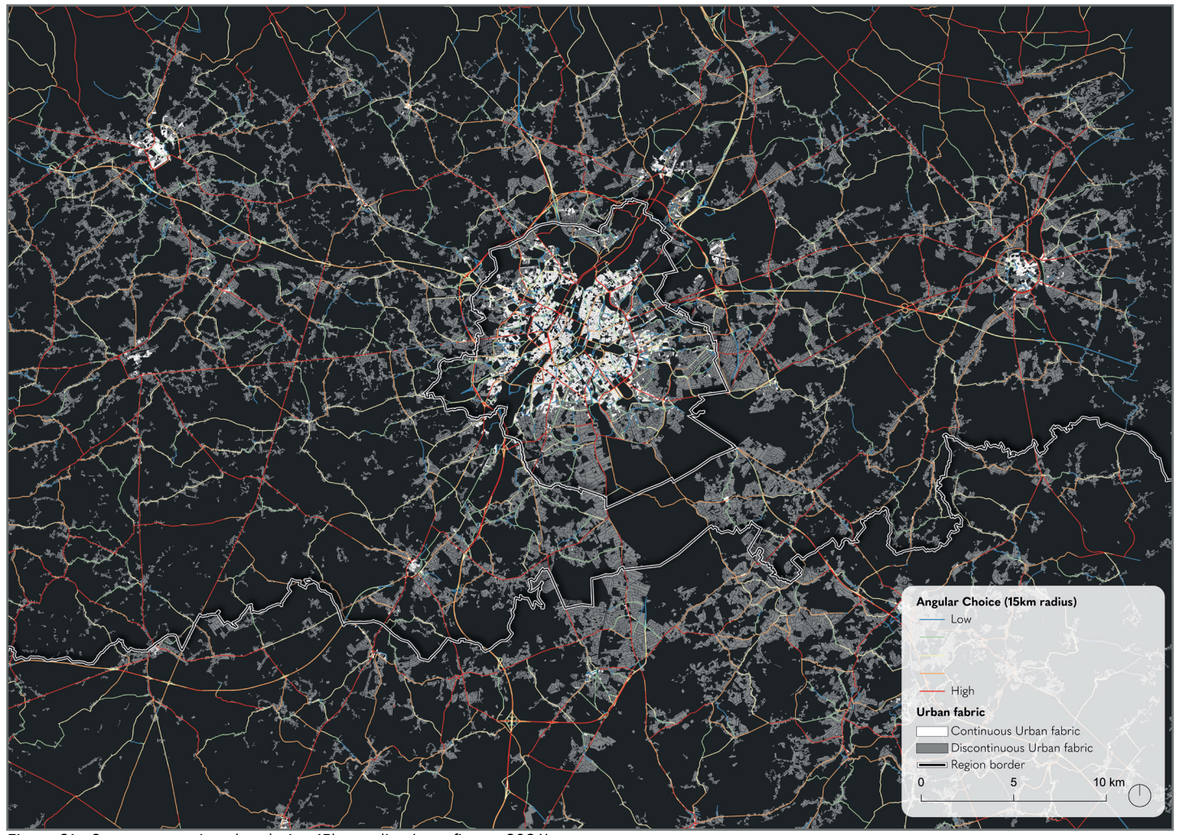


Figure 21 - Space syntax Angular choice 15km radius (own figure, 2026).

Migration patterns and income gradients

The map (figure 22) combines net migration flows between Brussels and the surrounding periphery with socio-economic profiles, highlighting a strongly asymmetric dynamic. The dominant movement is from Brussels towards the periphery, while migration in the opposite direction remains limited and spatially selective. As shown by the darker tones, municipalities directly bordering Brussels register the highest positive migration balances, confirming the role of short-distance residential relocation rather than long-range suburbanisation. Appendix B further details these dynamics through municipality-level maps showing where residents from each of Brussels' 19 municipalities tend to relocate, revealing predominantly short-distance moves toward nearby peripheral municipalities rather than dispersed metropolitan migration.

These patterns correspond closely to the dynamics described by De Maesschalck, De Rijck, and Heylen (2015), who demonstrate that migration from Brussels to the large periphery is primarily driven by young, economically active households. Their analysis shows that this outward movement contributes simultaneously to the relative impoverishment of Brussels and the increasing prosperity of the periphery, as higher-income groups are overrepresented among movers. The income symbols overlaid on the map reinforce this observation, revealing an association between positive migration balances and higher socio-economic profiles in the immediate periphery.

Rather than indicating a homogeneous suburban belt, the figure suggests a selective socio-spatial sorting process, where proximity to Brussels, housing markets, and accessibility structure who moves where. This reading is essential for understanding the periphery not merely as a demographic extension of the city, but as an active interface where residential choices, income stratification, and metropolitan inequalities intersect (De Maesschalck et al., 2015).

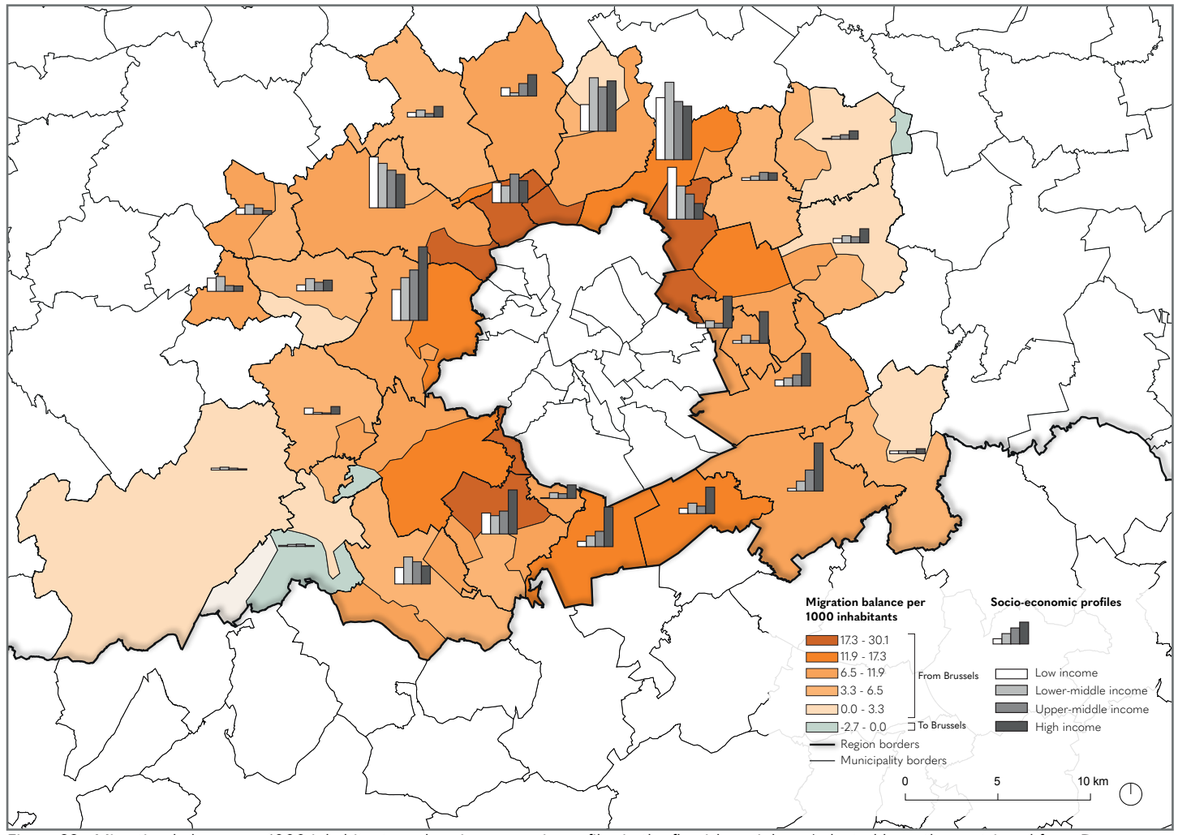


Figure 22 - Migration balance per 1000 inhabitants and socio-economic profiles in the flemish periphery (adapted by author, retrieved from De Maesschalck et al., 2015)

Territorial identities in the periphery

This map (figure 23) proposes a qualitative reading of the Brussels periphery as a set of differentiated territorial identities, rather than a single, coherent entity. By delineating zones based on dominant spatial, functional, and morphological characteristics, the figure highlights how the periphery is internally structured by distinct development logics.

Some areas are strongly shaped by logistics, infrastructure, and productive landscapes, while others are characterised by residential suburbanisation, green buffer zones, or polycentric town structures. These identities do not follow administrative boundaries (even though the municipal boundaries are taken into account) but instead reflect long-term interactions between urbanisation patterns, mobility infrastructures, and land-use dynamics. The result illustrates how different parts of the periphery relate to Brussels in unequal and sometimes contrasting ways.

By framing the periphery through multiple identities, the map challenges any monolithic understanding of "the periphery" as a uniform belt around the city. Instead, it proposes an interpretative reading based on the overlay of multiple analytical layers, including spatial structures, land-use patterns, mobility networks, and demographic trends. These territorial identities should therefore be understood as a conceptual and qualitative interpretation, rather than as fixed or definitive classifications. Given the scale and internal diversity of each zone, any attempt to assign a single, stable identity inevitably remains partial and abstract. The intention is not to label territories conclusively, but to provide an analytical framework that helps reveal dominant tendencies and contrasts within the metropolitan fringe. Figure 24 to 29, then 30 to 35, further explore these distinctions by describing, zone by zone, the predominant spatial and functional characteristics that inform this interpretative reading.

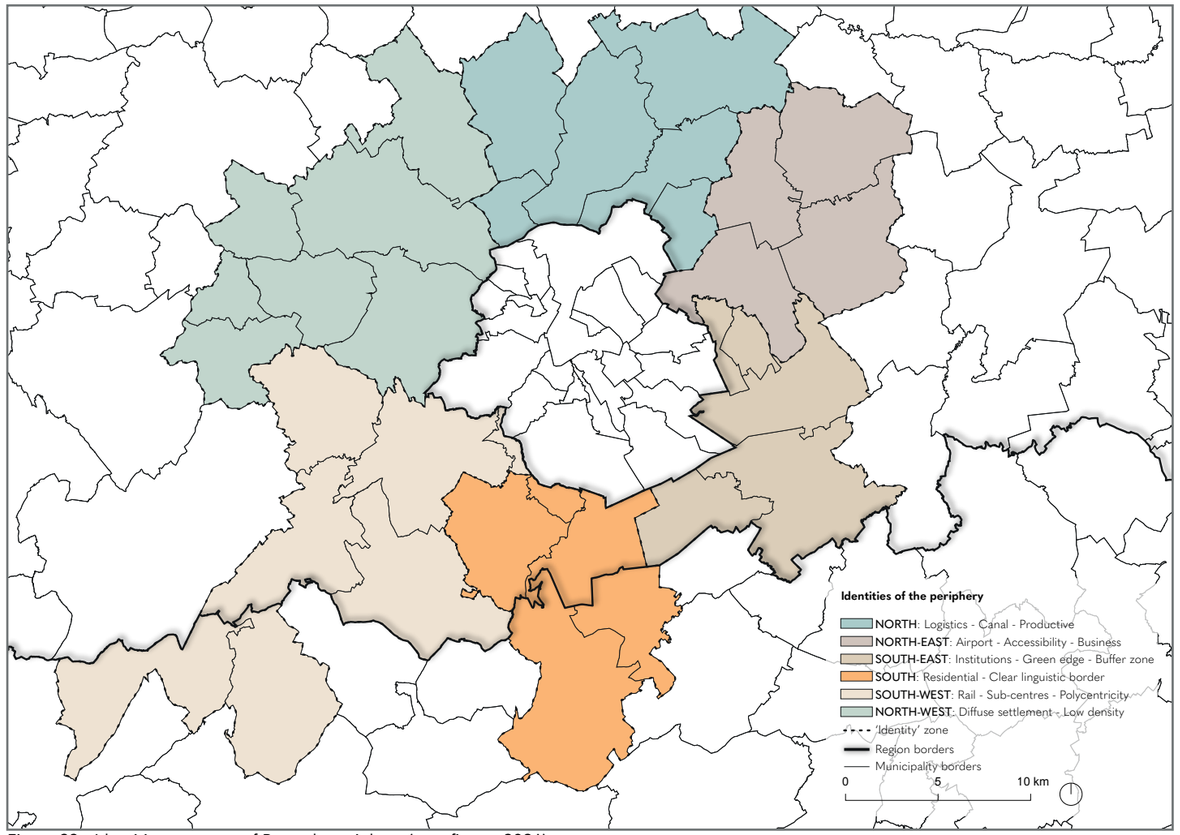


Figure 23 - Identities per zone of Brussels periphery (own figure, 2026).

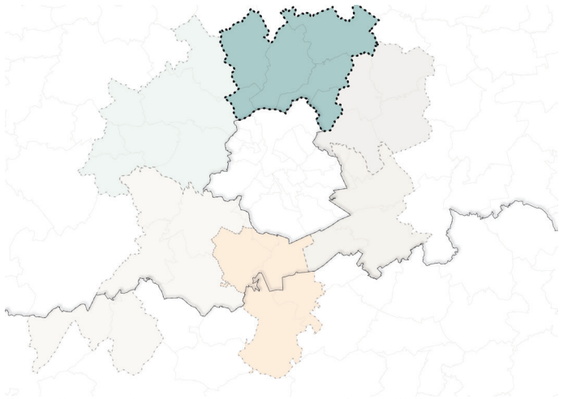


Figure 24 - Identity of the North zone (own figure, 2026).

North - Canal/Logistics/Port

This zone's identity emerges from the overlap of large-scale industrial land use, logistics infrastructures, and dense transport corridors along the canal. The built environment is dominated by productive and infrastructural spaces, interspersed with compact residential pockets. Population densities are uneven, reflecting a strong functional dependence on metropolitan employment rather than local residential continuity.

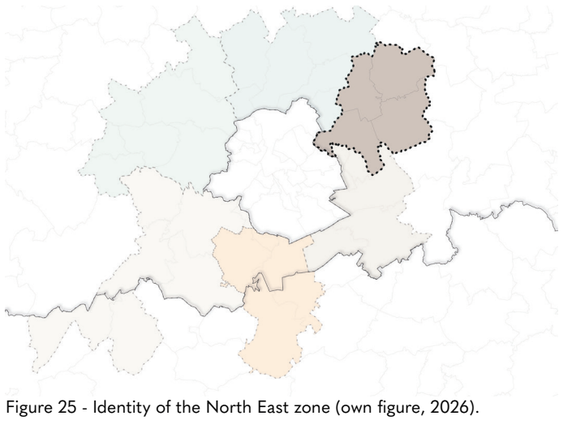


Figure 25 - Identity of the North East zone (own figure, 2026).

North East - Airport/Business/Infrastructure

The North-East is shaped by airport-related infrastructure (Brussels Airport located in Zaventem), business parks, and high-capacity road and rail connections. The built environment is largely monofunctional and infrastructure-driven, with limited residential fabric. Population presence is relatively low and highly mobile, reinforcing the area's role as a strategic metropolitan gateway.

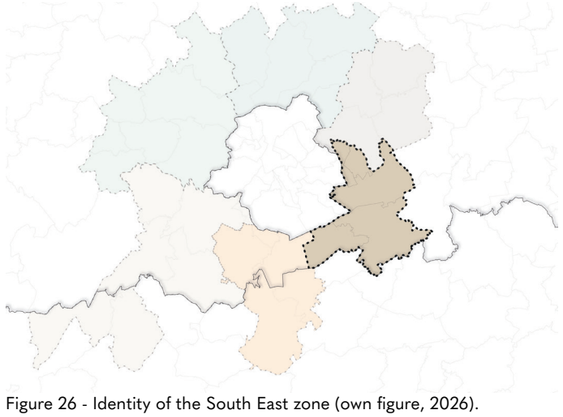


Figure 26 - Identity of the South East zone (own figure, 2026).

South East - Forested residential belt

This zone is characterised by a dominant green structure such as the Sonian Forest, and open landscapes strongly shaping settlement patterns. The built environment consists mainly of low-density residential areas embedded in green space. Population levels are moderate but socially selective, reflecting housing pressure, environmental quality, and strong daily commuting ties to Brussels.

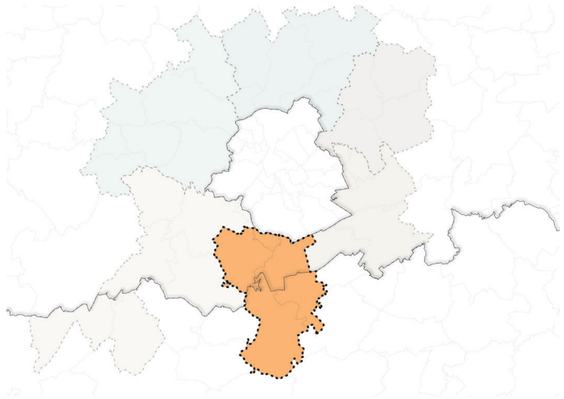


Figure 27 - Identity of the South zone (own figure, 2026).

South - Green & residential edge

The southern periphery is distinguished by the absence of a continuous ring-road infrastructure, unlike other parts of the Brussels periphery. As shown by De Werkvennootschap (2017), extending or closing the Brussels Ring in the south would not improve traffic conditions, due to landscape constraints and limited infrastructural capacity. Consequently, green structures and open landscapes play a stronger role in shaping the built environment, which remains predominantly residential and dispersed. Population dynamics are driven by cross-regional daily practices rather than infrastructural centrality, positioning this zone as a softer metropolitan edge where environmental and institutional factors prevail.

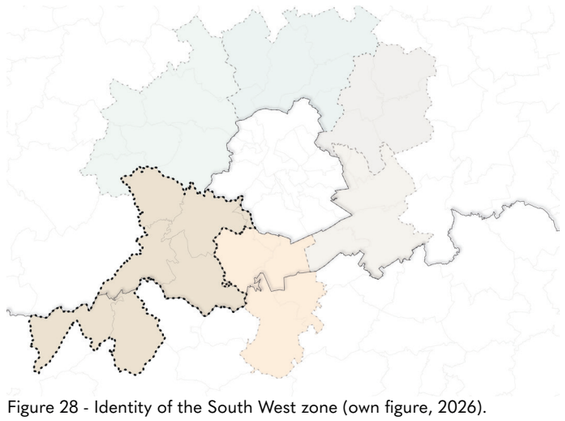


Figure 28 - Identity of the South West zone (own figure, 2026).

South West - Secondary centre(s)

This zone combines secondary urban centres with strong rail accessibility. The built environment is more compact and mixed, structured around stations and local centres. Population densities are relatively higher and more stable, indicating a form of suburban urbanity that supports local services while remaining closely connected to Brussels.

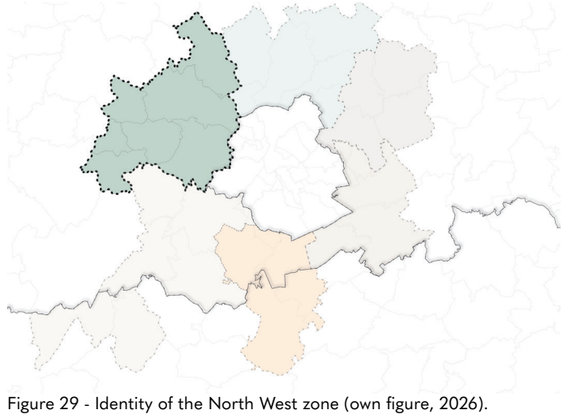


Figure 29 - Identity of the North West zone (own figure, 2026).

North West - Rural/Suburban gradient

The western periphery is marked by dispersed settlements, agricultural land, and low-density residential development. The built environment reflects a gradual transition from rural to suburban conditions, with limited infrastructural intensity. Population density is low and spatially fragmented, reinforcing car dependency and weaker metropolitan integration.

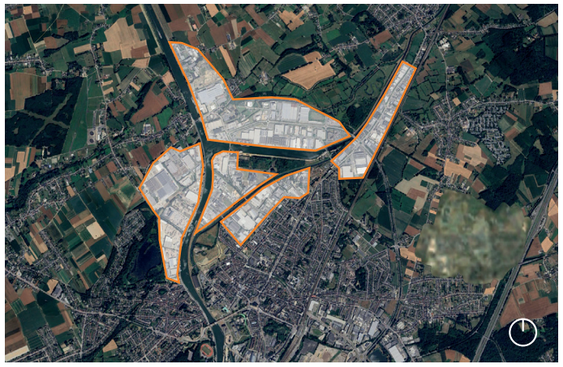


Figure 30 - Aerial view of the North zone (own figure, 2026).

North - Canal/Logistics/Port

Industrial blocks



Figure 31 - Aerial view of the North East zone (own figure, 2026).

North East - Airport/Business/Infrastructure

Brussels international airport (Zaventem)

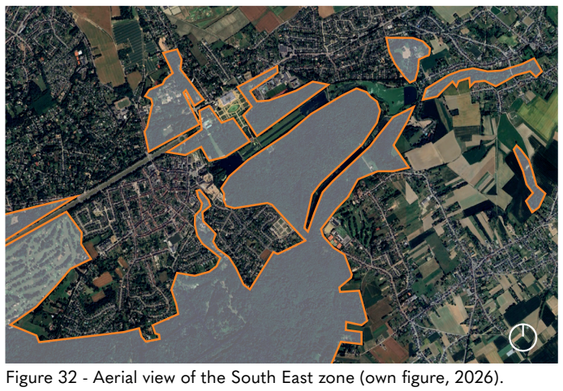


Figure 32 - Aerial view of the South East zone (own figure, 2026).

South East - Forested residential belt

Green main structure

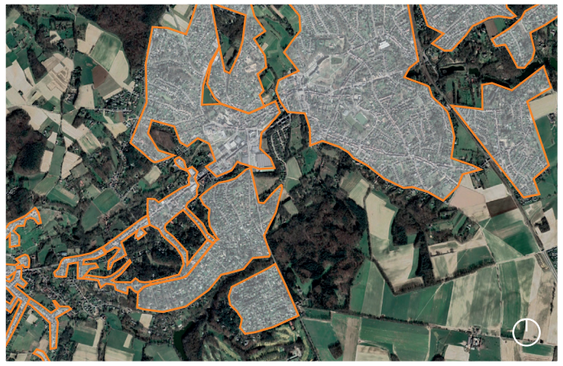


Figure 33 - Aerial view of the South zone (own figure, 2026).

South - Green & residential edge

Residential blocks

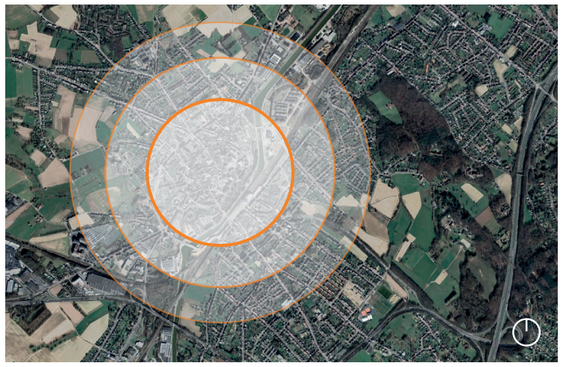


Figure 34 - Aerial view of the South West zone (own figure, 2026).

South West - Secondary centre(s)

Polycentric (secondary) hub

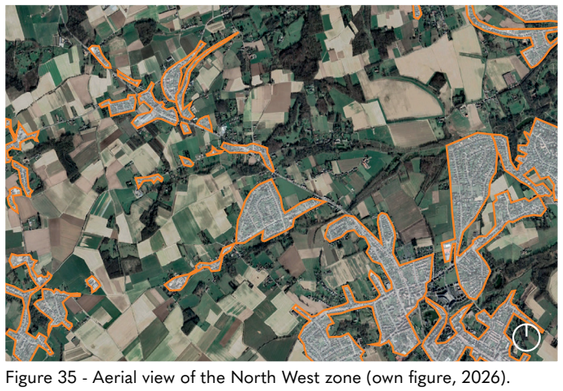


Figure 35 - Aerial view of the North West zone (own figure, 2026).

North West - Rural/Suburban gradient

Discontinued residential blocks

03

ACTORS & URBAN FRICTIONS

The Brussels periphery is not only produced through space, but also through the interactions, interests and conflicts of numerous actors and institutions.

.1 Multi-level governance complexity 42
.2 Stakeholders and conflicting Logics 44
.3 Institutional (current) visions 46

.1 Multi-level governance complexity

The Belgian system complexity

Governance around Brussels is structurally complex: Belgium evolved from a unitary state into a federal system through successive state reforms, resulting in a constitutional architecture where the Federal State, the Regions, and the Communities are legally equal and exercise their competences without a formal hierarchy (Istaz, 2000). This principle of equality implies that no level of government can impose decisions on another within its own field of competence, reinforcing a system based on exclusive powers rather than shared ones. In practice, this produces a highly fragmented governance landscape in which similar policy domains are governed by different authorities depending on whether they are territory-based (Regions: spatial planning, housing, transport, environment, employment) or people- and culture-based (Communities: education, culture, health care, and social assistance) (Istaz, 2000).

The Brussels-Capital Region (BCR) introduces an additional layer of complexity. While it holds the same constitutional status as the Flemish and Walloon Regions, its institutional set-up is unique, combining regional competences with multiple Community-related bodies (such as the French- and Flemish-speaking Community Commissions) that operate within the same limited territory of 19 municipalities (Istaz, 2000). As a result, Brussels functions simultaneously as a regional entity, a bilingual space, and the core of a much larger metropolitan area that lies largely outside its jurisdiction. Language arrangements further complicate this metropolitan interface, particularly through the system of municipalities with linguistic facilities, which reflect historical compromises but continue to shape administrative practices and political sensitivities at the edge of the capital (Istaz, 2000).

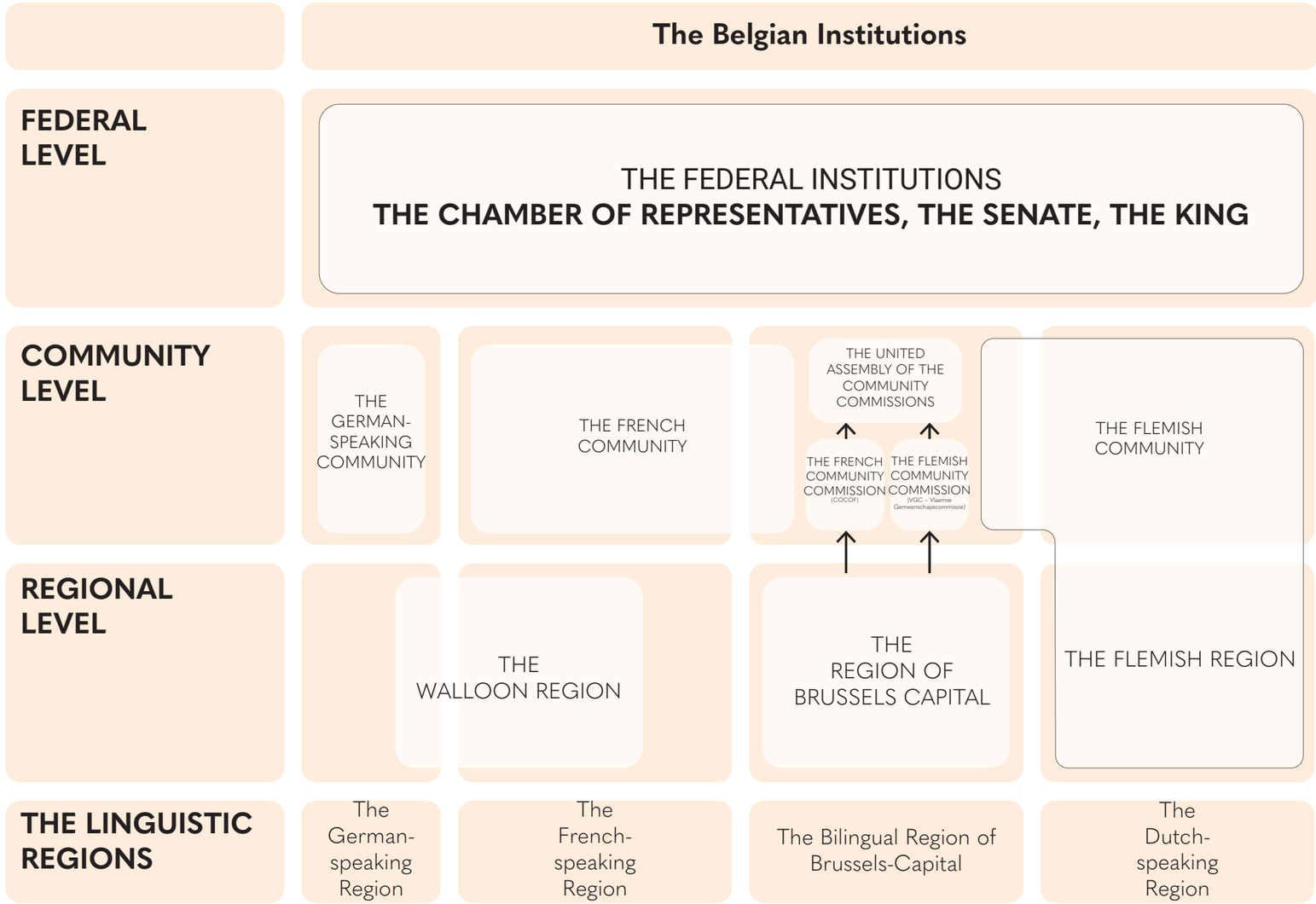


Figure 36 - The Belgian institutions (adapted by author, retrieved from Istaz, 2000).

.2 Stakeholders & conflicting logics

Key stakeholders

The diagrams (Figures 37 and 38) provide a preliminary overview of the main stakeholders shaping mobility, spatial development, and governance in and around the Brussels metropolitan area. Figure 37 organises actors across institutional levels (national, regional, provincial, municipal) and actor categories, while Figure 38 situates these stakeholders in relation to both scale and sector, distinguishing between public sector, private sector, and civil society.

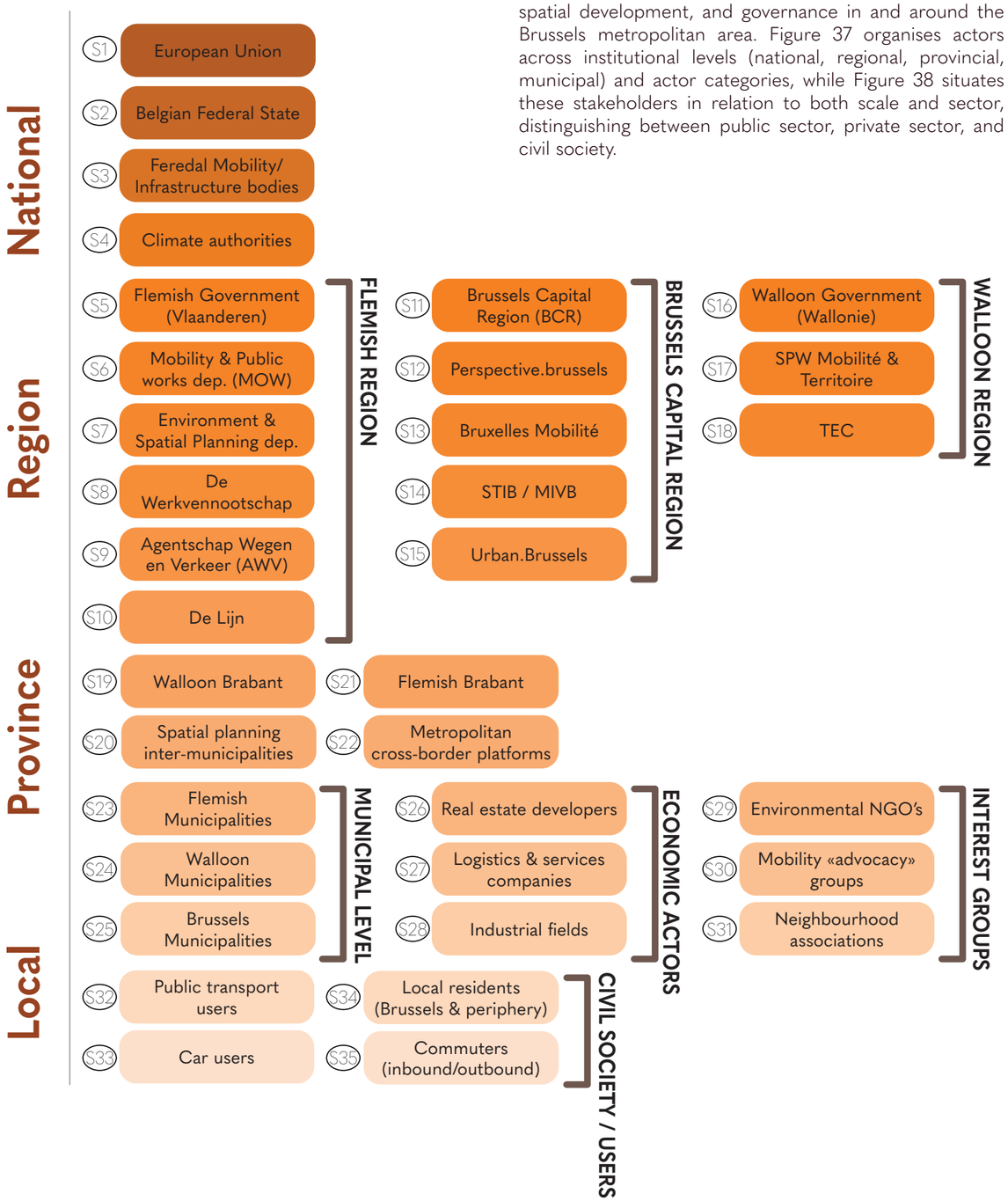


Figure 37 - Key stakeholders (own figure, 2026).

At the national and regional levels, public authorities play a structuring role. These include the Belgian Federal State, federal mobility and infrastructure bodies, and the three Regions. In the Flemish Region, actors such as the Department of Mobility and Public Works (MOW), the Agency for Roads and Traffic (AWV), and De Werkvennootschap are responsible for major infrastructure planning and delivery, while De Lijn operates regional public transport. In the Brussels-Capital Region (BCR), institutions such as Bruxelles Mobilité, STIB/MIVB, and Urban.brussels shape transport systems and spatial development. In Wallonia, SPW Mobilité & Territoire and TEC fulfil similar roles.

At the provincial and municipal levels, Flemish Brabant, Walloon Brabant, and local municipalities influence land-use decisions, local mobility, and inter-municipal coordination, particularly in the metropolitan periphery. Beyond public authorities, the diagrams also identify economic actors, as well as civil society and user groups, including residents, commuters, public transport users, and car users. Interest groups such as environmental NGOs, mobility advocacy organisations, and neighbourhood associations represent collective interests and contribute to public debate.

Taken together, Figures 35 and 36 indicate that, in this first draft of stakeholder mapping, most actors (especially at higher institutional levels)are positioned within the public sector. The relative positioning and scale of actors should be understood as approximate and non-hierarchical, as stakeholders may shift roles or collaborate across levels depending on the policy domain or project phase. This mapping therefore serves as a first analytical step to clarify the stakeholder landscape and support further analysis.

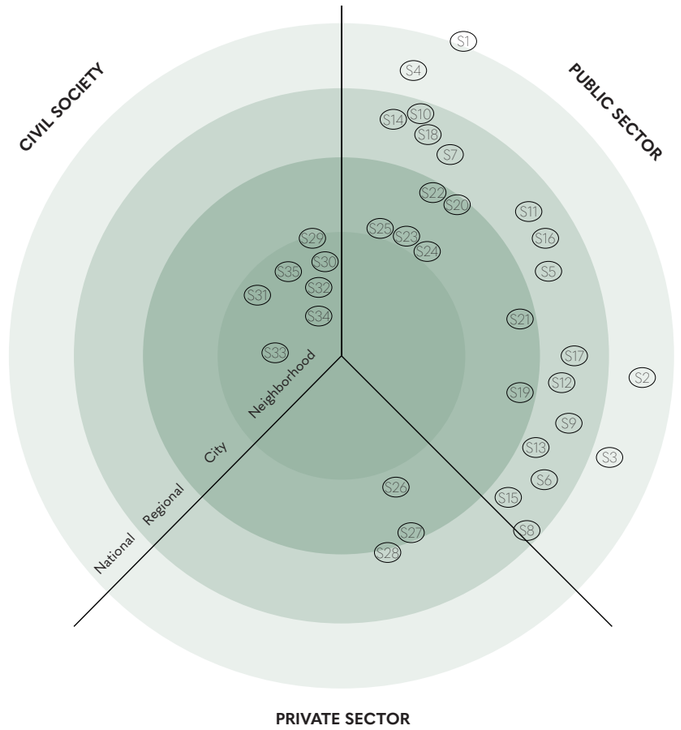
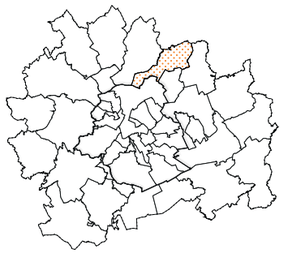


Figure 38 - Scale & sector division of stakeholders (own figure, 2026).

.3 Institutional (current) visions





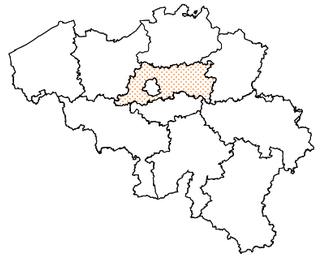
VILVOORDE
(scale: municipality - Flanders region)





BRUXELLES-CITY
(scale: municipality - Brussels region)
*One of the 19 Brussels municipalities





VLAAMSE-BRABANT
(scale: province - Flemish region)

Vilvoorde is selected as an example of the Flemish peripheral municipality, strategically positioned at the interface between Brussels and the Flemish hinterland.

Brussels-City is examined as the central municipality of the Brussels-Capital Region, shaping urban dynamics that extend beyond its administrative boundaries.

Vlaams-Brabant represents the provincial level that structurally mediates between regional policies and local municipalities, including the Flemish periphery of Brussels.

Core objectives

- Compact city model
- Historic centre as development lever
- Local accessibility & mobility restructuring
- Canal-oriented economic activities
- Water-based freight & local distribution
- Strategic transformation areas

Implications for the Brussels periphery

- Interface city between Brussels and hinterland
- Shared metropolitan infrastructures (canal, rail, roads)
- Functional cross-border mobility
- Local control over metropolitan flows
- Limited explicit metropolitan governance

Source: Stad Vilvoorde. (2017). Globaal Ruimtelijk Strategisch Plan Vilvoorde: de gedeelde Stad. https://www.grsp-vilvoorde-onepage.be/

Core objectives

- Dense and mixed urban core
- Modal shift & reduced car dependency
- Proximity-based services and facilities
- Productive activities within the city
- Urban liveability and social cohesion

Implications for the Brussels periphery

- Periphery largely absent as planning scale
- Implicit commuter and mobility relations
- Inward-looking municipal vision
- No formal inter-municipal coordination

Source: Ville de Bruxelles. (2024). BXL 2050: Plan communal de développement durable de la Ville de Bruxelles. https://www.bruxelles.be/bxl2050

Core objectives

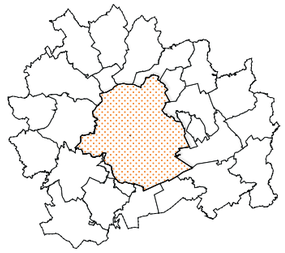
- Network of cores and corridors
- Concentration of growth in well-connected centres
- Protection of open space (“soft backbone”)
- Modal shift for people and goods
- Climate-neutral spatial development (2040)

Implications for the Brussels periphery

- Explicit recognition of Brussels-driven pressure
- Rejection of pure “buffer” role
- Call for interregional agreements
- Periphery as strategic interregional space

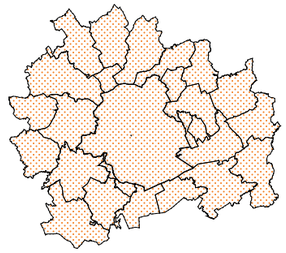
Source: Provincie Vlaams-Brabant. (2022). Beleidsplan Ruimte Vlaams-Brabant. https://www.vlaamsbrabant.be/en/node/9315#toc-0--0





BRUSSELS-CAPITAL REGION
(scale: region)





BRUSSELS-CAPITAL REGION++
(scale: region with periphery)

The **Brussels-Capital Region** (BCR) is considered as the primary regional authority defining strategic spatial, economic and mobility policies for the metropolitan core.

Core objectives

- Polycentric and sustainable urban structure
- Circular economy and urban metabolism
- Integrated economic–environmental approach
- Strategic coordination across policy fields
- PRDD as long-term urban roadmap

Implications for the Brussels periphery

- Metropolitan scale explicitly acknowledged
- Cross-boundary mobility and logistics
- Need for interregional cooperation
- Governance fragmentation recognised

Source: Région de Bruxelles-Capitale. (2018). Plan régional de développement durable: Construisons ensemble la région bruxelloise de demain. https://perspective.brussels/fr/outils-de-planification/plans-strategiques/plan-regional-de-developpement-prd/prdd

Brussels 2040 is included as a prospective metropolitan vision that explicitly addresses Brussels and its periphery as a shared functional territory. «Three visions for one metropolitan area»

Core objectives

- Shared metropolitan system
- Long-term demographic anticipation
- Common challenges: housing, mobility, economy
- Solidarity between regions
- Metropolitan-scale strategic thinking

Implications for the Brussels periphery

- Explicit inclusion of peripheral municipalities
- Win–win metropolitan cooperation
- Shared responsibility for growth and infrastructure
- Visionary but non-binding governance

Source: Région de Bruxelles-Capitale. (2012). Bruxelles - 2040: Trois visions pour une métropole. https://perspective.brussels/fr/enjeux-urbains/metropolisation/projets-metropolitains

04

PROBLEM DEFINITION & RESEARCH FRAMEWORK

The identified tensions are translated into a research agenda that frames the project's objectives, questions and conceptual direction.

.1 Problem statement 52
.2 Research objectives and questions 54
.3 Conceptual framework 56
.4 Scope, delimitation and focus areas 58

.1 Problem statement

The Brussels-Capital Region (BCR) and its Flemish periphery form a deeply interconnected metropolitan area in the centre of Belgium, yet are divided by a sharp administrative and cultural boundary that reflects broader national tensions between Belgium's linguistic communities. Brussels is predominantly French-speaking and international, while the surrounding municipalities strongly promote a Flemish character, yet the periphery itself is diverse and far from a single entity.

This boundary produces fragmented mobility networks, limited cross-border accessibility, and weak coordination between institutions. Despite strong daily flows of people and shared functional dependencies, the interface between Brussels and its periphery has become a visible physical and symbolic divide.

This thesis will examine how the Brussels-periphery divide can be better understood through three interconnected dimensions: **infrastructure (including mobility systems), social and cultural inclusion, and governance across multiple institutional levels.** By analysing how these pillars jointly shape the boundary between Brussels and its Flemish periphery, the project aims to reinterpret this border as a zone of transition rather than separation, and to identify where the strongest opportunities lie to strengthen metropolitan continuity.



Figure 39 - Areal view Brussels suburbs (Unsplash, 2022)

.2 Research questions & objectives

How can spatial design and institutional strategies mediate the integration of the Flemish periphery into the Brussels metropolitan system?

Research Questions

To address the main research question, this thesis investigates the metropolitan interface through three interrelated dimensions: mobility and infrastructure, social and cultural inclusion, and governance and multi-level coordination. These dimensions together inform the proposed spatial and policy interventions.

Research Question 1

How can mobility systems and infrastructural connections between Brussels and the Flemish periphery be improved to provide credible alternatives to car dependency and support daily cross-border flows?

Research Question 2

How can planning interventions & urban design foster greater social and cultural inclusion between French- and Flemish-speaking communities in the suburban interface?

Research Question 3

What governance mechanisms or collaborations (top-down and bottom-up) could help harmonize planning approaches across regional and municipal boundaries in order to reduce fragmentation?

Objectives

Mobility / infrastructure

1

Network Gaps:

- Cross-border flows
- Discontinuities
- Accessibility

2

Spatial Leverage:

- Nodes & Corridors
- Spatial integration
- Design/Infrastructure opportunities

Social & cultural inclusion

3

Socio-Spatial Divide

- Linguistic boundaries
- Suburban interface
- Everyday practices

4

Shared/Rearranged spaces

- Public space
- Co-presence
- Encounter

Governance & multi-level coordination

5

Institutional fragmentation

- Governance layers
- Policy alignments
- Decision-making

6

Coordination frameworks

- Multi-level coordination
- Governance principles
- Cross-border collaboration

Figure 40 - Research questions & objectives (own figure, 2026)

.3 Conceptual framework

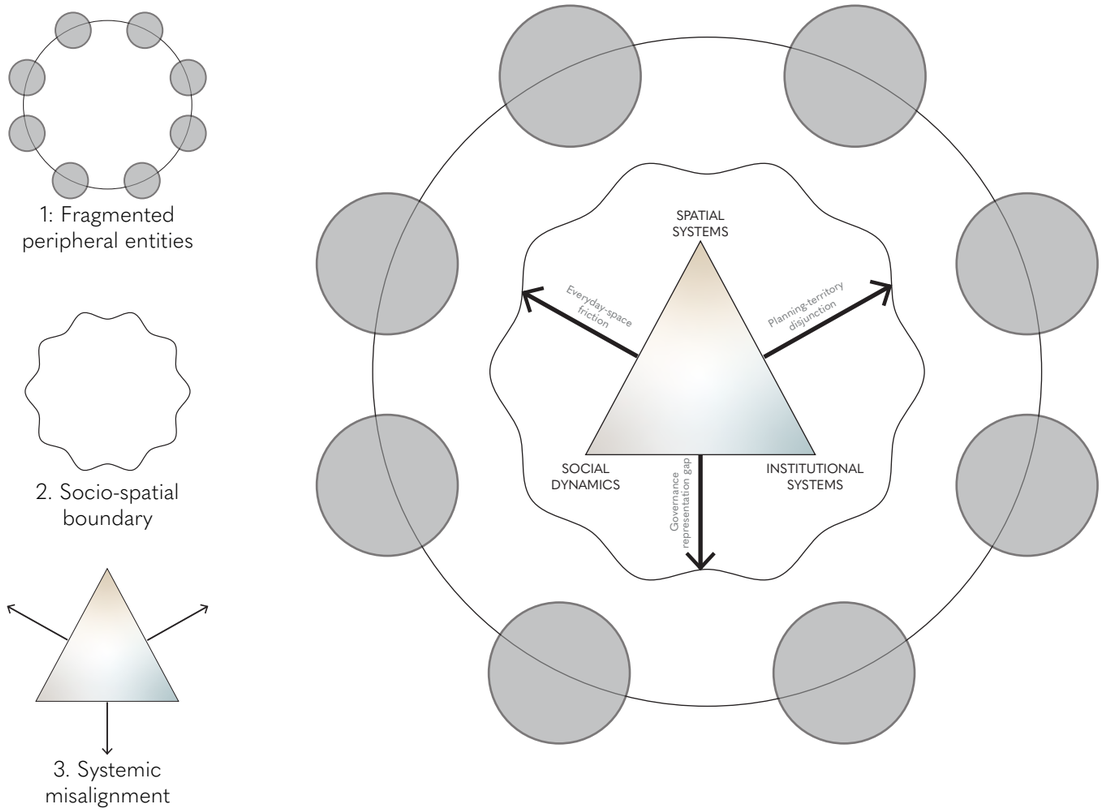


Figure 41 - Conceptual framework: current situation (own figure, 2026)

Current conditions: Fragmentation & Systemic tensions

This first conceptual framework (figure 41) captures the current territorial condition of the Brussels periphery, as interpreted through the analyses developed earlier. The periphery is represented as a set of fragmented peripheral entities, each operating relatively inward-looking and separated by strong socio-spatial boundaries.

At the core, three interrelated systems: spatial systems, institutional systems, and social dynamics, are shown as structurally misaligned. A planning–territory disjunction reflects the mismatch between spatial realities and planning competences. A governance representation gap points to limited institutional capacity to represent diverse peripheral communities, while everyday space friction highlights tensions between lived practices and spatial configurations. Together, these dynamics explain the difficulty of the periphery to function as a coherent metropolitan interface.

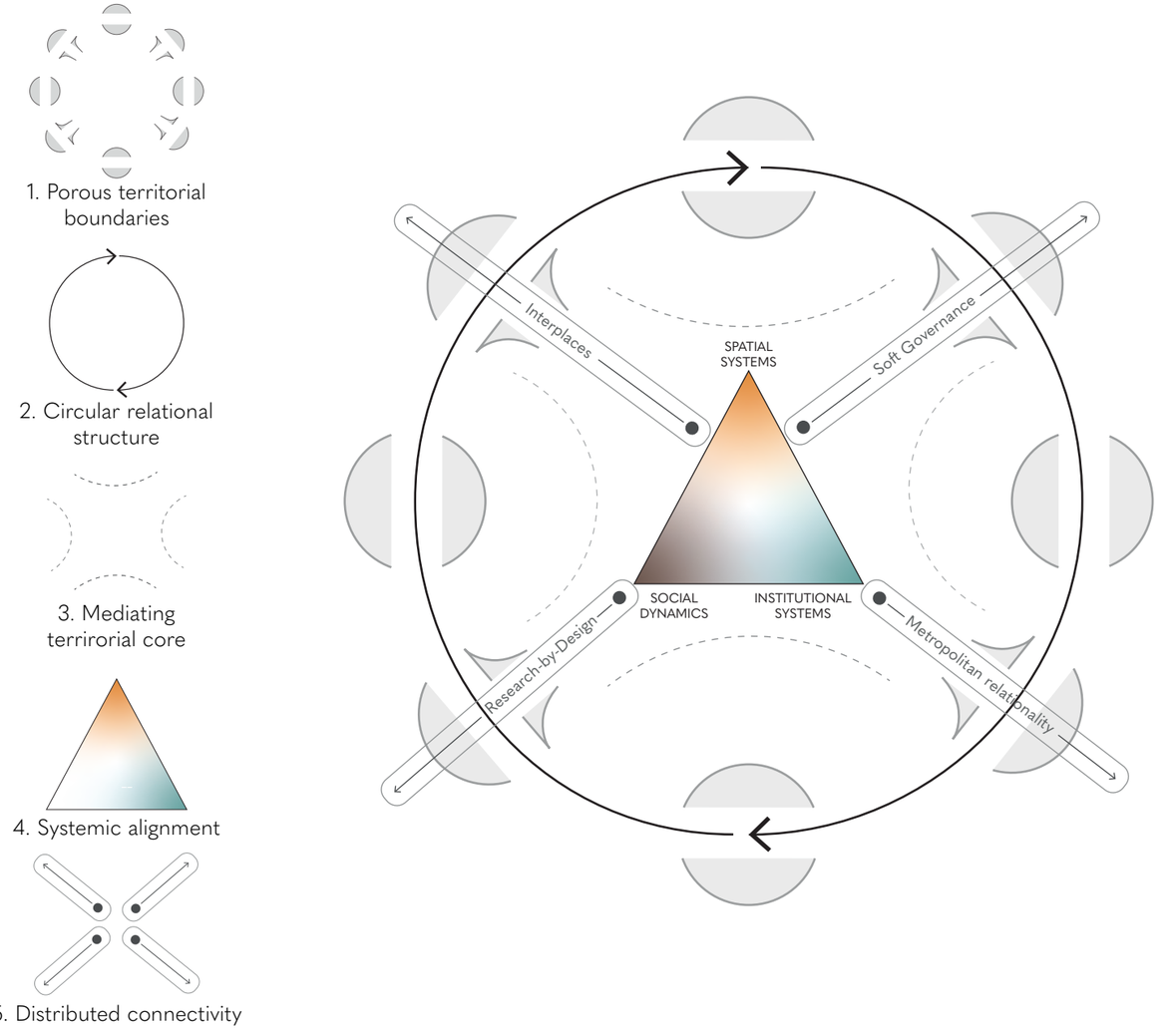


Figure 42 - Conceptual framework: Desired situation (own figure, 2026)

Future conditions: Relational & Systemic Alignment

The second conceptual framework (figure 42) outlines a desired metropolitan condition, aligned with the research questions and objectives defined in Chapter 4.2. Here, the periphery is no longer understood as a fixed boundary but as a relational system structured by porous territorial limits and distributed connections.

Peripheral entities are depicted as open and interconnected, both among themselves and with a mediating territorial core. Rather than dissolving identities, this core supports a balance between metropolitan integration and local specificity. Systemic alignment is sought through the concepts of Interplaces (explained in chapter 8), Soft governance (introduced in chapter 11), Research-by-Design (explained in chapter 5), and metropolitan relationality, enabling more coherent interactions between spatial, institutional, and social systems. This framework establishes a conceptual direction for future design and policy explorations rather than a fixed end state.

.4 Scope, delimitation & focus areas



Figure 43 - Scale 1: Belgium (own figure, 2026)

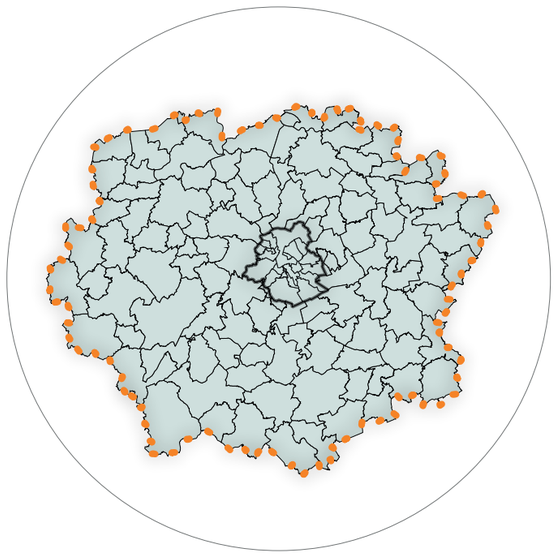


Figure 44 - Scale 2: Brussels Agglomeration (own figure, 2026)

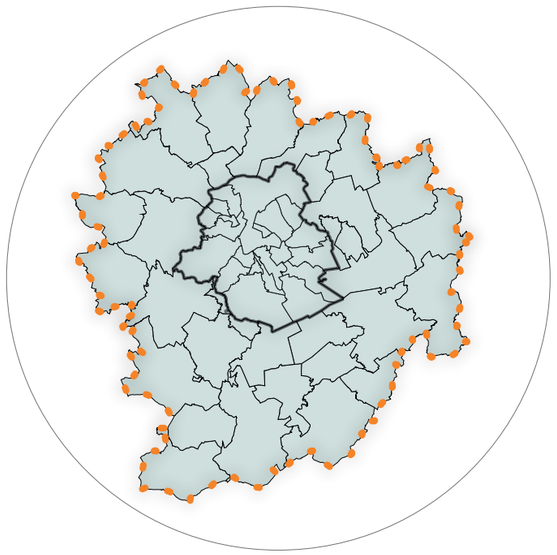


Figure 45 - Scale 3: Brussels Periphery (own figure, 2026)

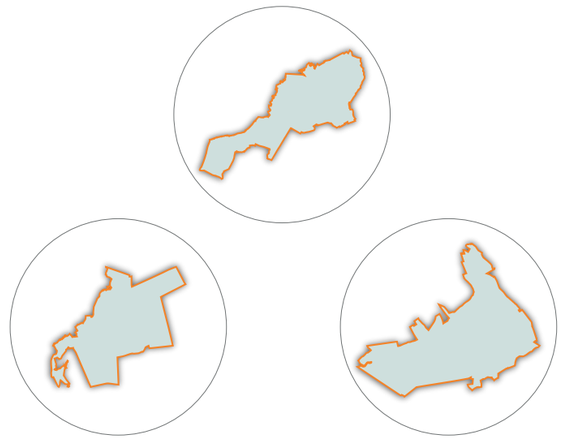


Figure 46 - Scale 4: municipalities (own figure, 2026)

The Belgian state

This scale situates the project within its national context. It provides an overview of Belgium's territorial structure and governance framework, helping to understand the institutional and spatial conditions in which the Brussels metropolitan region is embedded.

Brussels (large) agglomeration

At this scale, the project frames Brussels as a metropolitan system extending beyond its administrative boundaries. It highlights functional relationships such as commuting, infrastructure networks, and urban continuity between the capital and its surrounding municipalities.

Brussels periphery

This is the core regional scale of the thesis. It focuses on the Flemish periphery as a space of interaction, tension, and transition between Brussels and its surroundings, where regional strategies related to mobility, infrastructure, and spatial integration can be explored.

Zoom-in's: chosen municipalities

At the zoom-in scale, three municipalities are selected to reflect different conditions within the Brussels periphery, with distinct roles. Vilvoorde serves as the primary case study, forming the main site for spatial exploration and design interventions, and representing a dense and demographically significant urban municipality closely connected to Brussels. Tervuren highlights the role of large green structures and open landscapes within the metropolitan context, while Sint-Genesius-Rode exemplifies municipalities with language facilities (French/ Flemish), where linguistic and institutional conditions strongly influence everyday spatial practices. Beyond individual cases, this scale enables the development of neighbourhood-level pattern languages (see Chapter 5.4), which are primarily explored in Vilvoorde and can be tested and applied across different areas of the Brussels periphery.

05

METHODOLOGICAL & THEORETICAL APPROACH

Methodological, theoretical and design-oriented approaches provide the framework through which the Brussels edge can be analysed, interpreted and transformed.

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.3 Theoretical framework 66
.4 Design Approach: a pattern language 68

.1 Methodology

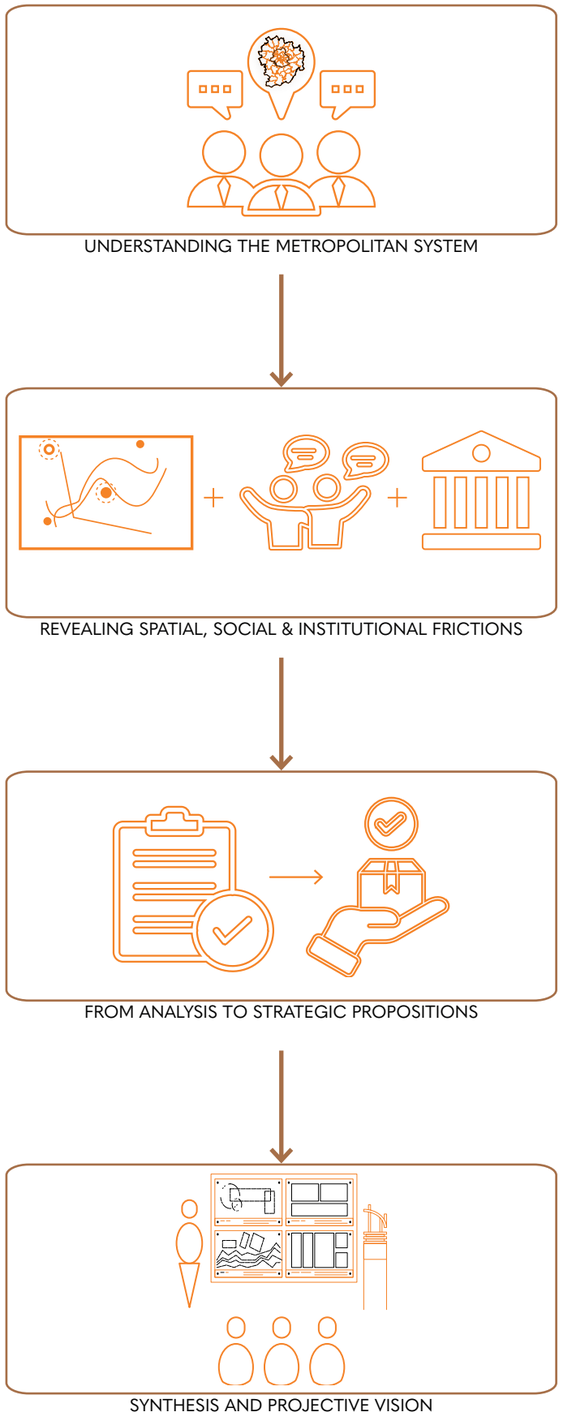

Figure 47 - Methodology phases (own figure, 2026)

Methodological positionning

This graduation project adopts a research-driven and design-oriented methodology to investigate the spatial, social, and institutional dynamics of the Flemish periphery of Brussels. The methodology is structured to support a progressive understanding of the territory, moving from analytical observation toward strategic and projective exploration. Rather than treating the periphery as a fixed administrative boundary, the project approaches it as a lived and contested metropolitan condition, shaped by infrastructure, governance structures, and everyday practices.

The research combines quantitative spatial analysis, qualitative insights, and design-based exploration. Mapping, spatial analysis, and policy review are used to understand structural conditions, while interviews with institutional actors and, where relevant, local residents will provide insight into perceptions, experiences, and decision-making processes. This combination allows the project to engage both top-down and bottom-up perspectives. Design is used not as an end product, but as a tool to synthesize findings and explore future-oriented spatial and governance strategies. The overall aim is to produce a grounded yet projective understanding of how the Brussels periphery functions today and how it could evolve in the future.

Phase 1 - Understanding the metropolitan system

The first phase focuses on building a comprehensive understanding of the metropolitan system in which the Flemish periphery of Brussels operates. This phase investigates spatial structures, infrastructure networks, and institutional frameworks that shape the territory. Through cartographic analysis, the project examines patterns of density, urban fabric, mobility networks, and accessibility, with particular attention to discontinuities and fragmentation across regional and municipal boundaries.

In parallel, a review of planning documents, policy frameworks, and academic literature provides insight into the governance structure of the Brussels metropolitan area and the historical processes that have shaped its periphery. This phase is primarily analytical and aims to establish a shared spatial and institutional baseline. The outcomes of this phase are not conclusions, but a set of spatial readings and systemic observations that reveal how the periphery is currently organized, governed, and connected, or disconnected, within the broader metropolitan context.

Phase 2 - Revealing spatial, social, and institutional frictions

Building on the analytical groundwork, the second phase focuses on identifying and interpreting frictions within the metropolitan system. These frictions emerge where spatial structures, governance mechanisms, and lived experiences do not align. This phase combines spatial analysis with qualitative methods, including interviews with institutional actors at municipal and regional levels, and selectively with local users or residents.

The aim is to understand how policies, infrastructures, and administrative boundaries are experienced on the ground, and where gaps exist between planning intentions and everyday realities. Mapping is used here as a critical tool to reveal mismatches, conflicts, and areas of tension, rather than as a purely descriptive instrument. This phase allows the project to move beyond abstract structures and engage with how the periphery is perceived, managed, and navigated, highlighting key challenges and opportunities that are not always visible through spatial analysis alone.

Phase 3 - From analysis to strategic propositions

The third phase marks a transition from analytical understanding toward strategic and projective thinking. Rather than aiming for definitive solutions, this phase uses design as a means of inquiry to test relationships, scenarios, and possible directions emerging from the previous phases. In this sense, design functions as a reflective and iterative process through which insights are translated into spatial and strategic propositions.

This approach aligns with research-by-design literature, where design is understood as a way to explore "how things could be" through iterative projection and feedback, rather than as a linear problem-solving tool. Design is used to navigate complexity and uncertainty by allowing exploratory moves, comparisons, and adjustments, acknowledging that metropolitan challenges often remain open-ended and unresolved (Roggema, 2017). Through scenario-based exploration, the project identifies leverage points within the metropolitan system, such as infrastructural corridors, intermunicipal interfaces, or overlapping governance spaces. These explorations act as a bridge between analysis and vision, preparing the ground for a more integrated projective framework.

Phase 4 - Synthesis and projective vision

The final phase synthesizes the analytical findings, qualitative insights, and strategic explorations into a coherent projective vision. This phase brings together spatial, social, and institutional dimensions to articulate a structured perspective on the future of the Brussels periphery. Rather than presenting a single masterplan, the project formulates a set of spatial principles, strategic orientations, and governance considerations that respond to the identified challenges.

The projective vision reflects both the current realities of the territory and its potential evolution over time. It aims to demonstrate how spatial design and strategic thinking can contribute to a more integrated metropolitan condition, while acknowledging the complexity of governance and lived experience. This phase positions the project as a critical and constructive contribution to ongoing debates on metropolitan peripheries, infrastructure, and multi-level governance.

.2 Research-by-design

Defining research-by-design

Research by Design refers to a methodological approach in which design is not only an outcome, but also a mode of inquiry through which knowledge is produced. Rather than positioning design at the end of a linear research process, this approach integrates analytical thinking, projection, and reflection within an iterative and exploratory framework. According to Roggema (2017), research by design is particularly suited to complex and uncertain contexts, often described as "wicked problems", where challenges cannot be fully understood or resolved through conventional analytical methods alone. In such contexts, design enables the exploration of possible futures by testing spatial propositions, scenarios, and relationships, while continuously reflecting on their implications. Research by design therefore operates through feedback loops between analysis, projection, and synthesis, allowing insights to emerge through the act of designing itself.

Design as an iterative mode of inquiry

Within this framework, design functions as a reflective and investigative practice. Roggema (2017) emphasizes that research by design does not aim to produce final or fixed solutions, but rather to explore "how things could be" in order to better understand "how things are" and "how things might become". The process is non-linear and iterative, where design propositions are continuously tested, adjusted, and reinterpreted. This logic is reflected in the three-stage structure of research by design (pre-design, design, and post-design) where analysis, projection, and synthesis are closely interrelated and overlap rather than follow a strictly linear sequence (figure 48). Knowledge is generated not only through textual analysis, but also through non-textual artefacts such as drawings, maps, diagrams, and scenarios. These artefacts make complex spatial, social, and institutional relationships tangible and discussable, both within the academic context and beyond (Roggema, 2017).

Applying research-by-design in this thesis

In this project, research by design is used as a complementary approach to the analytical methodology outlined in the phase 3 of chapter 5.1. While the earlier phases focus on understanding existing spatial structures, governance arrangements, and social dynamics in the Brussels periphery, research by design enables the translation of these insights into exploratory spatial propositions. Design is employed as a tool to test alternative configurations, challenge existing assumptions, and reveal latent potentials within the metropolitan system. Rather than proposing a single masterplan, the project develops a set of strategic and spatial explorations that reflect different scales and thematic focuses, ranging from neighbourhood-level social dynamics to regional infrastructure and mobility systems.

Pattern-based design and local spatial tactics

The logic of the Dorpse Architectuur - Toolbox (Verbakel et al., 2021) provides a useful reference for operationalising research by design at a more local and socially oriented scale. By identifying recurring spatial "figures" within villages and peripheral neighbourhoods, and linking them to specific "tactics" rather than fixed solutions, the toolbox adopts a pattern-based approach that resonates strongly with research by design principles. Instead of designing for one specific site, this approach develops a shared design language that can be adapted to different contexts. In this project, such an approach is particularly relevant for exploring how public space and urban design interventions can support social inclusion, everyday interaction, and community life at the neighbourhood scale. These spatial tactics are not treated as prescriptive solutions, but as testable propositions that can be interpreted and applied in relation to specific local conditions.

From analysis to future-oriented exploration

By embedding research by design within the broader methodological framework, the project positions design as a means to connect analysis, stakeholder insights, and future-oriented thinking. It allows the project to move beyond diagnosis and critique, towards a constructive exploration of alternatives that address spatial, social, and institutional challenges simultaneously. In this sense, research by design acts as a bridge between understanding the present and envisioning possible futures, while remaining grounded in empirical analysis and contextual knowledge.

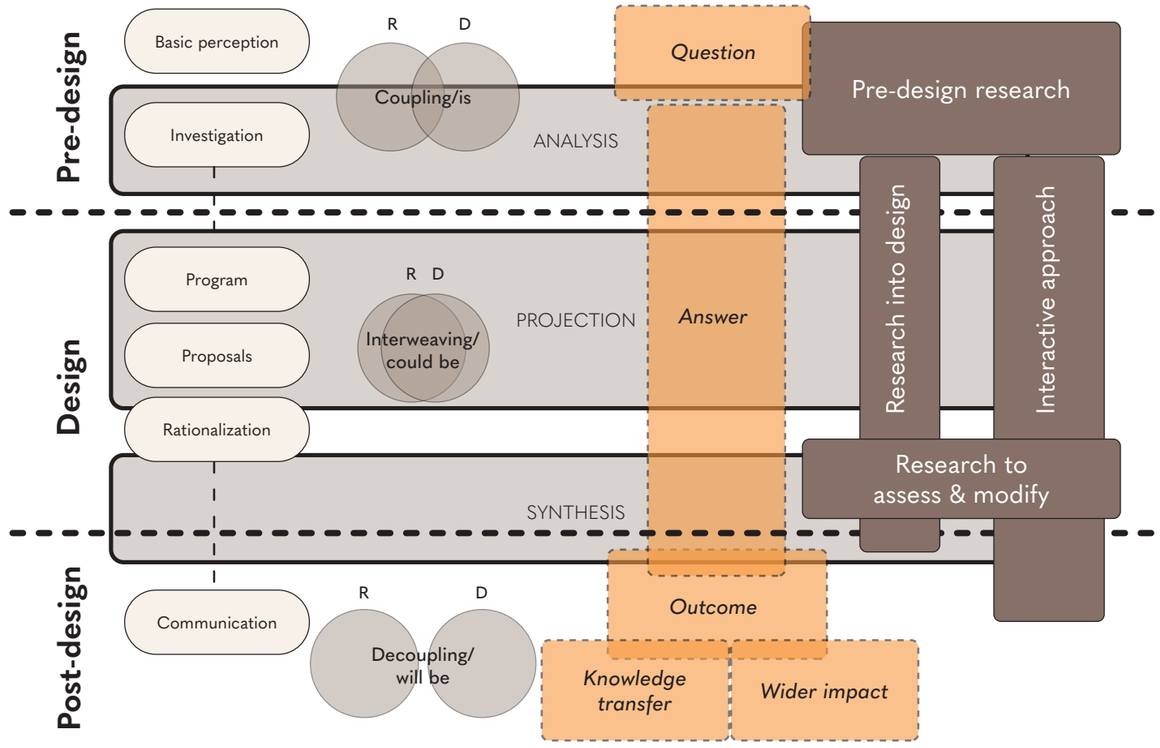

Figure 48 - Combined approaches of Research-by-designed (adapted by author, retrieved from Roggema, 2017).

.3 Theoretical framework

Purpose and role of the theoretical framework

The theoretical framework establishes the conceptual lens through which the Brussels periphery is interpreted throughout this thesis. Rather than functioning as an exhaustive literature review, it brings together four complementary perspectives that help explain the mismatch between metropolitan realities and administrative structures, the differentiated role of peripheral municipalities, the ambivalent role of borders and infrastructures, and the capacity of design and governance to mediate between fragmented systems. Together, these concepts provide the foundation for the analytical framework, the pattern language and the spatial and institutional strategies developed later in the project.

1) Metropolitan regions beyond administrative borders

Metropolitan regions are increasingly shaped by functional relationships that extend beyond formal administrative boundaries. Mobility flows, housing markets, economic networks and everyday practices often operate at a wider scale than the institutions responsible for planning and governance. This produces a mismatch between the territory as it is lived and the territory as it is governed (Cardoso & Meijers, 2021). In the Brussels context, this mismatch is particularly visible because the Brussels-Capital Region (BCR) is institutionally limited to 19 municipalities, while its demographic, economic and mobility influence extends far into the Flemish and Walloon peripheries. The Brussels Metropolitan Region is therefore understood in this thesis as a relational territory rather than a fixed administrative unit.

2) The periphery as an interplace

The Brussels periphery is not approached as a homogeneous suburban ring or as a passive edge of the city. Instead, it is understood as a collection of differentiated "interplaces": municipalities and localities positioned between suburb and city, shaped by varying degrees of spatial-functional, political-institutional and cultural-symbolic integration (Demuynck et al., 2025). This perspective makes it possible to compare places such as Vilvoorde, Tervuren and Sint-Genesius-Rode without reducing them to the same peripheral condition. Each municipality relates differently to Brussels through mobility, landscape, identity, governance and everyday practices. The concept of interplaces therefore helps frame the periphery as an active and diverse metropolitan interface.

3) Borders, infrastructure and metropolitan integration

Borders and infrastructures play an ambivalent role in metropolitan territories. They can connect places through mobility, access and exchange, but they can also reinforce separation, discontinuity and unequal accessibility. In the Brussels periphery, regional borders, railways, roads, the Ring and the canal all shape how territories relate to one another. They structure flows and development, while also making institutional and spatial fragmentation visible. Infrastructure should therefore not be understood as a neutral technical system, but as a socio-spatial agent that influences urbanisation, accessibility and social relations over time (Ryckewaert, 2011). This dual role is central to the project: the same systems that currently divide the Brussels edge can also become levers for metropolitan integration.

4) Design and governance as mediating practices

In fragmented metropolitan contexts, integration cannot be achieved through spatial design or governance alone. Research-by-Design offers a way to explore complex territorial conditions by testing spatial possibilities, revealing frictions and translating abstract challenges into concrete propositions (Roggema, 2017). At the same time, metropolitan integration requires governance mechanisms capable of connecting actors, competences and investments across institutional boundaries. Concepts such as 'Soft governance' are therefore relevant because they allow cooperation to emerge through shared objectives, flexible platforms and project-based coordination rather than through a new formal authority (Dąbrowski et al., 2025). In this thesis, design and governance are understood as complementary mediating practices: design makes metropolitan relationships visible and discussable, while governance creates the conditions through which these relationships can become collective projects.

.4 Design approach: a pattern language





Figure 49 - Foto's from the book *Dorpse Architectuur - Toolbox* (AR-TUR, 2021).

A pattern language, but why?

In the Flemish periphery of Brussels, public spaces are shaped by spatial discontinuities, municipal borders, and diverse everyday practices. In such contexts, a pattern language can be used as a way to frame public space interventions through recurring spatial situations rather than isolated design solutions. Rooij and Van Dorst (2020) argue that a pattern language approach can help young professionals to organize complexity by translating knowledge into a communicative set of spatial principles, while remaining non-prescriptive.

Following this position, the pattern language in this project could be approached as a structured method to identify and communicate spatial conditions that may support social interaction and appropriation. Importantly, this does not claim direct causality between form and social outcomes; instead, patterns are used as hypotheses that connect observed problems to plausible spatial implications, supported by visual and verbal reasoning (Rooij & Van Dorst, 2020).

Spatial patterns and social dimensions

The pattern language is not used to claim direct causal relationships between spatial form and social outcomes. Instead, patterns are formulated as spatial hypotheses that describe how certain configurations may influence everyday practices such as encounter, co-presence, or appropriation. This cautious positioning aligns with Rooij and Van Dorst's (2020) understanding of patterns as tools for learning and reasoning rather than guarantees of effect.

Dorpse Architectuur – Toolbox (2021) similarly frames its figures as enabling conditions rather than social prescriptions. Building on this logic, the social dimension in this project would be approached through spatial mechanisms that can support inclusive use, while acknowledging that actual social practices remain context-dependent and open-ended.

Pattern language as a design instrument

In this project, the pattern language is used as a design instrument rather than a prescriptive model. Following Rooij and Van Dorst (2020), patterns are understood as structured units that connect a spatial problem to a direction of intervention, supported by a knowledge base, while deliberately avoiding fixed solutions. *Dorpse Architectuur – Toolbox* (2021) provides a complementary design-oriented approach through «figuren» and «tactieken», which frame recurring spatial situations and possible ways of acting upon them.

Together, these approaches position the pattern language between analysis and design. Patterns condense spatial knowledge into a visual and verbal format that supports reflection, comparison, and iteration. In the context of the Brussels periphery, this shared vocabulary makes it possible to address recurring public space conditions across municipalities without imposing uniform design outcomes.

Scale and local context

The pattern language in this thesis could operate at an intermediate scale, focusing on everyday public spaces such as streets, small squares, mobility nodes, and local centres. These spaces are particularly relevant in the Brussels periphery, where social interaction is shaped through ordinary spatial encounters rather than large metropolitan interventions.

As noted by Rooij and Van Dorst (2020), patterns enable comparison across cases by highlighting which spatial relations are present or absent. The book *Dorpse Architectuur – Toolbox* (2021) reinforces this approach by demonstrating how similar spatial figures can be adapted to different local contexts. In this project, transferability is therefore understood not as repeating forms, but as reusing spatial relationships that can be interpreted and adjusted across municipalities.

06

TIMELINE THESIS

The project develops through successive analytical, theoretical and design phases that gradually connect regional challenges to spatial interventions.

.1 Planning and outcomes 72

.1 Planning & expected outcomes

Timeline thesis project

In the initial phase of the project, up to and slightly beyond the A1 presentation, the main objective is to deliberately open up the field of inquiry. The project focuses on mapping and analysing a broad range of layers and dynamics shaping the Brussels metropolitan periphery, including spatial structures, mobility networks, socio-economic patterns, governance arrangements, and everyday practices. Particular attention is given to existing institutional visions at municipal, provincial, and regional levels, both within Brussels and in its surrounding territories, in order to understand how these visions interact, overlap, or come into friction. This exploratory phase is intentionally broad, allowing multiple scales and perspectives to coexist without prematurely narrowing the scope of the project.

After A1, the project would progressively adopts a funnel-like logic. While maintaining a cross-scalar perspective, specific themes and tensions would be selected based on their structural relevance and spatial impact. This phase focuses on identifying where metropolitan ambitions, infrastructural logics, and local spatial conditions align, and where they diverge or produce fragmentation. The project will continue to balance between regional, municipal, and neighbourhood scales, using this movement to link abstract institutional frameworks with concrete spatial realities in the Flemish periphery.

Towards A2 and especially A3, the project will shift from analysis towards strategic and design-oriented propositions. On the one hand, it will explore regional-scale strategies related to infrastructure and mobility, addressing how the Flemish periphery could function in a more integrated way within the Brussels metropolitan system. On the other hand, it will investigate how the design of public space, with help of a pattern of language, at the municipal and neighbourhood scales can influence social interaction and inclusion within peripheral Flemish municipalities. In parallel, the project will examine the role of institutional arrangements and multi-level governance, exploring how spatial and infrastructural strategies can be aligned with existing policy frameworks and coordination mechanisms across regions and municipalities. These directions would be developed as interconnected rather than separate, reinforcing the cross-scalar ambition of the project. By A3, the project will aim to articulate a clear projective position, demonstrating how spatial, infrastructural, and institutional strategies across scales can contribute to a less fragmented and more socially responsive metropolitan condition.socially responsive metropolitan condition.

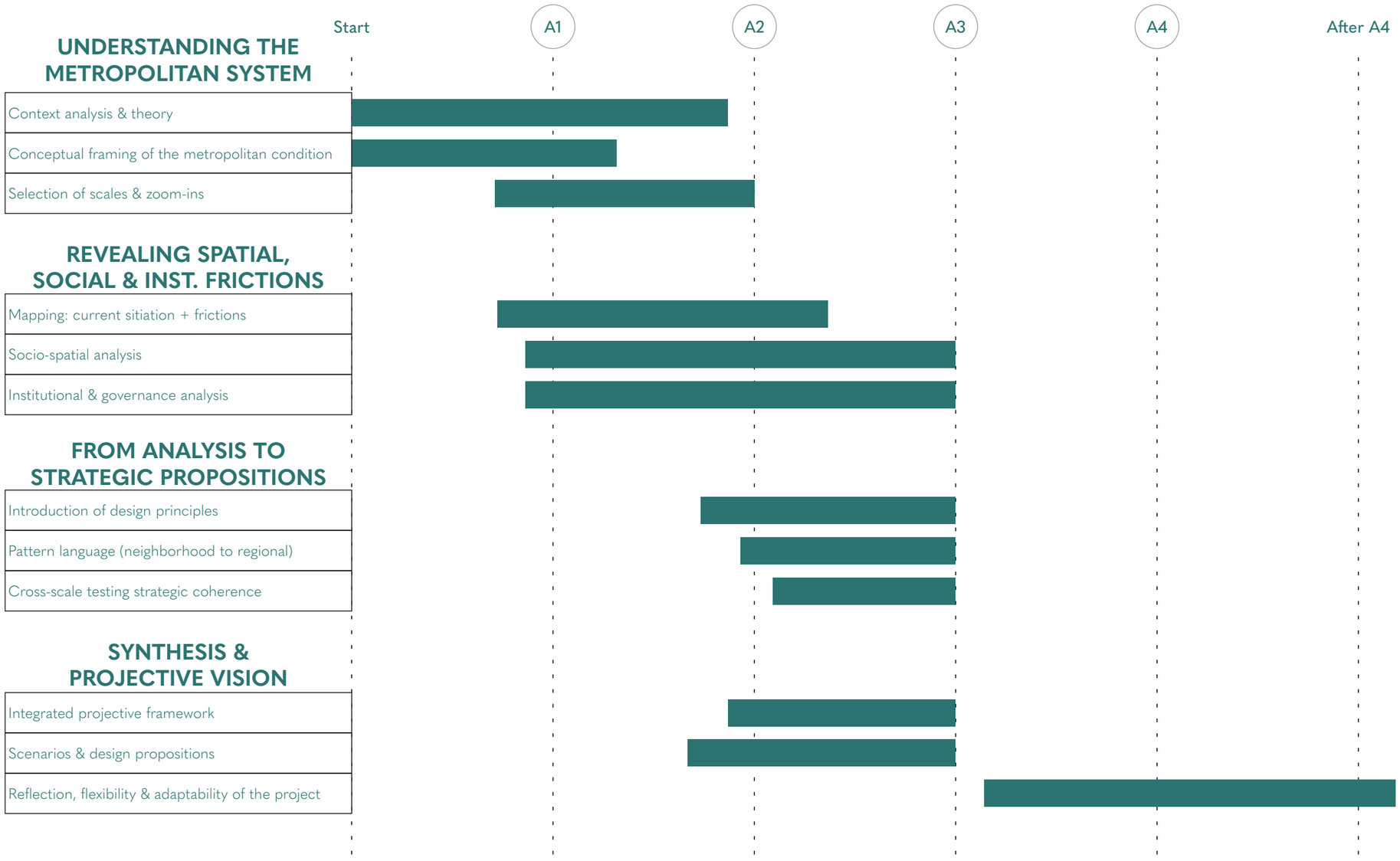

Figure 50 - Timeline thesis project (own figure, 2026)

07

REGIONAL MEANING

Reading the territory through morphology, mobility and urbanisation reveals the spatial logics that structure the metropolitan periphery.

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.4 Chosen areas 94

.1 Morphological analysis

The morphological structure of the Brussels region reveals a high concentration of continuous urban fabric within the Brussels-Capital Region, which forms the dominant core of the metropolitan system. On this basis, "urban cores" (figures 51 & 52) are defined here exclusively based on areas of continuous urban fabric, deliberately excluding discontinuous urban areas in order to highlight the densest and most structuring centralities. This primary centrality extends toward the periphery in the form of a network of secondary urban cores.

These "urban cores" can sometimes correspond to hybrid centralities, neither fully urban nor strictly suburban, that can be understood as "interplaces", that is intermediate localities whose role stems from a partial and uneven integration into the metropolitan system (Demuynck et al., 2025). Depending on their trajectory, in this case the Continuous (urban cores) or, more often, the Discontinuous, may resemble post-suburbs, shadowed cities, or intermediate forms such as metrotowns, reflecting varying combinations of attraction, dependence, and autonomy vis-à-vis the Brussels core (Demuynck et al., 2025).

"Urban cores" represent the main anchor points of the metropolitan area, defined here based on zones of continuous urban fabric in order to identify the most densely populated centralities. Organized around the Brussels core, they form a network of interconnected hubs that structure flows and interactions at various scales.

These centralities can be understood as interplaces (primarily for certain orange zones in the periphery), playing a key role in metropolitan organization despite their hybrid and evolving nature (Demuynck et al., 2025). Brussels acts as the dominant core, while peripheral centralities can function as relays or extensions, creating a system where the relationships between centres become as important as the centres themselves.

Together, they thus form a hierarchical and polycentric territorial framework, in which Brussels retains a major structuring role while linking with a few peripheral anchor points, which may, to some extent, still appear underrepresented.

Urban cores

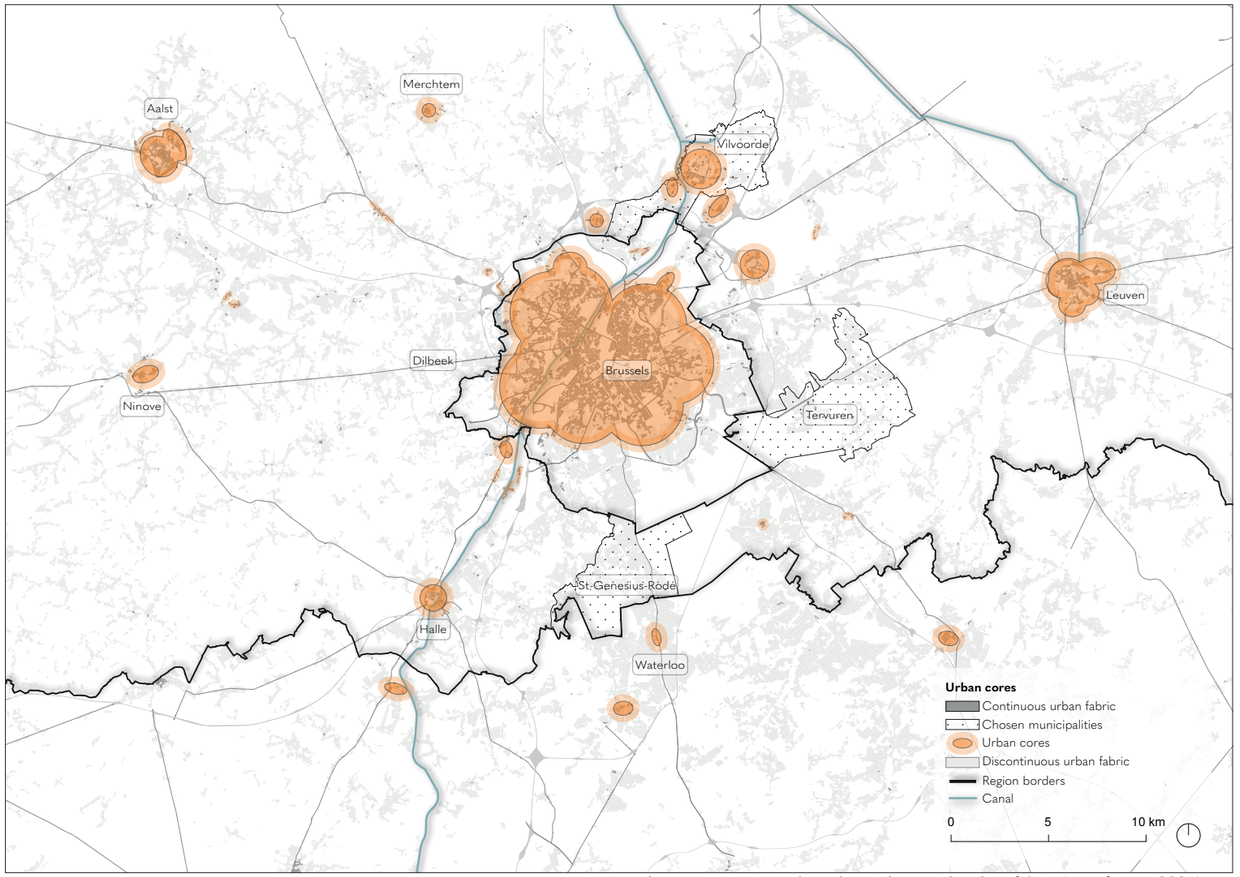


Figure 51 - Urban cores in Brussels and periphery with urban fabric (own figure, 2026)

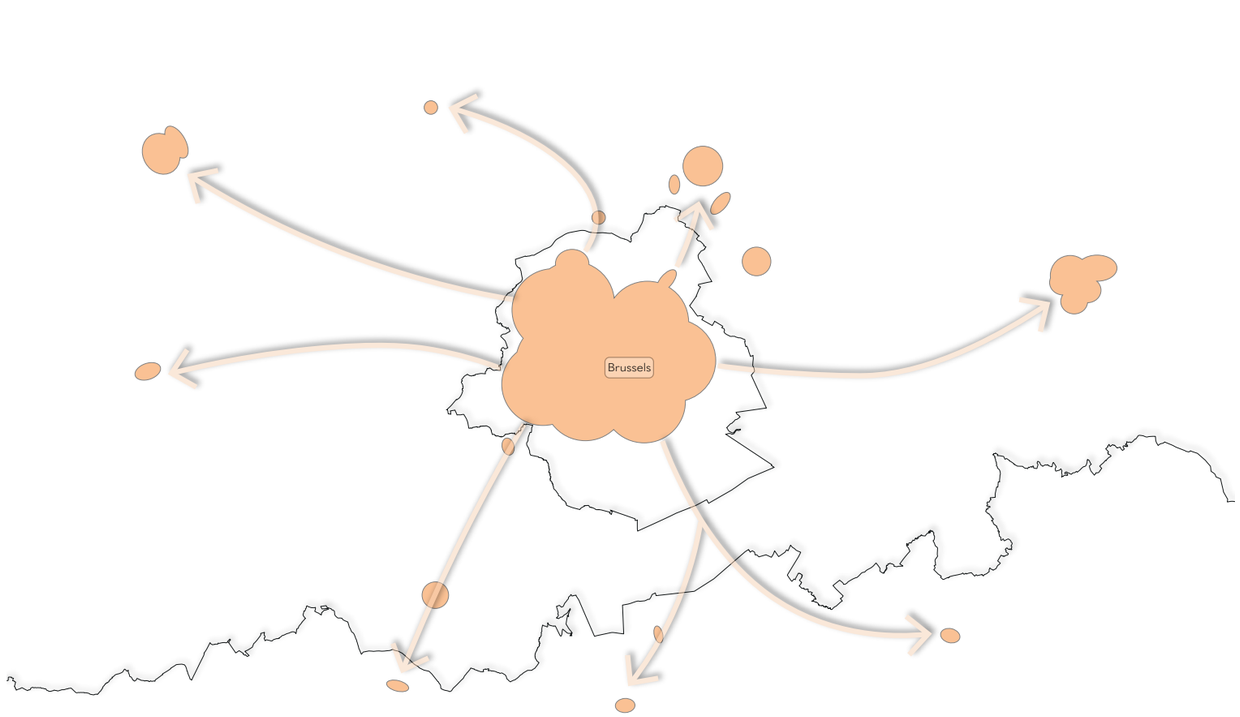


Figure 52 - Urban cores only in Brussels and periphery (own figure, 2026)

The socio-economic distribution varies greatly across the metropolitan area. Overall, Brussels appears to be an area with a higher concentration of low- to middle-income households, while the suburbs are characterized by a higher proportion of high-income households. This spatial pattern reflects a long-term process of suburbanization, in which households with greater resources tend to settle outside the Brussels-Capital Region, contributing to a relative enrichment of the periphery and a relative impoverishment of the centre (De Maesschalck et al., 2015). However, this interpretation is nuanced at a finer scale: certain peripheral areas near the canal or industrial corridors also host lower-income populations, reflecting a socio-spatial continuity that extends beyond administrative boundaries.

The map (figure 53) thus highlights that the regional boundary does not correspond to a clear-cut break, but rather to a complex and differentiated socio-economic gradient.

Socio-economic distribution

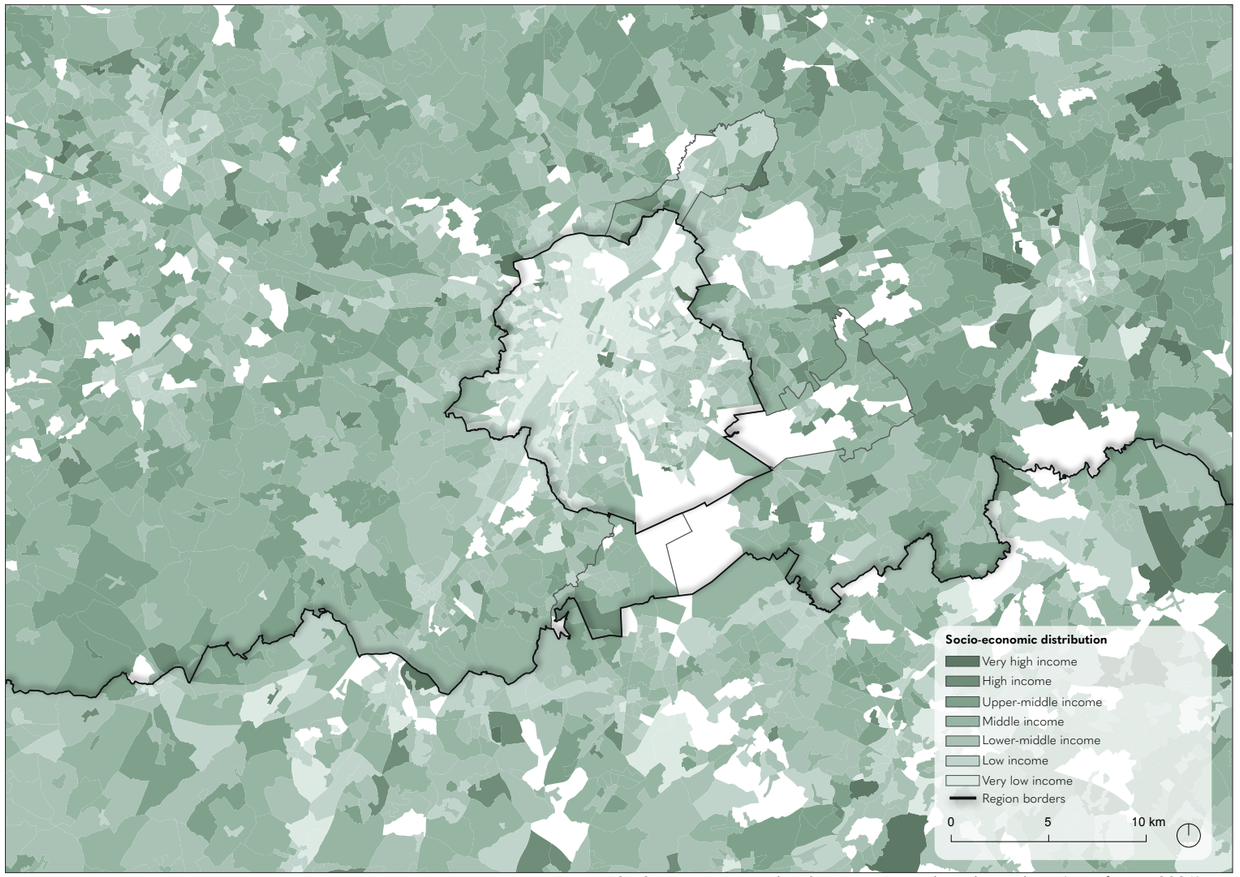


Figure 53 - Socio-economic distribution in Brussels and periphery (own figure, 2026)

The graph (figure 54) provides an overview of this distribution by dividing the population into four income groups (quartiles), distinguishing between residents and migrants in Brussels and the suburbs. It shows that Brussels residents are overrepresented in the lowest income categories, while the suburbs have a higher concentration of high incomes (De Maesschalck et al., 2015).

Migration flows confirm this trend: households leaving Brussels have, on average, higher incomes than those remaining in the city, while the reverse movements involve a proportionally higher share of lower-income households. These movements contribute to reinforcing the socioeconomic contrasts between the centre and the periphery, while revealing the importance of residential mobility in shaping the metropolitan area.

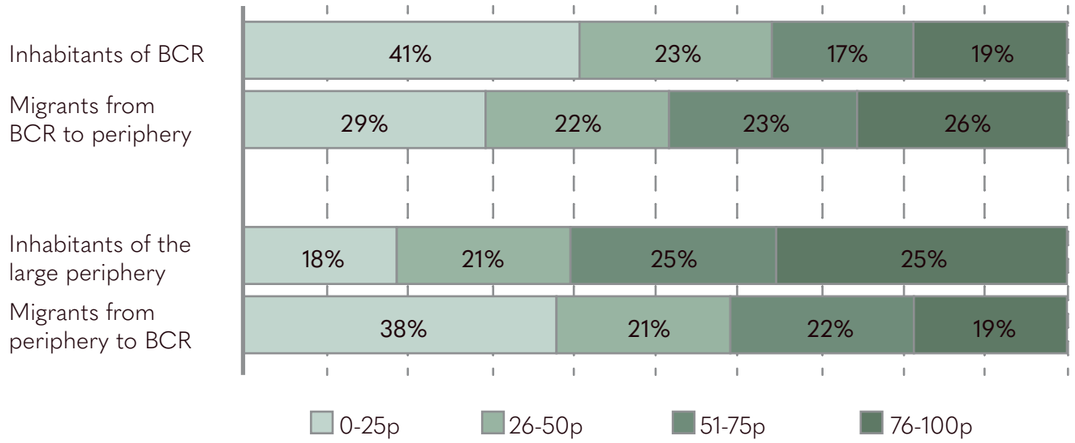


Figure 54 - Equivalent income distribution between 2007 & 2010 (adapted by author, retrieved from De Maesschalck et al., 2015)

The organization of economic activities is part of a process of transformation and redistribution at the metropolitan level. Former industrial hubs, particularly along the canal or in the Dendre Valley, have gradually declined since the 1980s (Demuynck et al., 2025).

At the same time, Brussels has strengthened its role as an economic hub by specializing in services and international functions, while some economic activities have spread to the outskirts. This suburbanization of the economy, which began in the 1960s, has affected both industry and services (ESPON, 2021).

The result is a polycentric metropolitan system, structured around several interconnected economic hubs, often located along major infrastructure corridors (see figure 55). The economy thus extends well beyond administrative boundaries, forming an extensive and interdependent functional network.

Industry and business

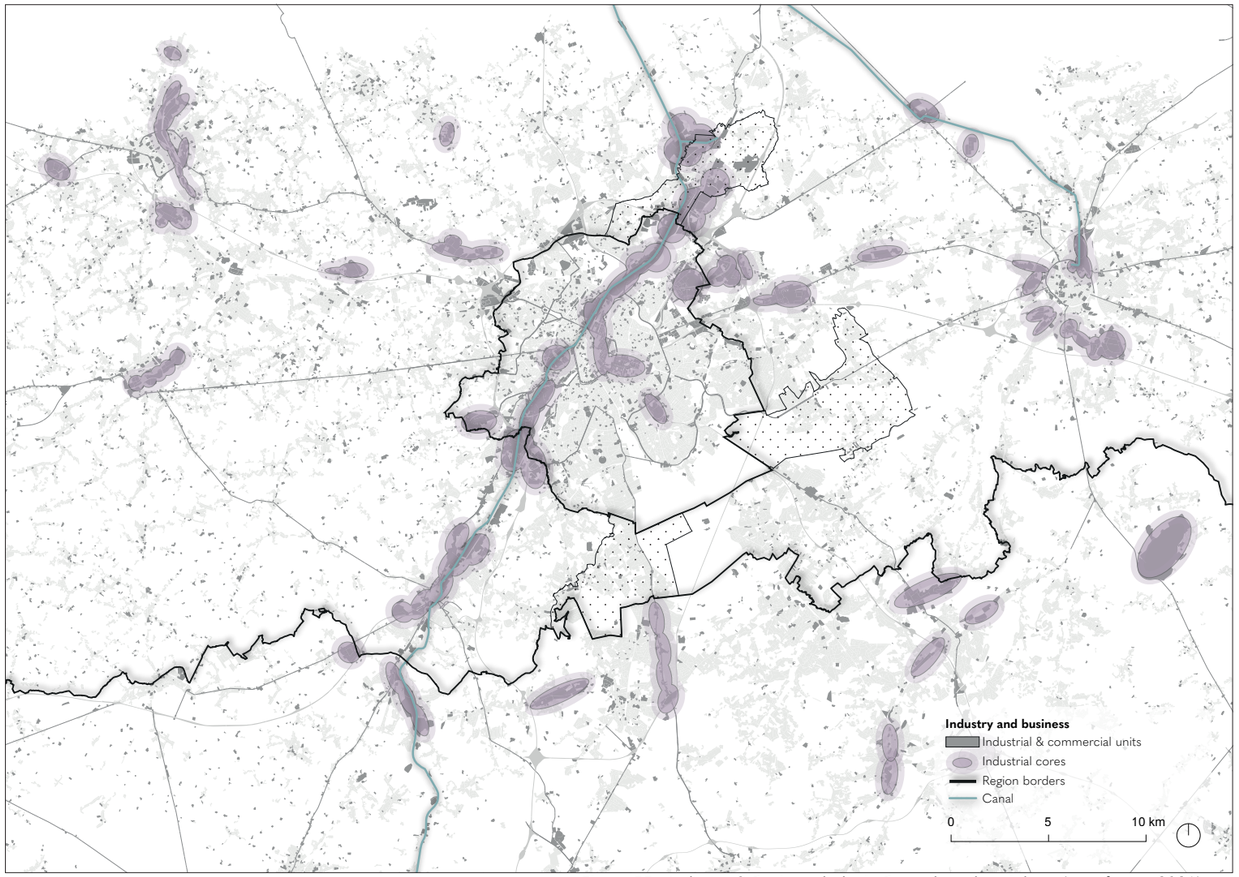


Figure 55 - Industry & Business hubs in Brussels and periphery (own figure, 2026)

Green spaces form a continuous system at the metropolitan level, largely shaped by historical landscapes and reinforced by preservation policies in the outskirts aimed at limiting Brussels' urban sprawl (Perspective.brussels, 2024).

Rather than a simple opposition between city and countryside, these spaces constitute an active territorial network, organized around forests, ecological corridors, and major landscape features. At the metropolitan scale, the concept of a "green grid" can also propose to reconnect these spaces to simultaneously improve accessibility, ecological continuity, water management, and landscape quality (ESPON, 2021). In the northern part of the Senne Valley and the canal zone, this approach seeks in particular to overcome the fragmentation caused by heavy infrastructure by linking ecology, sustainable mobility, recreation, and urban development within a single territorial network (Région de Bruxelles-Capitale, 2018). Green structures thus play a role in urban renewal and metropolitan identity between Brussels and its outskirts.

Green structures

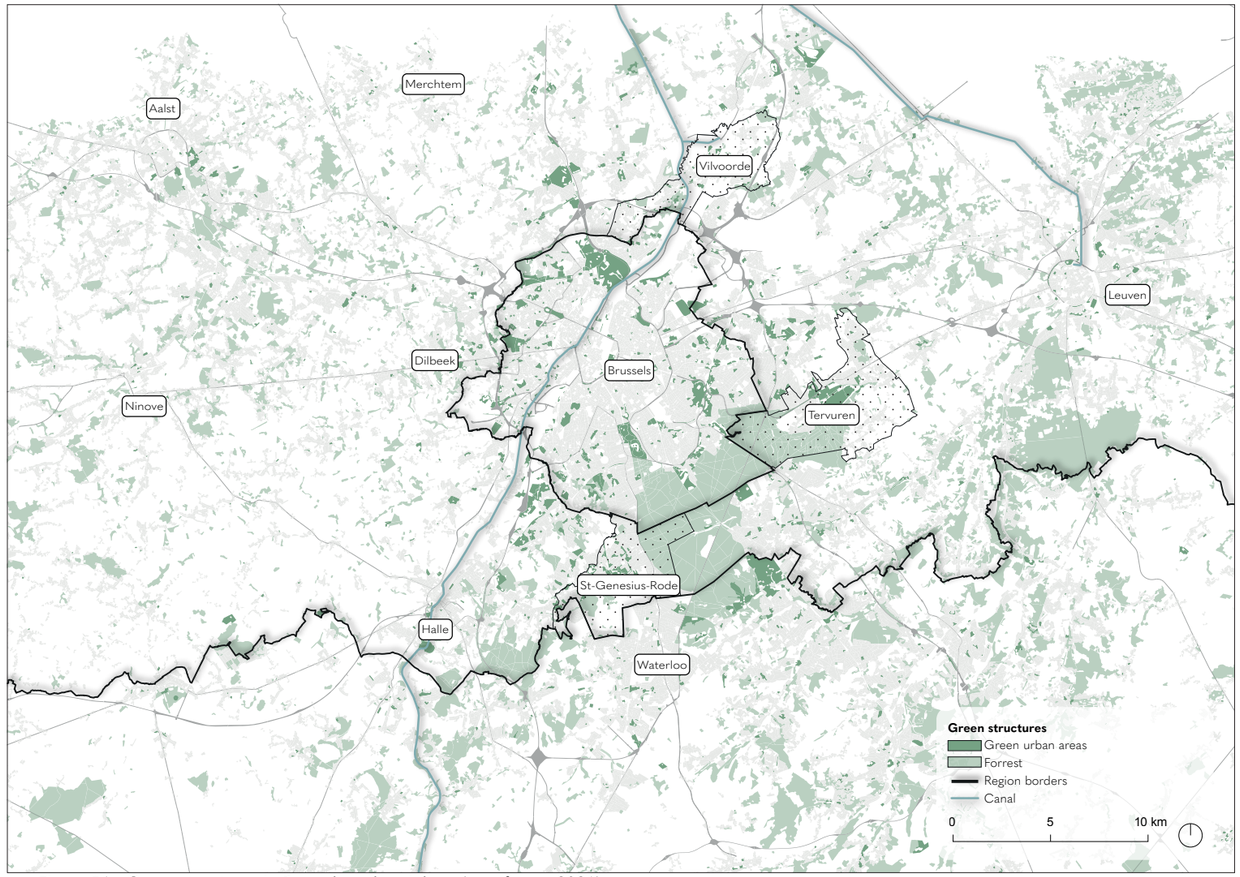


Figure 56 - Green structures in Brussels and periphery (own figure, 2026)

.2 Built environments

The Brussels metropolitan area is characterised by a wide variety of urban fabrics, resulting from different planning logics, densities, and relationships to landscape and infrastructure. Rather than defining fixed categories, the selected examples presented in this section illustrate a simplified reading of six recurring urban environments found within and beyond the Brussels-Capital Region. These examples should therefore be understood as representative conditions rather than exhaustive or rigid typologies.

The sequence (figures 58 to 63) highlights a gradual transition from dense inner-city environments towards increasingly fragmented and low-density peri-urban landscapes. The most central fabrics are characterised by compact perimeter blocks, high spatial continuity, and a strong concentration of services, public facilities, and mobility infrastructures. Moving outward, inner-suburban areas introduce slightly lower densities, more open blocks, and a stronger presence of local green structures, while still maintaining a relatively continuous urban form.

Further into the metropolitan periphery, more hybrid conditions emerge, where residential areas, productive zones, commercial strips, infrastructures, and open spaces coexist in fragmented ways. In municipalities such as Vilvoorde or Dilbeek, these mixed fabrics reflect the complex interaction between metropolitan growth, industrial development, suburbanisation, and remaining landscape structures. Finally, the outer peri-urban environments are increasingly defined by dispersed development patterns, detached housing, individual plots, and stronger relationships to agricultural or forested landscapes. These urban environments illustrate the spatial complexity and gradual transitions that characterise the Brussels metropolitan territory. Beyond administrative borders, they reveal how density, infrastructure, landscape, and urbanisation interact differently across the metropolitan continuum.

Fabric types (different urban env.)

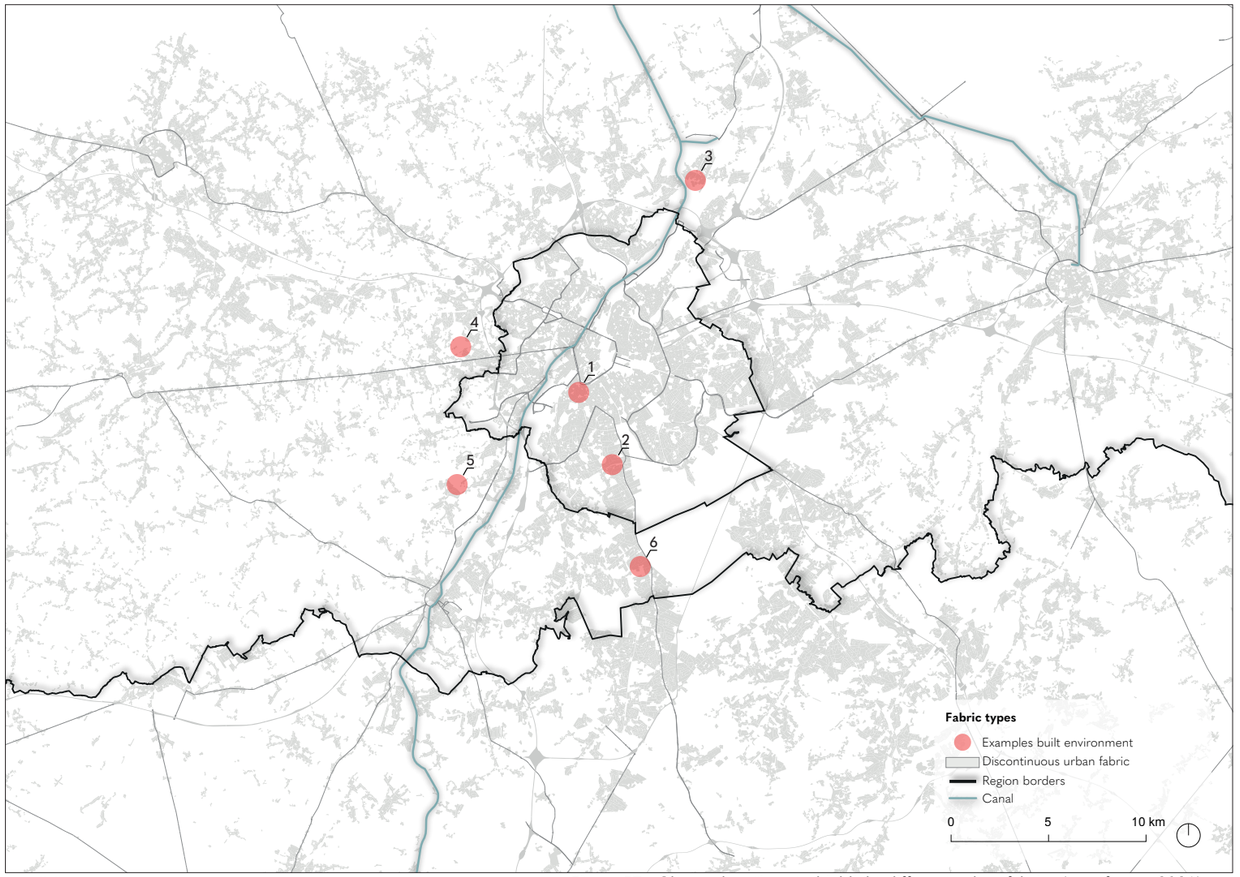


Figure 57 - Chosen locations to highlight different urban fabrics (own figure, 2026)

Main urban fabric
Public buildings
Green structure
Roads



1 - Inner-city perimeter block (dense)
(example: Sint-Gilles, Brussels)

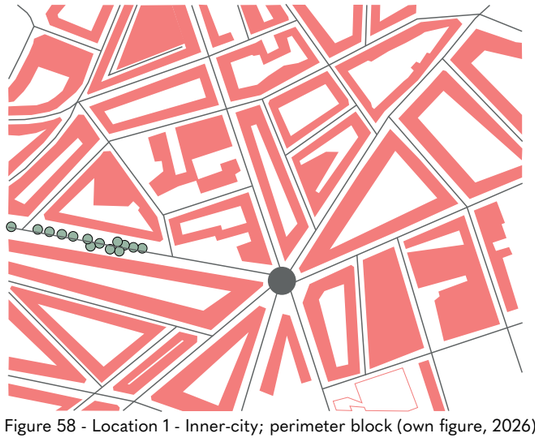




Figure 58 - Location 1 - Inner-city; perimeter block (own figure, 2026)



2 - Inner-suburban row house (relatively dense)
(example: Forest, Brussels)

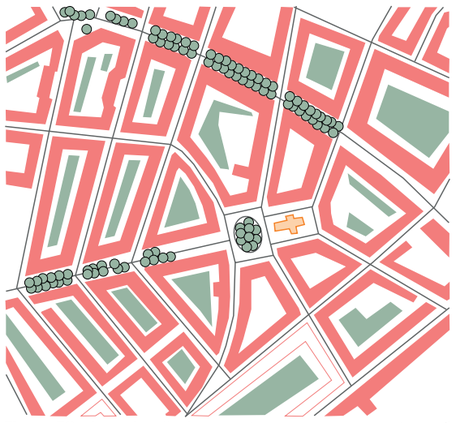
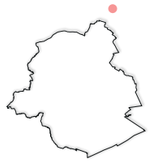




Figure 59 - Location 2 - Inner-suburban; row house (own figure, 2026)

3 - Peri-urban mixed fabric
(example: Vilvoorde, Flemish Brabant)





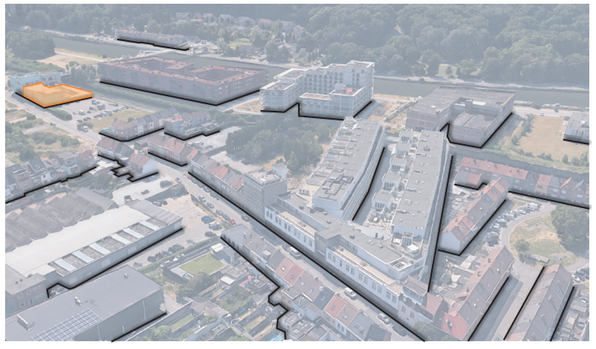


Figure 60 - Location 3 - Peri-urban; mixed fabric (own figure, 2026)

4 - Hybrid peri-urban development
(example: Dilbeek, Flemish Brabant)







Figure 61 - Location 4 - Hybrid peri-urban development (own figure, 2026)

5 - Dispatched peri-urban with low density
(example: Sint-Peters Leeuw, Flemish Brabant)



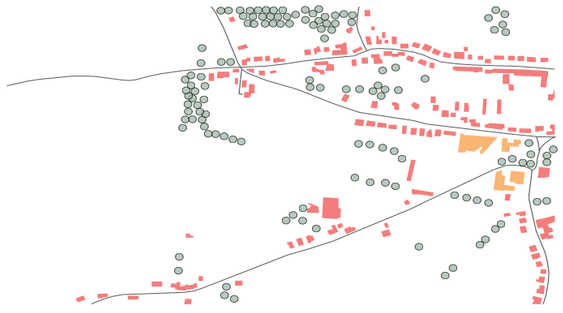
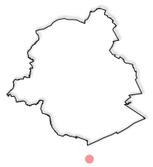




Figure 62 - Location 5 - Dispatched peri-urban (own figure, 2026)

6 - Detached houses / individual fields
(example: Sint-Genesius-Rode, Flemish Brabant)





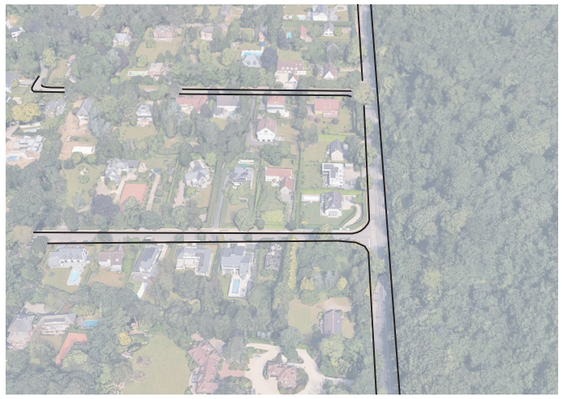


Figure 63 - Location 6 - Detached houses (own figure, 2026)

.3 Mobility

The bus and tram network (figure 64) highlights a significant difference between flexible mobility and heavy infrastructure. Bus routes, particularly those operated by 'De Lijn' (Flemish public transport), largely cross regional borders and enter Brussels via several historic entry points into the city. Rail4Brussels highlights that De Lijn operates 56 lines connecting Brussels to Flemish Brabant, with a significant expansion of service between 2002 and 2011 (Abu Jeriban et al., 2016). This ability to extend beyond regional boundaries is partly due to the flexibility of buses, which require little fixed infrastructure.

On the other hand, STIB's tram lines remain largely confined to the Brussels-Capital Region. Extending them requires heavier investments, coordination between operators and regions, and institutional continuity that is more difficult to ensure. The regional boundary thus also becomes a technical and political boundary: it does not entirely block traffic flows, but it strongly influences the shape of the network. This situation shows that metropolitan integration depends not only on mobility demand, but also on the capacity of institutions and infrastructure to function across administrative boundaries.

Today, the rail network (figure 65) serves as the backbone of metropolitan mobility around Brussels. Unlike tram lines, rail infrastructure extends well beyond regional borders and connects Brussels to a network of cities and regional hubs throughout Belgium. This structure is gradually being supplemented by the emergence of "Hoppinpunten," developed as part of the Flemish mobility policy and "basisbereikbaarheid" (basic accessibility). Hoppinpunten are designed as intermodal hubs where different modes of transport (train, bus, tram, bicycle, shared mobility, or Park & Ride) are grouped together and coordinated to facilitate transfers and encourage more sustainable mobility (Mobiliteit Vlaanderen, 2025).

Through this network of hubs at various scales (local, regional, or interregional), the Flanders region is gradually seeking to establish a metropolitan mobility framework that moves beyond dependence on private cars. The Park & Ride facilities and Hoppinpunten located around Brussels thus reflect a desire to connect outlying areas to the main rail corridors and public transit networks. Although this system is still under development and heavily dependent on regional institutional structures, it represents an initial attempt to build a more integrated, multimodal, and cross-border metropolitan mobility system across the broader Brussels region (Mobiliteit Vlaanderen, 2025).

Mobility infrastructure:
Main Bus & Tramway lines (In & out Brussels)

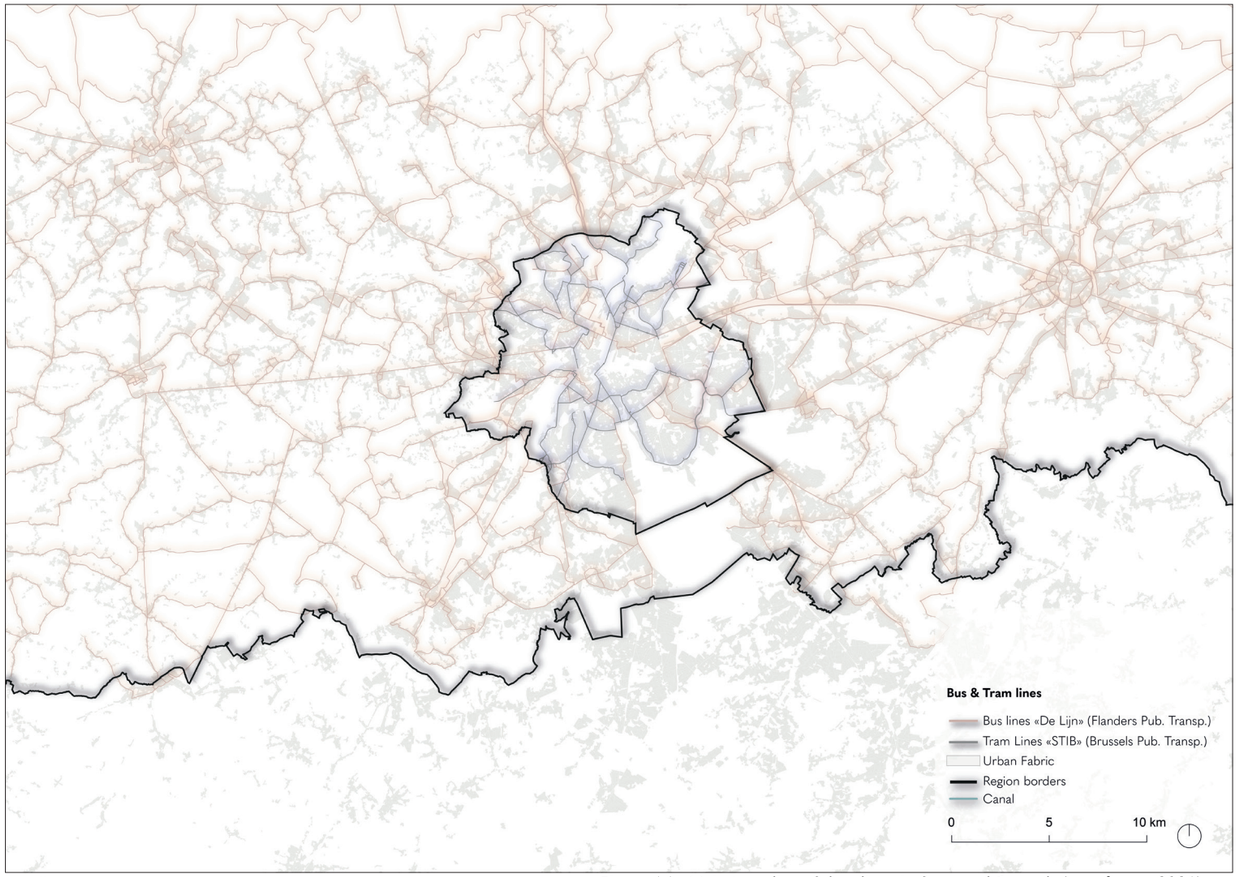


Figure 64 - Main tram lines & bus lines in & around Brussels (own figure, 2026)

Mobility infrastructure:
Train railways + «Hoppinpunten»

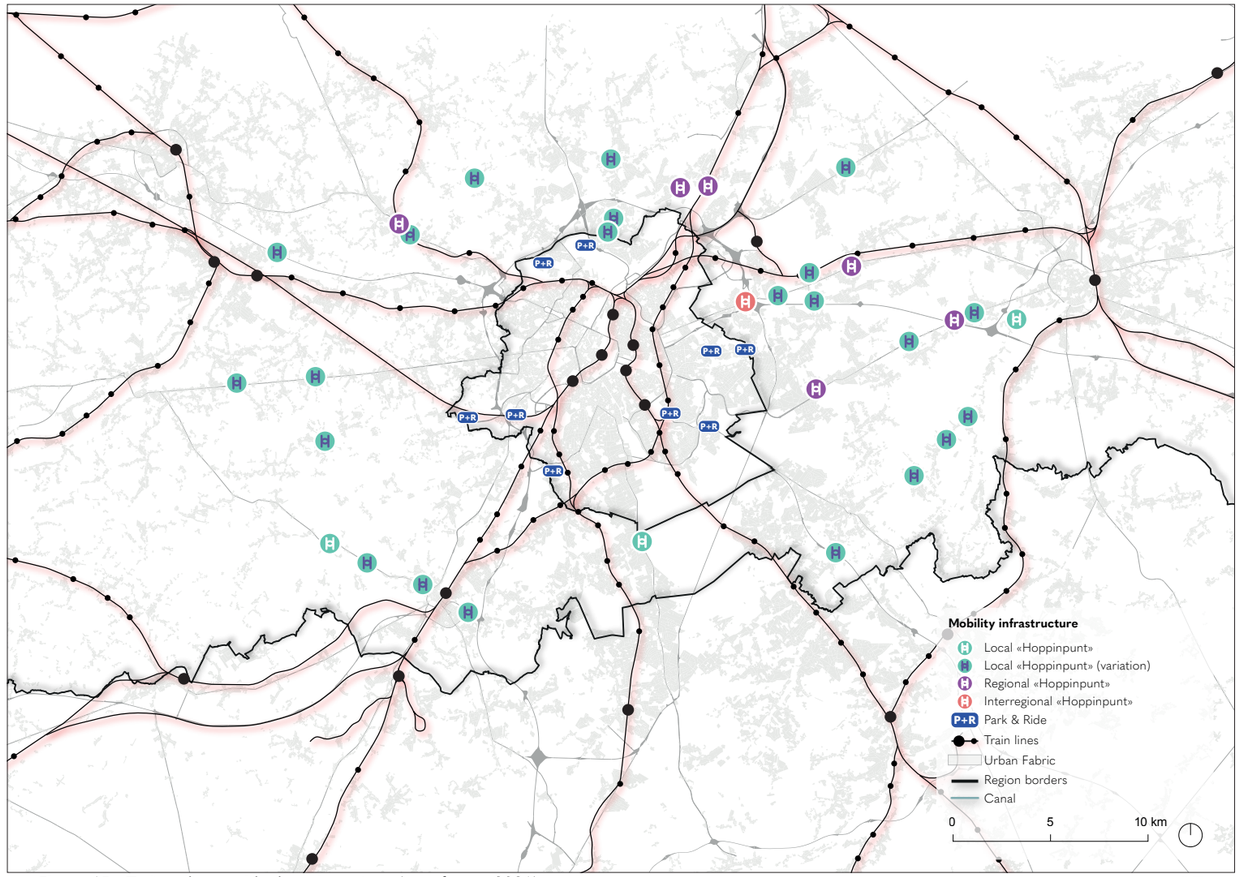


Figure 65 - Train railways with «hoppinpunten» (own figure, 2026)

What's a «Hoppinpunt» ?

As part of the Flemish reform of basisbereikbaarheid ("basic accessibility"), the "Hoppinpunten" represent a new generation of mobility hubs distributed across different territorial scales in Flanders (Hoppin, n.d.). Designed as multimodal interchange points, they bring together several transport modes: train, tram, bus, bicycle, shared mobility, and Park & Ride facilities, in order to simplify transfers and reduce dependence on private cars (Hoppin, n.d.). Through this network logic, the Flemish Region is gradually structuring a more integrated mobility system in which rail infrastructure and public transport form the backbone of everyday metropolitan mobility. Implemented throughout Flanders, the Hoppinpunten also introduce a territorial hierarchy ranging from neighbourhood hubs to regional and interregional nodes (Hoppin, n.d.), see figure 66. This differentiated structure allows each hub to adapt its level of equipment and connectivity according to its role within the wider mobility network. Around Brussels, these hubs can already be understood as a first attempt to strengthen the connections between the capital and its dispersed periphery by linking residential areas to major rail corridors and collective transport systems. Although still largely framed within Flemish institutional structures, they point toward a more transversal and metropolitan approach to daily mobility.

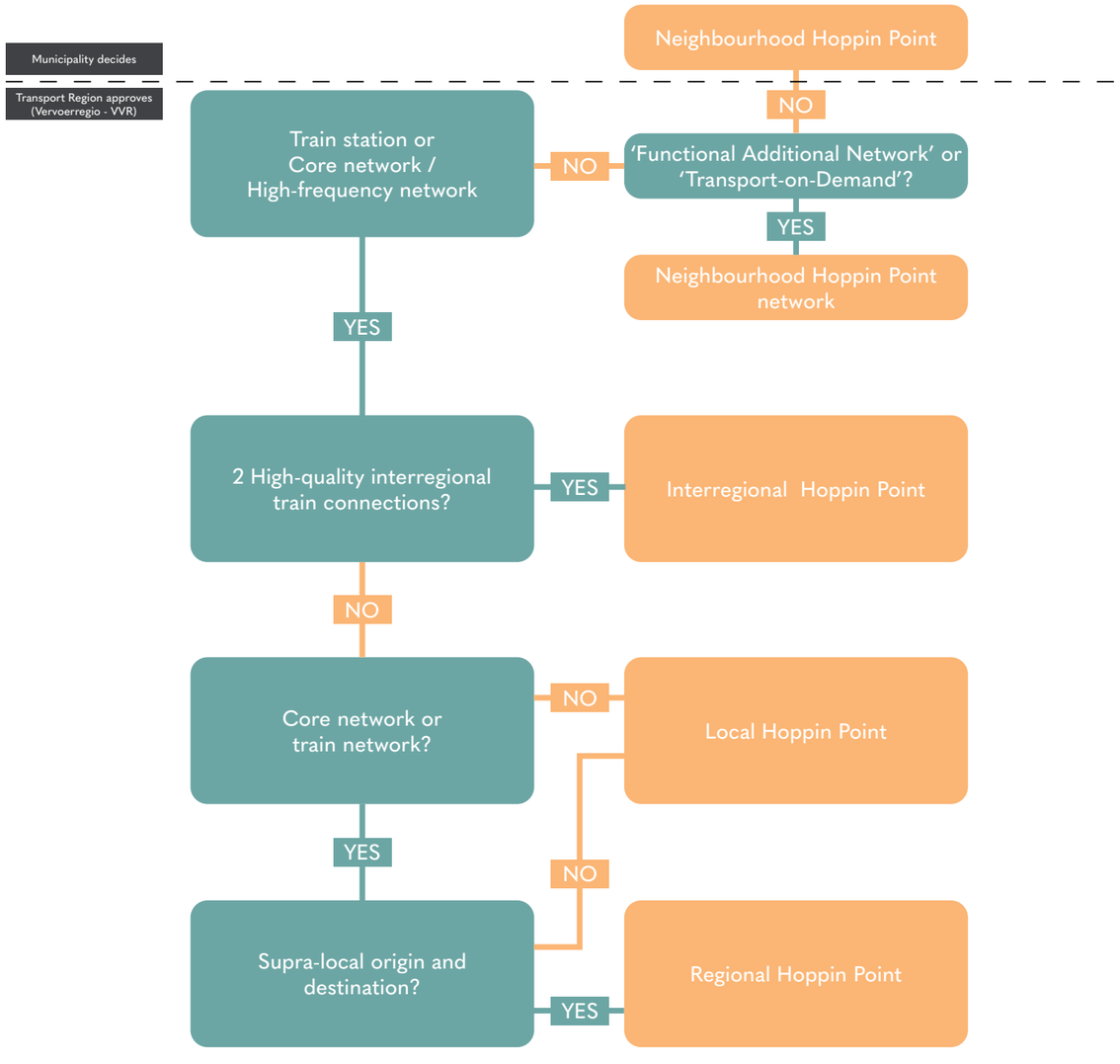


Figure 66 - Hoppinpunten types with explanations (adapted by author, retrieved from hoppin.be/nl/, 2026)

Metropolitan potential

Beyond their technical function, the "Hoppinpunten" reflect a broader shift in the way mobility is conceived at the regional scale. Rather than relying primarily on car-oriented access to the city, the system is based on the combination of complementary and interconnected transport networks organised through different levels of accessibility (Hoppin, n.d.). Some Hoppinpunten operate as small-scale local access points, while others function as larger interfaces between regional, rail, and interregional mobility systems.

Within the Brussels metropolitan context, this logic becomes particularly relevant for peripheral territories that remain strongly dependent on the car and fragmented by institutional and infrastructural boundaries. In this sense, the "Hoppinpunten" provide an already existing framework upon which a more coherent metropolitan mobility structure could gradually be developed. By reinforcing the relation between railway stations, public transport corridors, and local access networks, these hubs have the potential to become strategic points of interconnection between Brussels and its surrounding municipalities. More broadly, they suggest how mobility infrastructure can also act as a territorial and urban catalyst within the evolving metropolitan landscape around Brussels (Région de Bruxelles-Capitale, 2012).

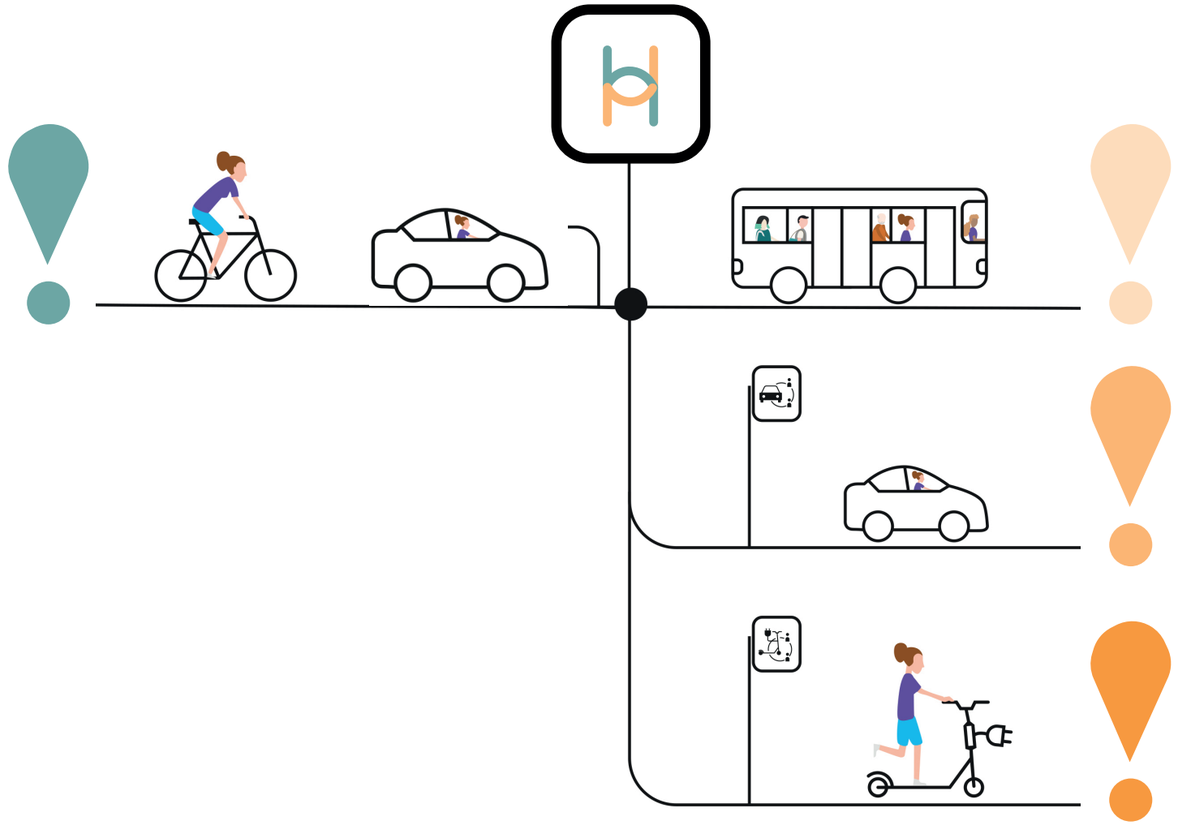


Figure 67 - Hoppinpunt as mobility hub function (adapted by author, retrieved from hoppin.be/nl/, 2026)

Neighborhood/Local «Hoppinpunt»

The local Hoppinpunt serves as a neighborhood access point to the mobility network. At the neighborhood or small-town level, it connects simple modes of transportation such as buses, bicycles, and short-term parking. The main goal is to provide an initial alternative to private cars for daily commutes, even in less densely populated or more outlying areas (Mobiliteit Vlaanderen, 2025).

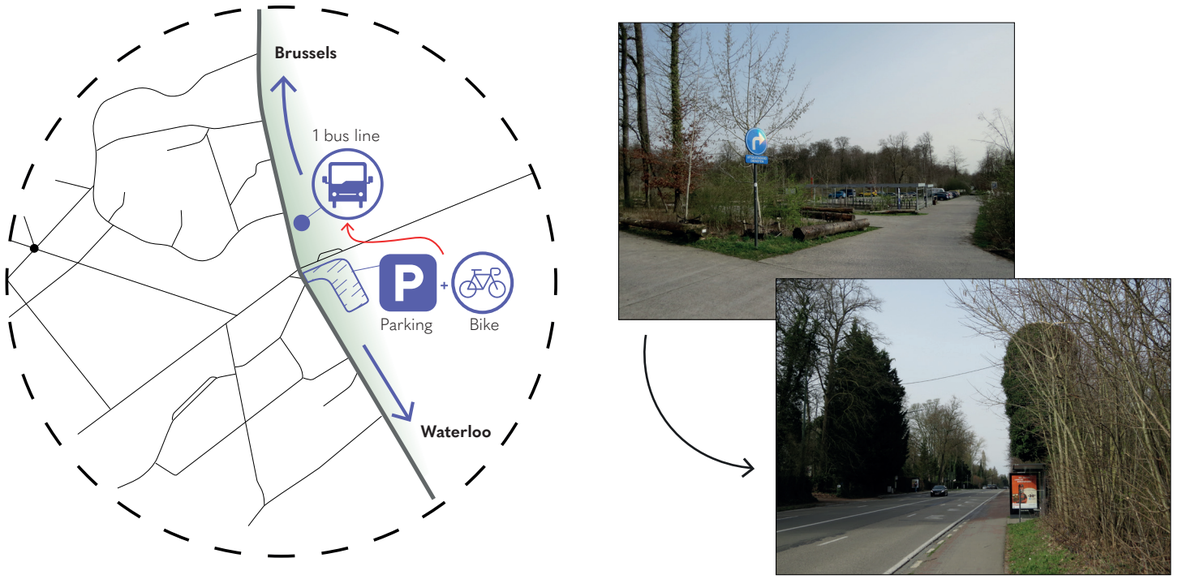


Figure 68 - Example of local Hoppinpunt (own figure, 2026)

Interregional «Hoppinpunt»

The interregional Hoppinpunt serves as a true multimodal platform, connecting major transportation networks such as trains, trams, subways, and large-scale bus services. Closer to the concept of a “mobility hub,” it facilitates transfers between different regions and modes of transportation. This type of infrastructure remains limited in Belgium and is concentrated mainly in large urban centres or major train stations, such as in Brussels or Antwerp.

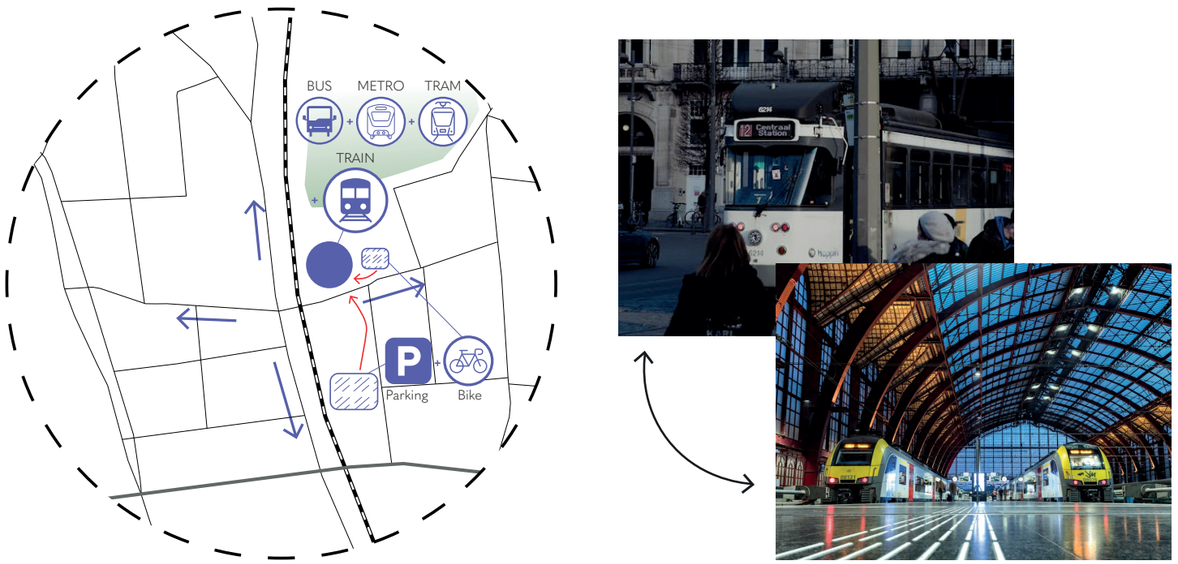


Figure 69 - Example of interregional Hoppinpunt (own figure, 2026)

Regional «Hoppinpunt»

Regional Hoppinpunts operate on a larger scale and are generally connected to major transportation infrastructure, such as the tram or major bus routes. Located near Brussels or along major metropolitan corridors, these hubs serve as interfaces between local mobility and regional travel. They also aim to strengthen connections to Brussels while reducing dependence on cars (Mobiliteit Vlaanderen, n.d.).

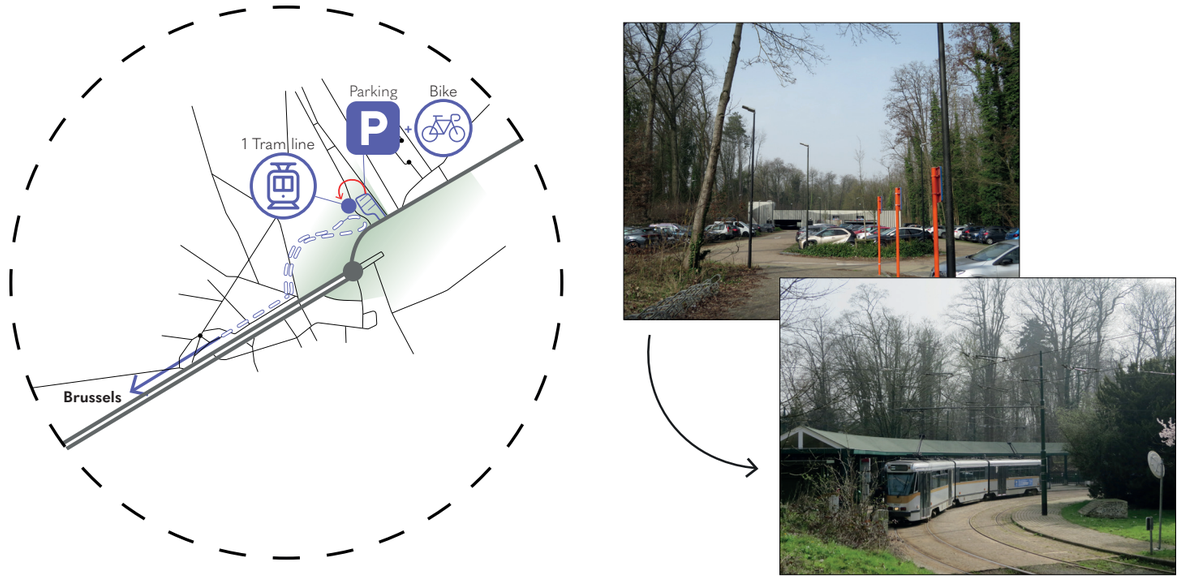


Figure 70 - Example of regional Hoppinpunt (own figure, 2026)

P+R Park & Ride

Park & Ride operates on a different principle: its primary goal is to divert traffic before it enters the densely populated city centre. Typically located near highways or major access routes, these facilities allow people to park their cars and then continue their journey by public transit, often via the metro, tram, or train. Several Park & Ride facilities have recently been developed around Brussels, but their number remains relatively limited on a metropolitan scale.

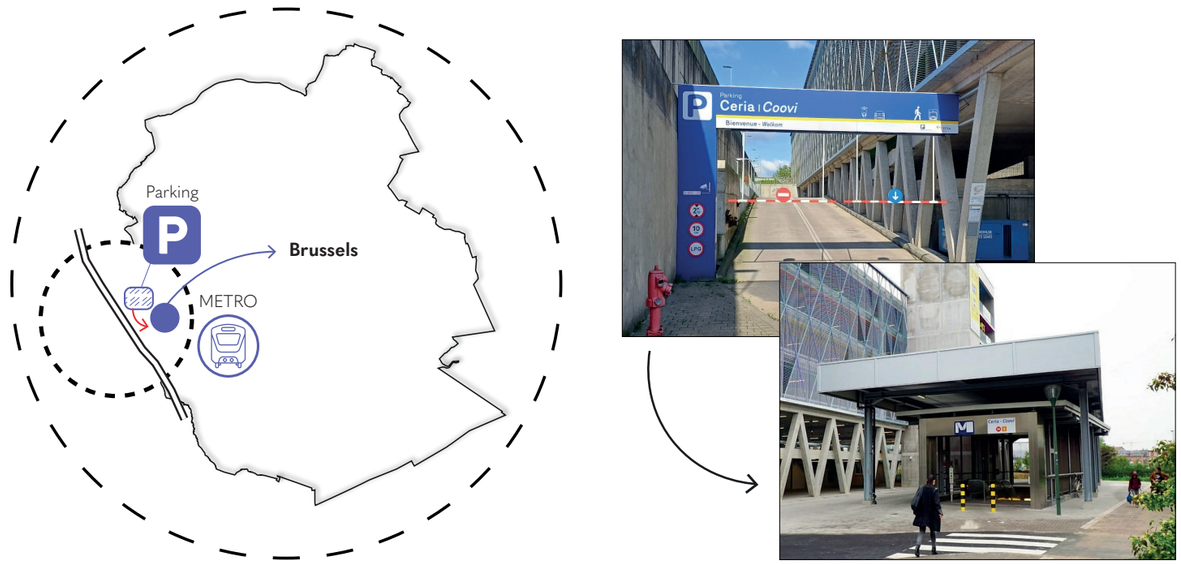


Figure 71 - Example of Park & Ride (own figure, 2026)

Periphery to Brussels: **Example 1**

This daily commute reflects the strong metropolitan dependency between the northern periphery and Brussels. For many office employees living in Vilvoorde, Brussels remains the primary employment centre (Brussels-north business district in this example), yet the journey still relies heavily on the Ring and car infrastructure. The comparison between car-based and multimodal alternatives highlights both the proximity of Brussels and the persistent imbalance between metropolitan accessibility and sustainable mobility options.



Vilvoorde (A) → Brussels North (B)

Profile: Office employee
Lives in: Vilvoorde
Works in: Brussels (north)
Commutes: Every (week) day

Mode:	Description	Time:
Car only	Via 'Ring' Highway	15-25min
P+R Car + 'P+R'	Car/Park + Train (+ Tram)	30-45min
Public Transp.	Bus + Train (+Tram)	35-50min

Periphery to Brussels: **Example 2**

This trajectory illustrates the everyday relationship between the southern periphery and Brussels through education and student life. Despite the relatively short metropolitan distance, the access to a university campus often remains fragmented and dependent on transfers through Brussels' central transport network. The example underlines how students living in the periphery constitute a highly mobile profile that could strongly benefit from more direct and interconnected metropolitan public transport systems.



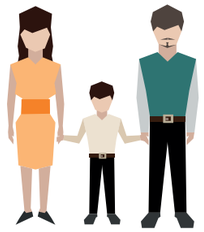
Sint-Genesius-Rode (A) → Brussels University ('ULB') (B)

Profile: Student
Lives in: St-Gen.-Rode
Studies in: Brussels (Ixelles)
Commutes: Every (week) day

Mode:	Description	Time:
Car only	Via main Brussels axis	25-35min
P+R Car + 'P+R'	Car/Park + Train or Bus	40-55min
Public Transp.	Bus + Tram	50-70min

Periphery to Periphery: **Example 3**

Unlike the radial logic of commuting into Brussels, this weekend leisure journey reveals another important metropolitan movement: residents from denser peripheral areas seeking access to the greener and more recreational landscapes of the eastern periphery. Tervuren, with its forests and open spaces, represents a leisure destination closely connected to the Brussels metropolitan region, yet still difficult to reach efficiently without a car. The example highlights how mobility within the periphery is not only linked to work, but also to leisure, nature, and everyday quality of life.



Vilvoorde (A) → Tervuren (B)

Profile: Family
Lives in: Vilvoorde
Leisure/green: Tervuren
Commutes: Every weekend

Mode:	Description	Time:
Car only	Via 'Ring' Highway	20-30min
P+R Car + 'P+R'	Car/Park + Tram	45-60min
Public Transp.	Bus + Tram (via Brussels)	70-90min

Periphery to Periphery: **Example 4**

Patterns of metropolitan employment outside the historical city centre are growing, notably around the airport and economic corridors of Zaventem (Région de Bruxelles-Capitale, 2012). While both municipalities are located in the Flanders within the Brussels metropolitan area, the journey remains largely structured around car use and highway infrastructure. The comparison demonstrates how cross-peripheral commuting often lacks efficient direct public transport connections despite the economic importance of these emerging metropolitan poles.



Dilbeek (A) → Zaventem (B)

Profile: Office employee
Lives in: Dilbeek
Works in: Zaventem (airport area)
Commutes: Every (week) day

Mode:	Description	Time:
Car only	Via 'Ring' Highway	25-40min
P+R Car + 'P+R'	Car/Park + Train	50-65min
Public Transp.	Bus + Train (via Brussels)	60-90min

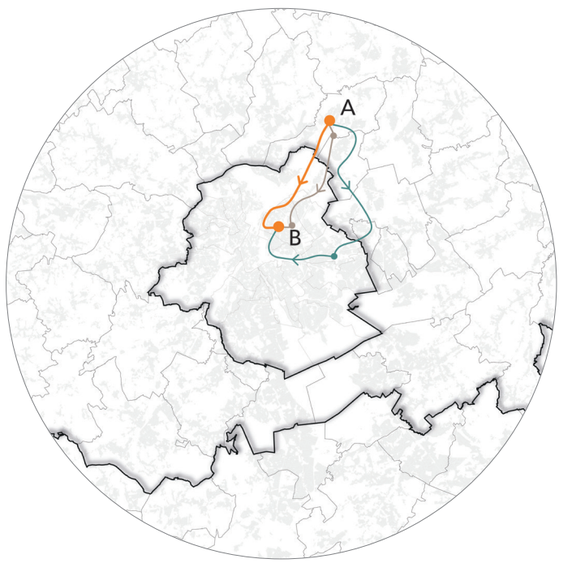


Figure 72 - Example 1 route choices (own figure, 2026)

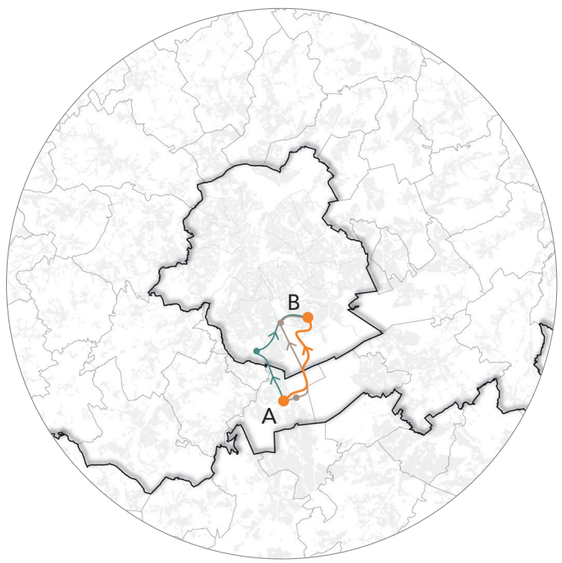


Figure 73 - Example 2 route choices (own figure, 2026)

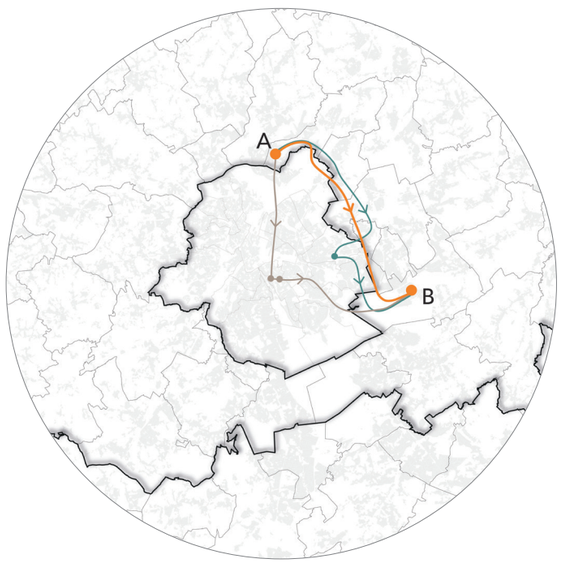


Figure 74 - Example 3 route choices (own figure, 2026)

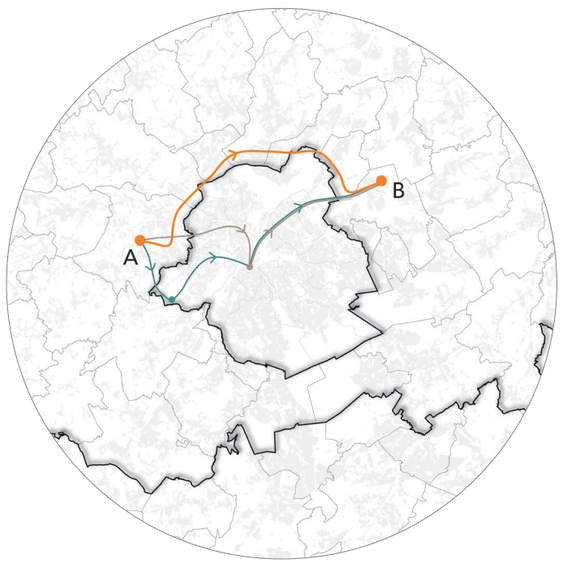


Figure 75 - Example 4 route choices (own figure, 2026)

.4 Chosen areas

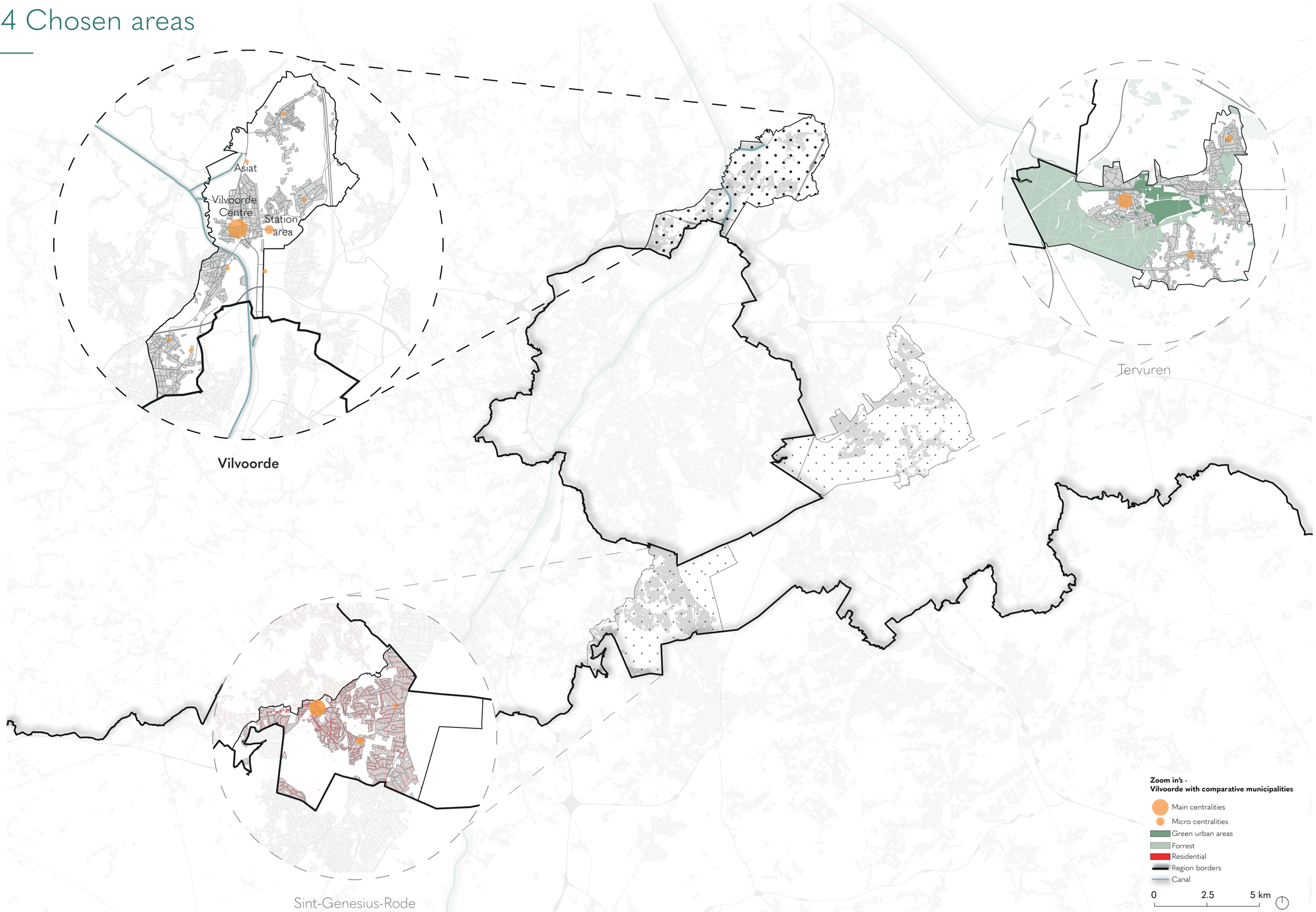
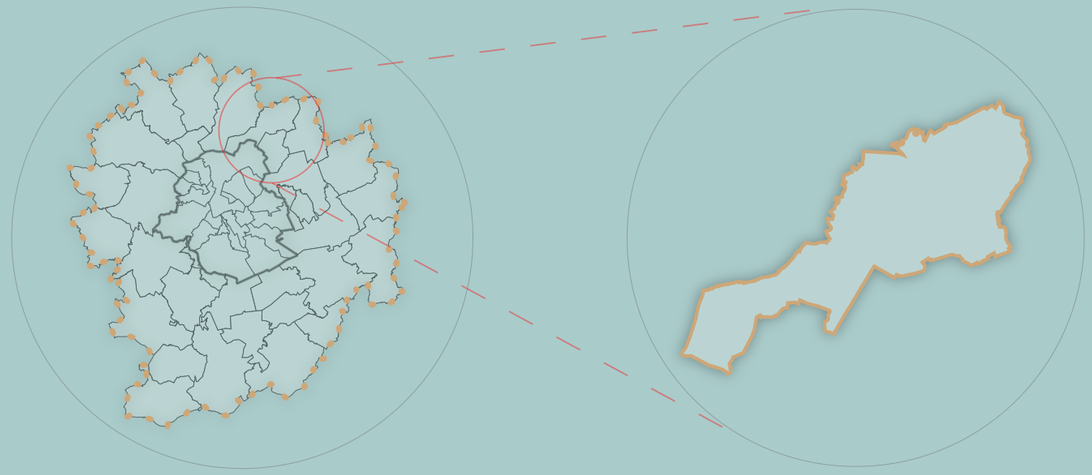


Figure 76 - Zoom ins case study Vilvoorde & comparator municipalities (own figure, 2026)

08
MUNICIPALITY CASE-STUDY

Vilvoorde, Tervuren and Sint-Genesius-Rode illustrate different ways of inhabiting and negotiating the space between Brussels and its surrounding region.



Brussels and periphery

Vilvoorde

.1 Case-study: Vilvoorde municipality 98
.2 Comparator municipality: Tervuren 116
.3 Comparator municipality: Sint-Genesius-Rode 122

Figure 77 - Zooming from Brussels & periphery to municipality of Vilvoorde (own figure, 2026).

.1 Case-study: Vilvoorde municipality

Vilvoorde is selected as the main case study because it condenses many of the spatial, social, and institutional tensions that define the Brussels metropolitan fringe. Located directly north of the Brussels-Capital Region, the municipality is not simply a suburban extension of Brussels, but a medium-sized Flemish city with its own identity, history, and planning agenda. Its position along the canal, the Brussels-Antwerp railway corridor, the N1, the 'Ring' and the wider airport economy places it within several metropolitan systems at once. In this sense, Vilvoorde represents the periphery not as a residual zone around Brussels, but as an active interface between the capital and the Flemish Brabant (Stad Vilvoorde, 2017).

This makes Vilvoorde particularly relevant for a project concerned with metropolitan integration. The municipality is strongly connected to Brussels through commuting, migration, employment and everyday services, yet these relations are not always translated into coherent spatial or governance structures. The wider Brussels-Flemish Brabant relationship is marked by intense flows: people move from Brussels to the periphery, while many inhabitants of Flemish Brabant continue to depend on Brussels for work, education and services (De Maesschalck et al., 2015). Vilvoorde makes these dynamics visible in a concrete urban condition, where metropolitan mobility, social change, industrial transformation and local identity overlap.

At the same time, Vilvoorde offers a strategic design opportunity. Its fragmented urban structure, productive landscapes, station area, canal zones and neighbourhoods such as Buda reveal both the problems and potentials of the metropolitan edge. This case study therefore allows the project to test how infrastructural and spatial interventions can move beyond the logic of the border, while still acknowledging the specific identity of the Flemish periphery and the importance of existing territorial and cultural structures. Rather than treating Vilvoorde as a secondary municipality outside Brussels, this thesis approaches it as a key metropolitan hinge: a place where stronger metropolitan integration can be imagined without dissolving the distinct character of the territories involved.

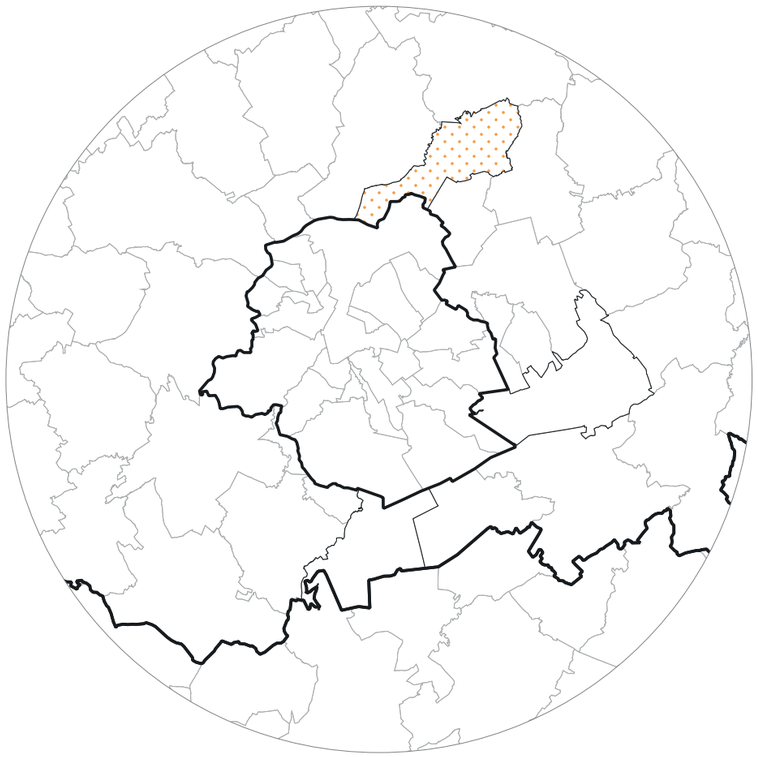


Figure 78 - Vilvoorde as chosen case-study (own figure, 2026)

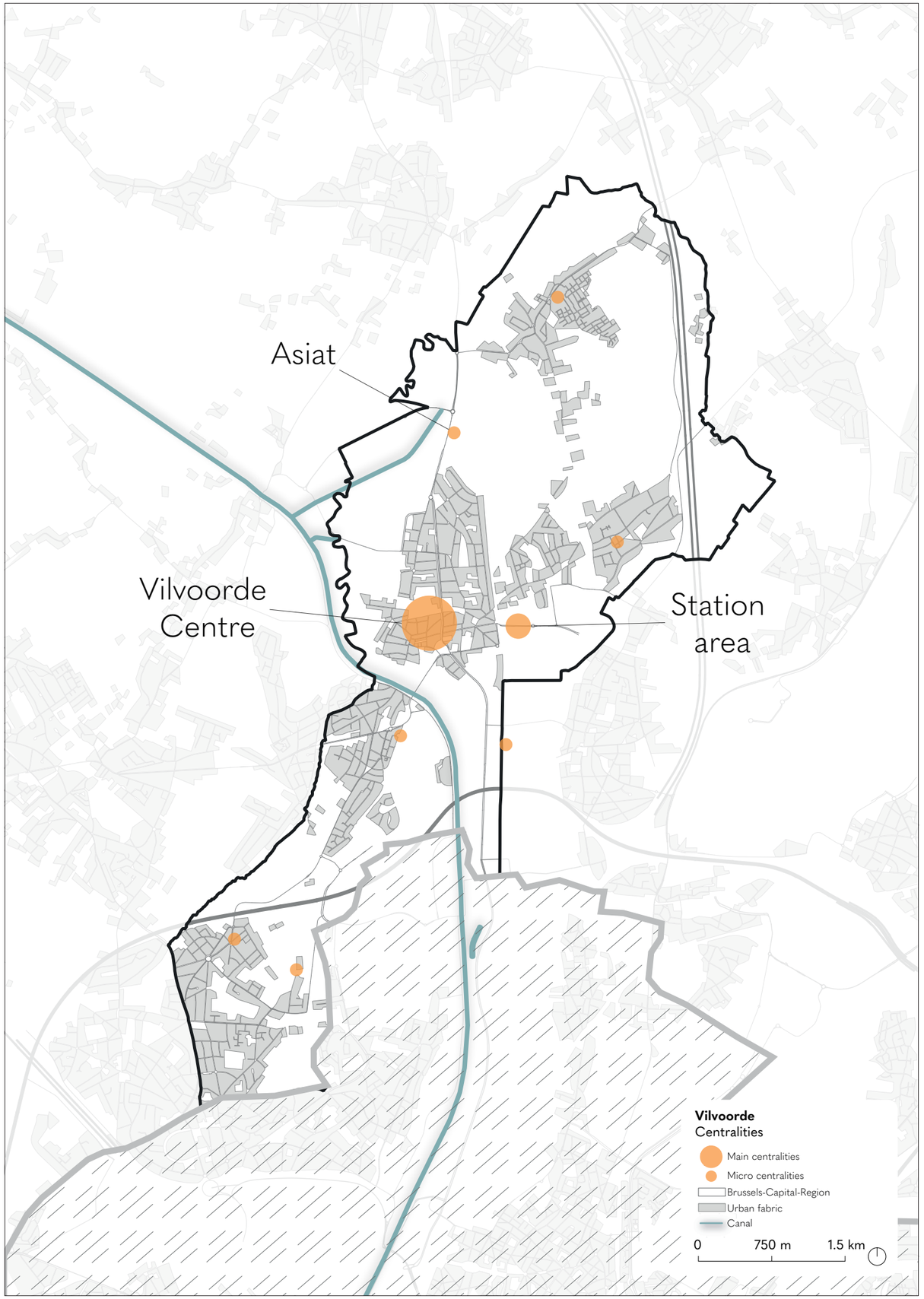


Figure 79 - Vilvoorde centralities (own figure, 2026)

COMPACT CITY



Centre

The historic centre of Vilvoorde concentrates commerce, services and public life within a compact urban fabric connected to the canal and the station (Stad Vilvoorde, 2017).





Kassei aan het water

A compact residential district along the canal with potential to reconnect the neighbourhood to the waterfront and strengthen public space and soft mobility (Stad Vilvoorde, 2017).



HYBRID CITY



Buda

A productive urban landscape where industry, logistics, housing and heritage coexist within a fragmented but strategic metropolitan territory (Stad Vilvoorde, 2017).





Faubourg-south

A mixed district combining housing, infrastructures and productive activities, illustrating the coexistence of living and working environments (Stad Vilvoorde, 2017).



GARDEN CITY/SUBURBS



Duchéhof

One of Belgium's first social garden-city neighbourhoods, structured around collective green spaces and low-rise housing (Stad Vilvoorde, 2017).





Koningslo

A low-density suburban neighbourhood characterised by garden-city morphologies and proximity to open landscapes (Stad Vilvoorde, 2017).



WORK CITY



The 'Power-station'

An infrastructural and industrial landscape shaped by energy production and large-scale productive activities along the canal (Stad Vilvoorde, 2017).





Cargovil

A strategic logistics platform connected to the canal, ring road and metropolitan infrastructure network (Stad Vilvoorde, 2017).



VILLAGE TYPE



Peutie

A village-like residential environment combining a compact historic core with low-density suburban housing (Stad Vilvoorde, 2017).





Houtem

A fragmented village structure combining a historic rural core with a large post-war social housing estate (Stad Vilvoorde, 2017).



LANDSCAPES



Dorent Nelebroek

An open landscape composed of agricultural fields, ecological corridors and fragmented natural areas (Stad Vilvoorde, 2017).





Houtemse Kouters

A rural agricultural landscape contributing to biodiversity, ecological continuity and metropolitan open space (Stad Vilvoorde, 2017).



Figure 80 - Series of aerial photos of Vilvoorde (Google earth, 2026)

Vilvoorde reveals a fragmented urban structure positioned between the metropolitan dynamics of Brussels and the dispersed landscapes of the Flemish periphery. Rather than functioning as a compact and continuous city, the municipality is composed of residential neighbourhoods, industrial areas, infrastructural corridors and open landscapes. The distinction between strategic intervention areas, characteristic neighbourhoods and robust landscapes highlights how different parts of the city require distinct development approaches. While open spaces remain fundamental to Vilvoorde's identity, they also reinforce discontinuities between neighbourhoods. At the same time, the station area, canal corridor and former industrial zones emerge as strategic areas capable of structuring future metropolitan development (Stad Vilvoorde, 2017).

The Space Syntax analysis (Angular Integration 800m radius) reinforces this reading by showing that the highest levels of angular integration are concentrated along the metropolitan corridors linking Vilvoorde to Brussels, particularly around the station area and the northern edge of the capital. This suggests that Vilvoorde already functions as part of a wider metropolitan system whose spatial logic extends beyond the administrative border.

At the local scale, however, important internal discontinuities remain. Several neighbourhoods are weakly connected to these highly integrated corridors, reflecting the impact of infrastructural barriers and dispersed urbanisation patterns. The distribution of recreational facilities (figure 81) nevertheless reveals a latent polycentric structure, with local centralities already present across different districts but operating in relative isolation.

Vilvoorde's future transformation should not rely solely on densification, but on the strategic reconnection of existing urban fragments. The overlap between metropolitan accessibility, local centralities and open landscape structures points towards a more integrated and socially connected urban model. In this sense, Vilvoorde appears less as a peripheral municipality and more as a mediating metropolitan territory between Brussels and the Flemish hinterland.

Social infrastructure: **Recreation**

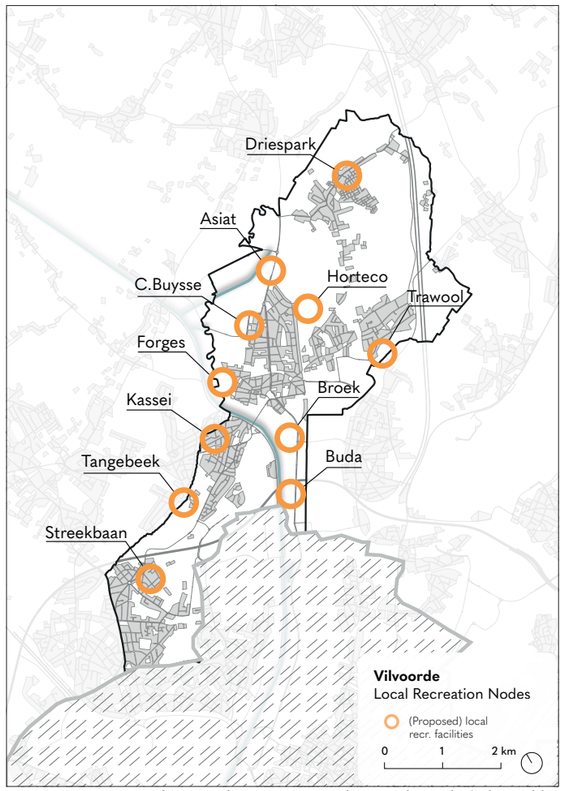


Figure 81 - Local recreation nodes in Vilvoorde (adapted by author, retrieved from Stad Vilvoorde, 2017)

General structure: **Types of zones & Local centralities (Space syntax)**

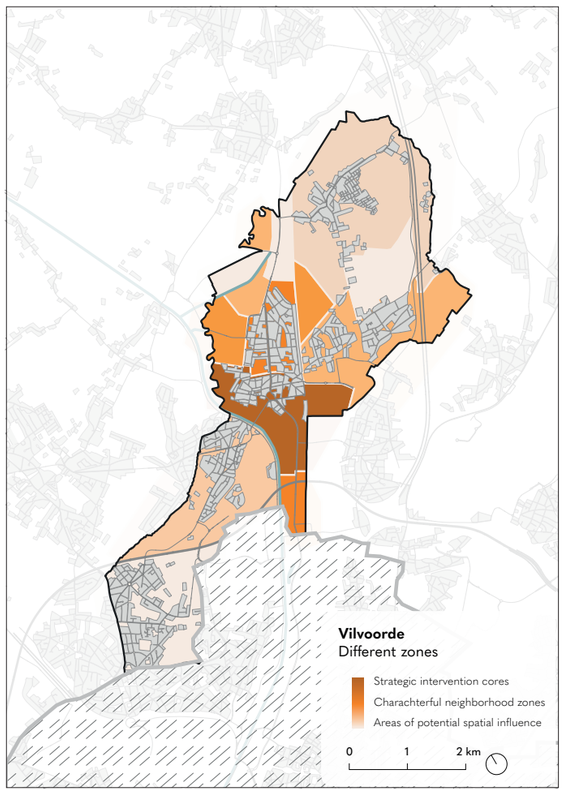


Figure 82 - Zones types in Vilvoorde (adapted by author, retrieved from Stad Vilvoorde, 2017)

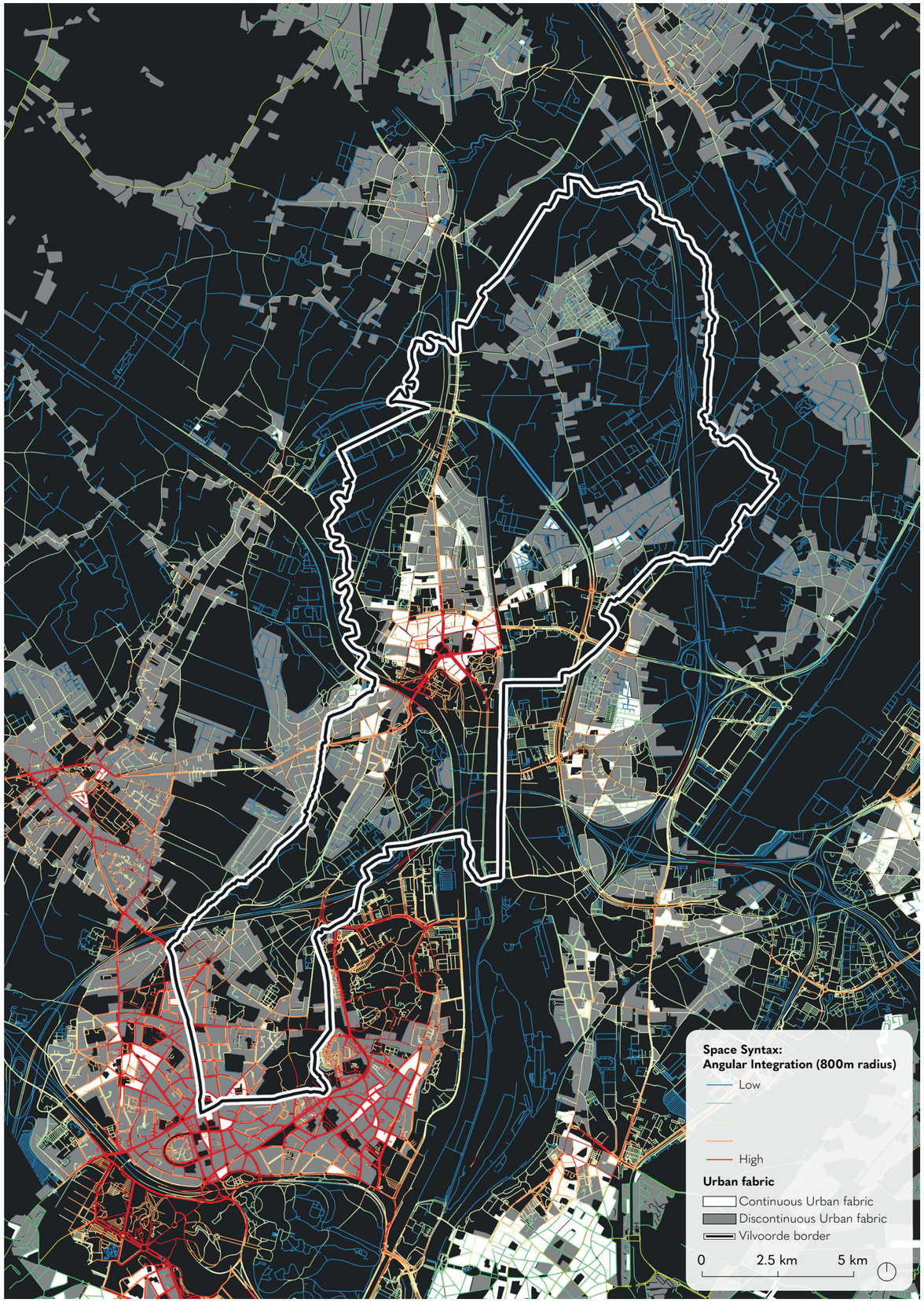


Figure 83 - Space syntax Angular integration 15km radius in & around Vilvoorde (own figure, 2026).

The analysis of sport infrastructure confirms the uneven distribution of social facilities across Vilvoorde. While several local sport nodes are present within the municipality, they are mainly concentrated around the central and western neighbourhoods, with fewer facilities in the more peripheral residential areas. This reinforces the previous observation that Vilvoorde does not lack social infrastructure entirely, but that its facilities are fragmented and not always well connected to the neighbourhoods that depend on them.

At the same time, the broader sport infrastructure network shows that Vilvoorde's provision is not only municipal but also metropolitan. Some important facilities are located just outside the administrative boundary, in Grimbergen, Machelen or Brussels, meaning that access to sport and recreation already operates across municipal borders. However, these nearby facilities do not automatically compensate for local shortages, especially when physical barriers, weak pedestrian and cycling connections, or limited public transport reduce their accessibility (Stad Vilvoorde, 2017).

This suggests that **future social infrastructure could be approached as a connected system rather than as isolated facilities.** The main challenge is therefore not only to add new sport and recreational spaces, but to connect existing and future facilities to neighbourhoods, mobility nodes and open landscapes. In this way, sport infrastructure can become part of a broader strategy of social integration, supporting both local daily life and Vilvoorde's role as a growing metropolitan hinge between Brussels and the Flemish periphery.

Social infrastructure:
Sport

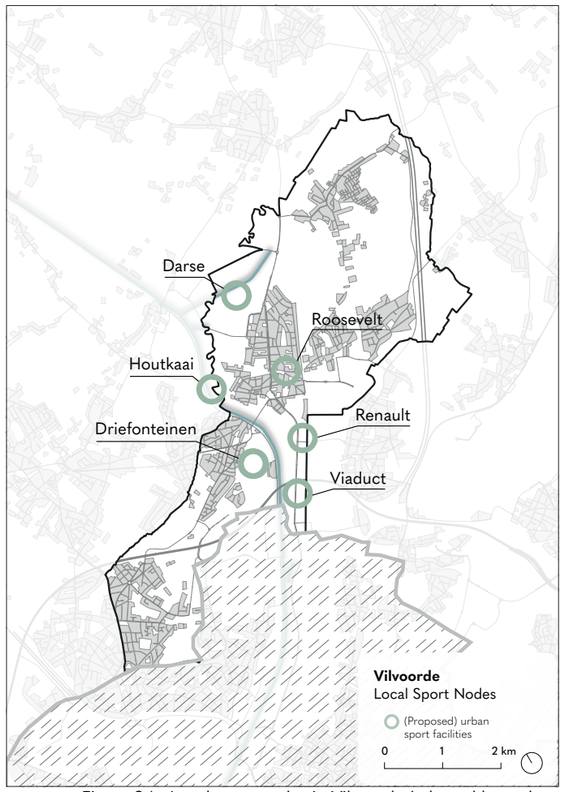


Figure 84 - Local sport nodes in Vilvoorde (adapted by author, retrieved from Stad Vilvoorde, 2017)

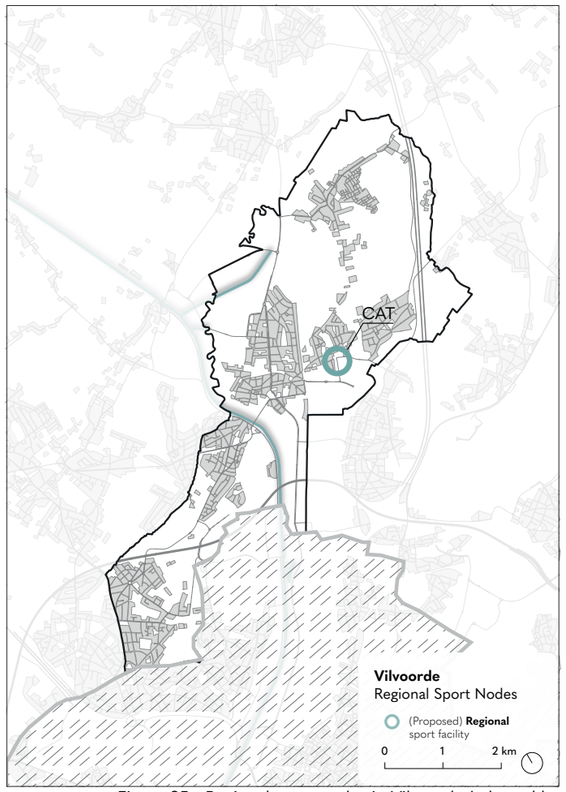


Figure 85 - Regional sport nodes in Vilvoorde (adapted by author, retrieved from Stad Vilvoorde, 2017)

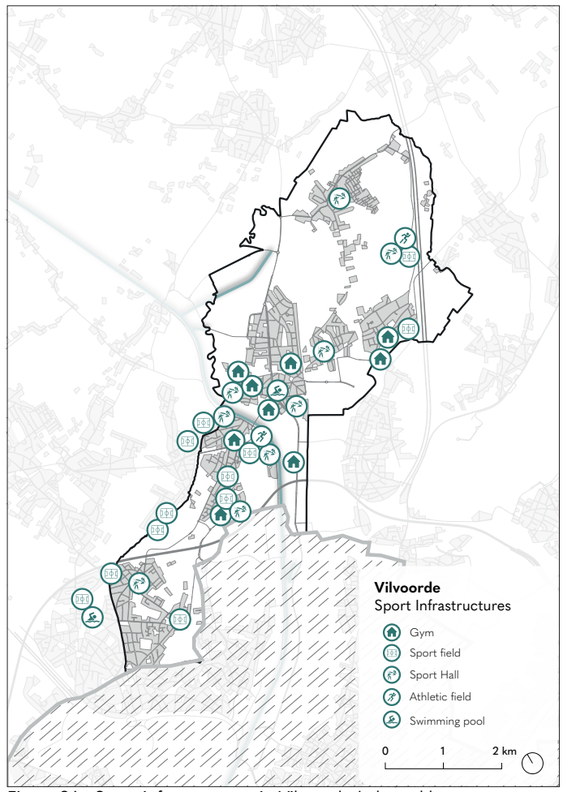


Figure 86 - Sport infrastructures in Vilvoorde (adapted by author, retrieved from Stad Vilvoorde, 2017)

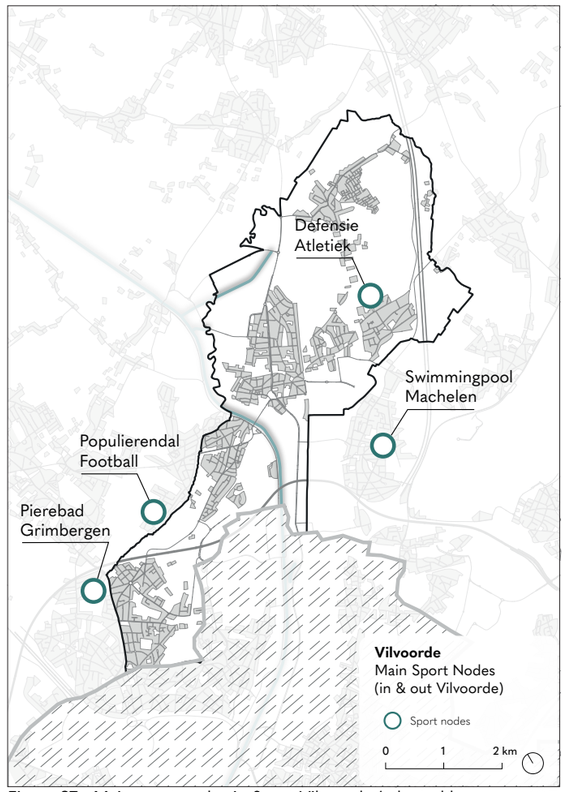


Figure 87 - Main sport nodes in & out Vilvoorde (adapted by author, retrieved from Stad Vilvoorde, 2017)

The analysis of educational infrastructure further reinforces the idea that Vilvoorde is undergoing strong metropolitan pressure. The municipality already functions as an important educational centre within the northern periphery of Brussels, attracting students not only from Vilvoorde itself but also from surrounding municipalities. Secondary schools such as Virgo Plus or Horteco therefore already operate beyond a purely local scale, reflecting Vilvoorde's growing metropolitan role.

At the same time, **both policy documents and informal interviews with regional planning actors point to an increasining shortage of educational capacity.** The strong demographic growth observed in Vilvoorde is generating additional pressure on kindergartens, primary schools and secondary education facilities, while the existing urban structure often leaves limited space for expansion. Rather than being isolated facilities, schools increasingly become strategic pieces of social infrastructure that structure daily mobility patterns, neighbourhood life and public space (Stad Vilvoorde, 2017).

The question is therefore not only quantitative, but also spatial. Future educational infrastructure should be integrated with public transport, cycling connections, open spaces and neighbourhood amenities. In this sense, schools and kindergartens can contribute to the creation of more connected and inclusive urban fragments, while simultaneously supporting the long-term metropolitan integration of Vilvoorde. The educational pressure visible in Vilvoorde also illustrates more broadly how the administrative border of Brussels does not correspond to the actual metropolitan dynamics of population growth and daily urban life.

Social infrastructure:
Kindergarten



Figure 88 - Kindergarten schools (Unsplash, 2026)

Social infrastructure:
Schools





Figure 89 - Vilvoorde High-schools (Stad Vilvoorde, 2017)

Cultural infrastructure adds another layer to Vilvoorde's social infrastructure. The GRSP (Vilvoorde's vision document) describes Vilvoorde as a city whose inhabitants are often regionally oriented for cultural activities, without needing to compete directly with Brussels. Its potential lies instead in its young, cosmopolitan population and in the possibility of using culture as a tool for local activation. Existing places such as «CC Bolwerk» and the «Kruitfabriek» already support this role, while temporary or hybrid cultural uses could further activate places such as the Darse, Steenkaai, Vierfonteinen or spaces under the viaduct. This suggests that **culture should not only be understood as a building-based facility, but as a flexible network of spaces for youth, experimentation, socio-cultural associations and temporary metropolitan programmes** (Stad Vilvoorde, 2017).

Social infrastructure:
Cultural



Figure 90 - Culture centre in Vilvoorde (own picture, 2026)

Elderly care reveals a different but equally important pressure. The GRSP notes that recent private investments in care facilities and assisted living are mostly concentrated in the city centre, which is logical from an accessibility perspective, but also raises questions of affordability. For Vilvoorde, **the issue is therefore not only the amount of elderly care infrastructure, but the type of care model being provided.** Alternative forms such as intergenerational housing, shared living or support for ageing at home become especially relevant in socially vulnerable neighbourhoods such as Houtem, where ageing and socio-economic fragility are expected to overlap. Elderly care should therefore be linked to housing renewal, neighbourhood services and everyday accessibility, rather than treated as an isolated institutional programme (Stad Vilvoorde, 2017).

Social infrastructure:
Elderly care





Figure 91 - Elderly care institutions (unspash, 2026)

Vilvoorde

Strengths

- Strategic metropolitan location
--> Direct interface between Brussels-Flemish Brabant
- Strong multimodal accessibility
--> Train station, bus network, proximity to airport and 'Ring' highway
--> Existing infrastructure already in place
- Canal as structuring backbone
--> Can connect local and metropolitan scales
- Dense and multifunctional urban fabric
--> One of the most «urban» conditions in the periphery
- Large post-industrial and redevelopment sites
--> 'Asiatpark' and similar areas = key transformation leverage
- Active planning/vision context
--> Ongoing initiatives (municipality): rich material
- Significant population base
--> Support services, centrality and future intensification

Weaknesses

- Clear spatial fragmentation
--> Ring highway, canal, infrastructure divide areas of the territory
- Car deppendency at all scales
--> Regional scale: Ring dominance, car-oriented infrastructure
--> Local scale: Road reliance in the municipality
- Underused rail infrastructure
--> Existing network not fully exploited
- Disconnection between neighbourhoods
--> Poor pedestrian + cycling continuity
--> «Enclaved» urban fragments
- Uneven/weak public space quality
--> Many undefined spaces
--> Lack of strong, active public nodes
- Industrial legacy and image challenges
--> Perceived as less attractive than greener suburbs
- Unclear hierarchy of centralities
--> Centre exists but competes with dispersed functions (Space Syntax analysis)

Opportunities

- Station area / CAT-Site as a metropolitan mixed-use node
--> High(er) density around Mobility Hub, Ideal for social infrastructure
--> Potential for becoming Secondary centre
- Watersite as a new canal-side urban district
--> Opportunity for active, social, urban life (mixed residential + public district)
- Scharbeeklei as urban boulevard (barrier --> connector)
--> Transform traffic corridot into multimodal urban axis
- Canal corridor as metropolitan slow mobility spine
--> Continuous cycling/pedestrian infrastructure
- Buda as (potential) hybrid productive district
--> Mix of: Housing/Culture/Productive economy
- Trawool valley as blue-green connector
--> East/West ecological corridor (with soft mobility)
- Shift towards multimodal + chain mobility system
--> Reduce car depencency & fragmentation

Threats

- Infrastructure as persistent barriers
--> Ring, rail corridors (majord roads) continue to divide urban area
- Lock-in of car-dependent mobility system
--> Reliance on road infrastructure at all scales, with auto-oriented developments
- Demographic growth outpacing social infrastructure
--> Mismatch between increased population and limited social infrastructure
- Socio-spatial inequalities between neighbourhoods
--> Unequal access to mobility, services & amenities
- External metropolitan pressures on local development
--> Large-scale projects (Ring, airport, logistics) driven outside Vilvoorde

Figure 92 - SWOT analysis of Vilvoorde (own figure, 2026)

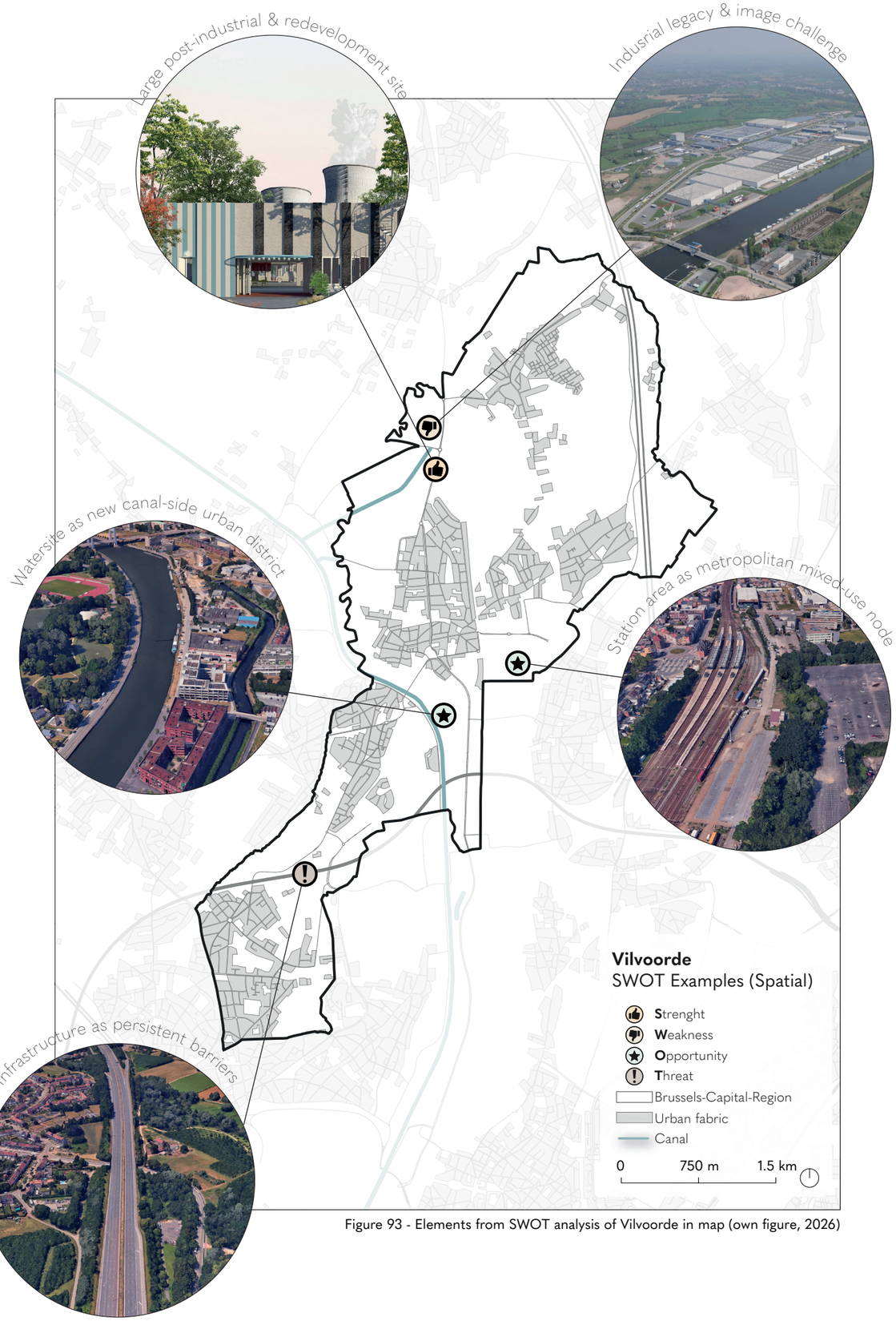


Figure 93 - Elements from SWOT analysis of Vilvoorde in map (own figure, 2026)

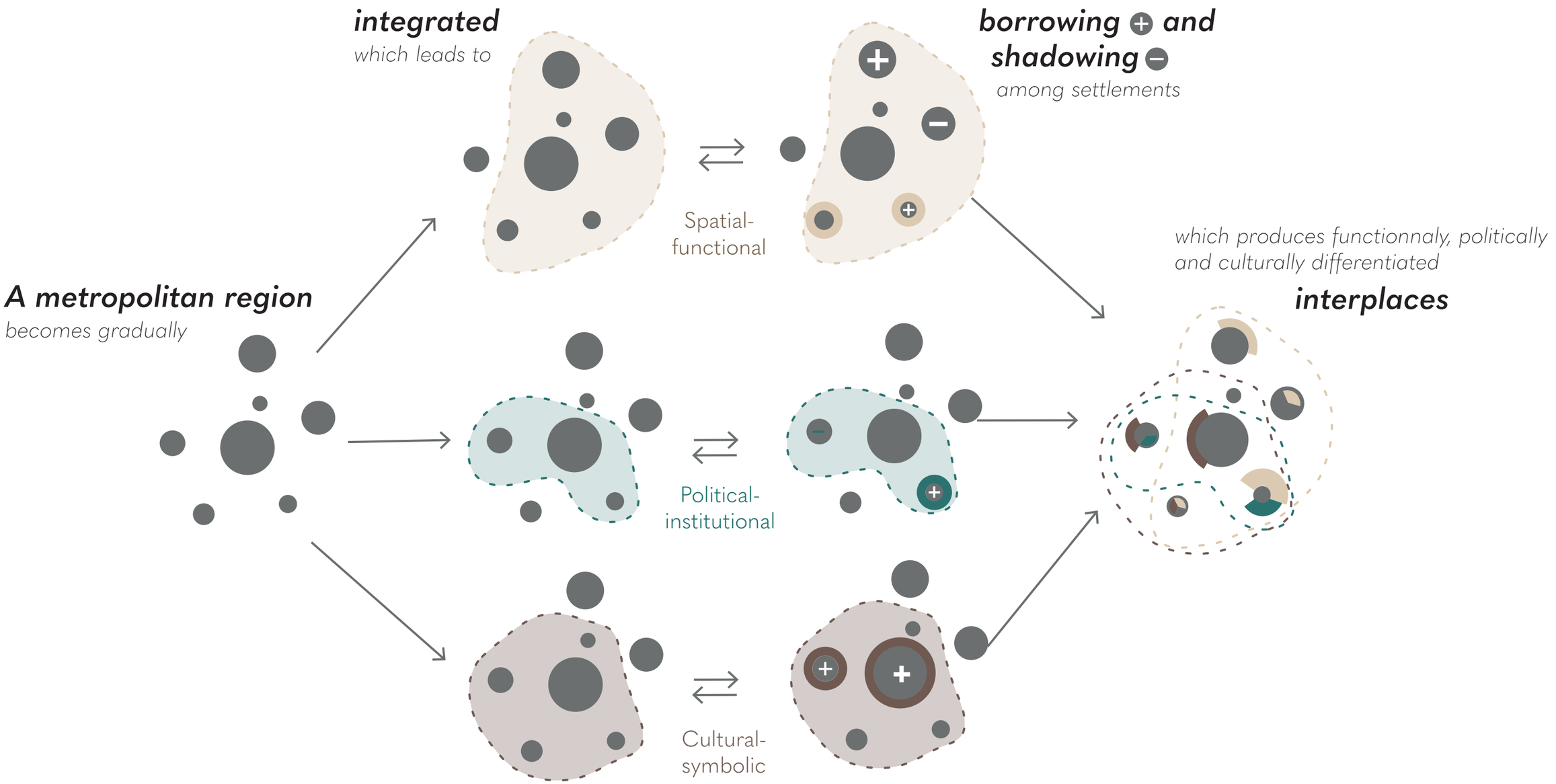


Figure 94 - The process of the integration of and differentiation among interplaces in a metropolitan region (adapted by author, retrieved from Demuynck et al. 2025)

Interplaces as a lens for the Brussels periphery

Demuynck et al. (2025) use the concept of interplaces to describe municipalities that are no longer simply suburbs, but not fully independent cities either. They are shaped by metropolitan integration while remaining differentiated from the core city: functionally, institutionally and culturally. In other words, they are places where Brussels' metropolitan dynamics become visible, but also contested.

For this project, the concept is useful because the Brussels periphery cannot be understood as a homogeneous belt around the capital. Each municipality relates to Brussels in a different way: some borrow economic or infrastructural centrality from the metropolis, while others are partly overshadowed by it. These processes do not happen equally across all dimensions. A municipality may be strongly connected through commuting and infrastructure, while remaining institutionally separated or culturally distinct.

In this Vilvoorde case, as well as the Tervuren and Sint-Genesius-Rode comparator municipalities (see chapter 8.2 and 8.3), the 3-by-3 framework highlighted by Demuynck et al. (2025) is used as an analytical tool. It examines municipalities through three dimensions of metropolitan integration: spatial-functional, political-institutional and cultural-symbolic. **Rather than assigning places to fixed categories, the framework reveals the diverse ways in which municipalities relate to Brussels and its metropolitan region.** It therefore helps explain why Vilvoorde, Tervuren and Sint-Genesius-Rode each occupy distinct positions within the Brussels periphery, reflecting different forms and intensities of metropolitan integration.

The concept of "interplaces" refers to localities situated between the traditional categories of suburb and city: places that are not fully independent urban centres, but also not simply residential suburbs. These localities become important because they absorb and shape metropolitan dynamics across three dimensions: ***spatial-functional integration, political-institutional integration and cultural-symbolic integration*** (Demuynck et al., 2025) .

In this framework (figure 95), Vilvoorde is positioned as a "metrotown", an intermediary category between the post-suburb and the shadowed city. Spatial-functionally, Vilvoorde is strongly linked to Brussels through commuting flows, infrastructure, employment and its historical industrial corridor, but it also retains its own economic role through logistics, media activities, productive zones and strategic transport connections. It is therefore neither only dependent on Brussels nor fully independent from it. Its role is hybrid: it borrows centrality from the Brussels metropolitan system while also being partly overshadowed by it.

This ambiguity is equally visible at the political-institutional level. Vilvoorde is part of the Flemish periphery and remains institutionally separated from Brussels, despite being deeply affected by Brussels' demographic, economic and infrastructural dynamics. Demuynck et al. (2025) describe this as a condition where cooperation with Brussels remains limited and selective, even though metropolitan challenges clearly exceed municipal and regional borders. This directly relates to the core argument of this project: **Vilvoorde's problems cannot be understood only at the municipal scale, because they are produced through a larger metropolitan system.** Culturally and symbolically, Vilvoorde also occupies an intermediate position. It has its own local history, industrial identity and Flemish institutional context, but it is increasingly perceived and used by some residents as part of the Brussels living environment. This creates a tension between local identity and metropolitan integration. Rather than reading this as a weakness, the metrotown concept helps frame Vilvoorde as a strategic hinge: a place where the contradictions of the Brussels periphery become visible, but also where new forms of spatial, social and institutional mediation can be tested.

Placing Vilvoorde in the centre of the 3x3 framework therefore supports the conclusion of the analysis of the municipality. At the metropolitan scale, Vilvoorde is not simply a suburb of Brussels, nor a fully autonomous secondary city. It is an interplace: a hybrid and transitional territory where spatial-functional integration, political-institutional fragmentation and cultural-symbolic ambiguity overlap. This makes Vilvoorde a particularly relevant case for testing how design and governance can move beyond the fixed logic of the regional border and instead work with the real metropolitan relations that already structure the Brussels periphery.

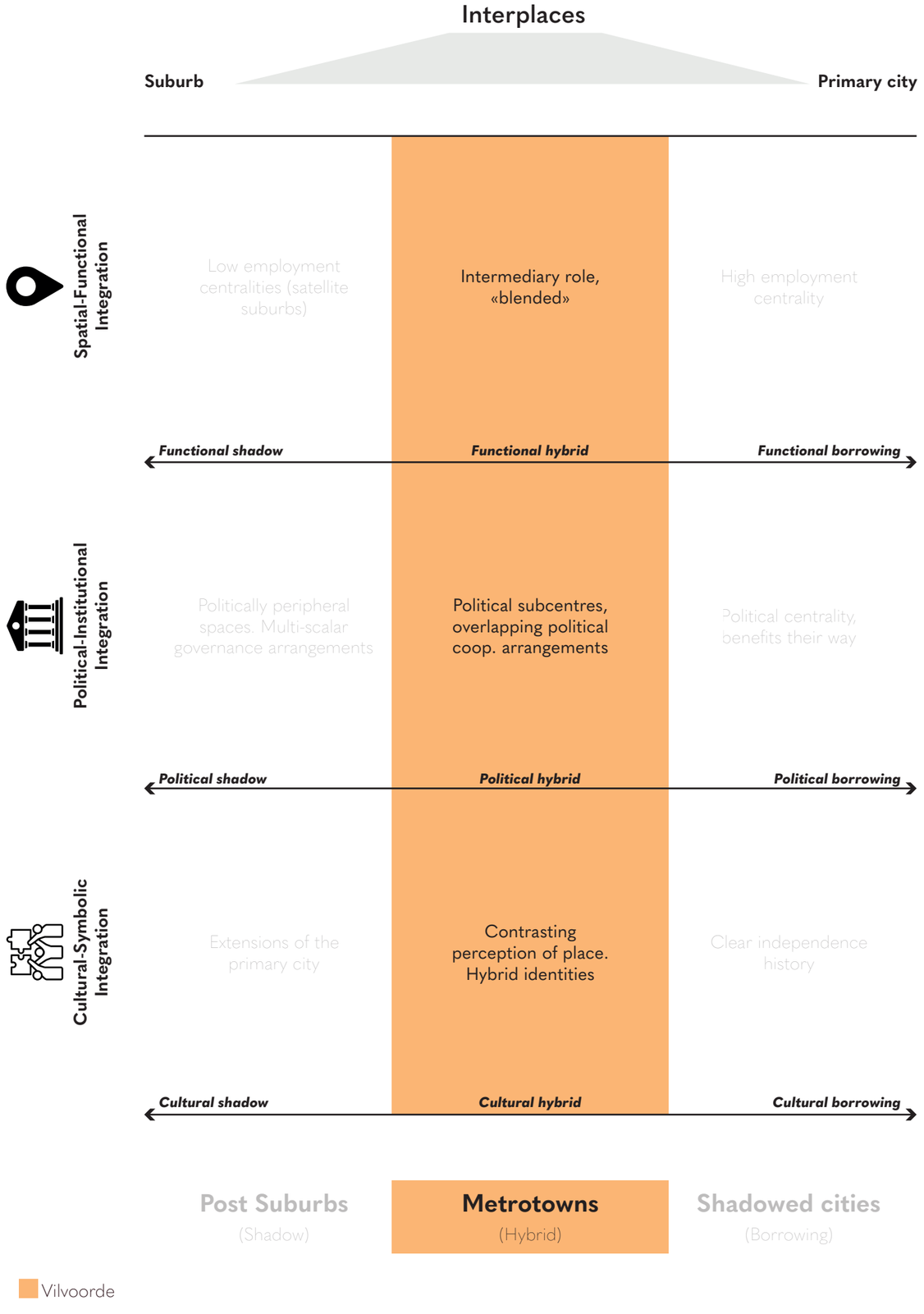


Figure 95 - 3-by-3 framework summarising the different possible characteristics of interplaces in metropolitan regions with focus on Vilvoorde (adapted by author, retrieved from Demuynck et al. 2025)

.2 Comparator municipality: Tervuren

Located on the south-eastern part of the 'Brussels metropolitan area', Tervuren represents a significantly different peripheral condition from Vilvoorde. While remaining strongly connected to Brussels through daily commuting flows and metropolitan mobility networks, the municipality is characterised by a predominantly residential urban structure embedded within a large landscape framework. The Sonian Forest, extensive open spaces and a series of dispersed local centres play a defining role in shaping its spatial identity and development trajectory. Rather than functioning as a major employment or infrastructural node, Tervuren is primarily associated with residential attractiveness, environmental quality and recreational landscapes (Provincie Vlaams-Brabant, 2022).

Tervuren is selected as a comparative municipality because it illustrates another expression of the Brussels periphery. Whereas Vilvoorde reflects the challenges and opportunities of a productive, infrastructure-oriented and rapidly transforming metropolitan edge, Tervuren embodies a more landscape-based suburban condition. Comparing these municipalities highlights the diversity of peripheral territories surrounding Brussels and demonstrates that metropolitan integration is experienced through different spatial realities and identities. This contrast allows the research to move beyond a single interpretation of the periphery and to examine how distinct territorial conditions relate to the broader Brussels metropolitan system (Brussels 2040, 2012; Provincie Vlaams-Brabant, 2022).

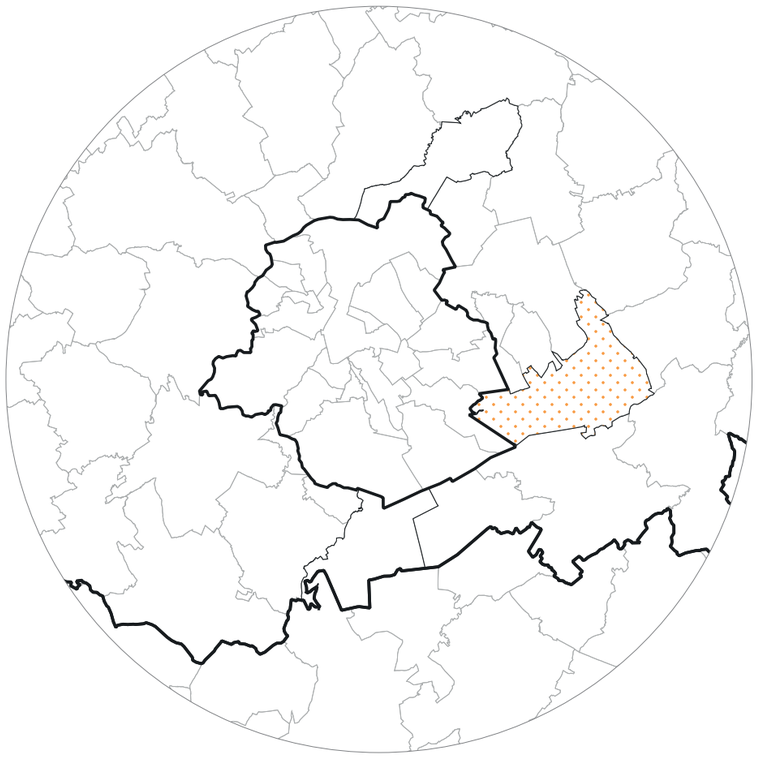


Figure 96 - Tervuren as comparator municipality (own figure, 2026)

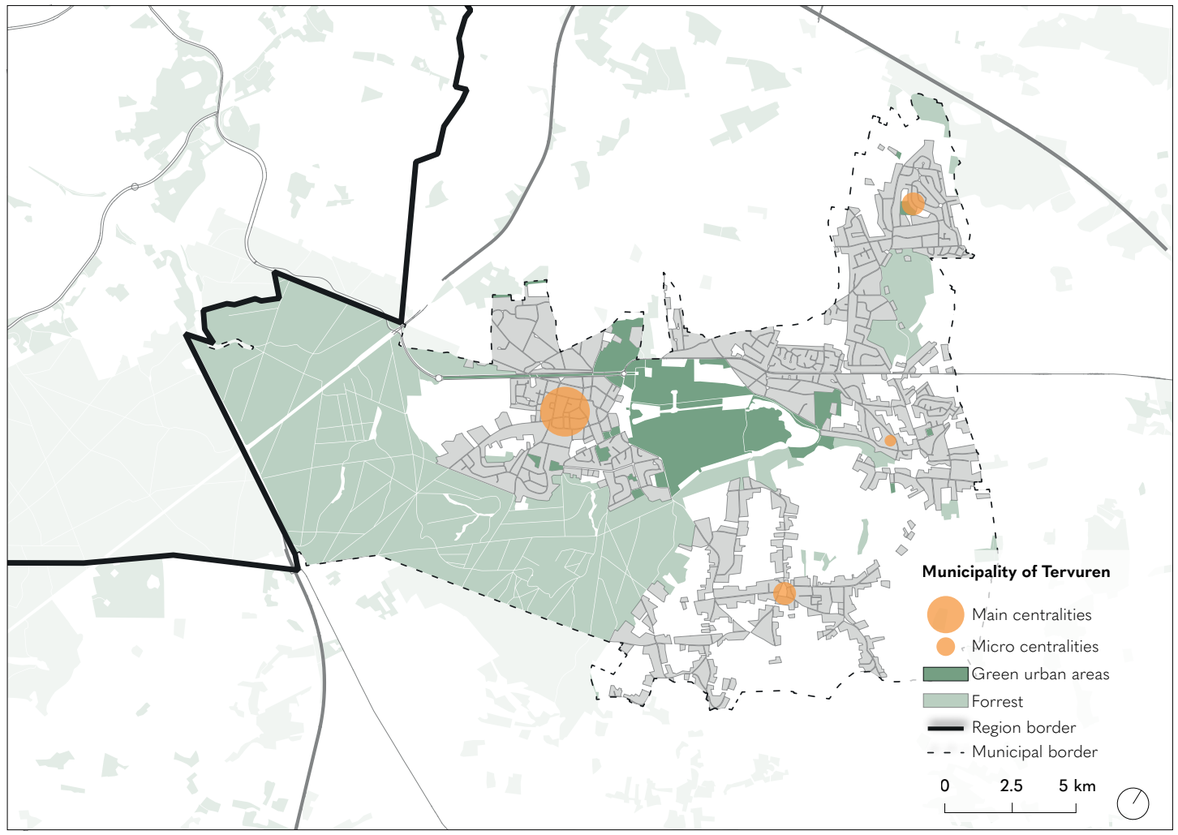


Figure 97 - Main characteristicsof Tervuren (own figure, 2026)



Figure 98 - Aging tramline from Brussels-east to Tervuren (Unsplash, 2023)


Figure 99 - Tervuren park, Belgium (Unsplash, 2020)


Figure 100 - Tervuren park, Belgium (Unsplash, 2020)


Figure 101 - African museum in Tervuren, Belgium (Unsplash, 2021)

Tervuren represents a markedly different peripheral condition from Vilvoorde. Rather than being shaped by industrial transformation, strategic infrastructure or metropolitan redevelopment pressures, the municipality is characterised by a predominantly residential structure embedded within a strong landscape framework. The Sonian Forest, open spaces and local centres continue to play a defining role in its spatial identity, making Tervuren an important example of a landscape-oriented municipality within the Brussels metropolitan region (Provincie Vlaams-Brabant, 2022).

This specific territorial condition is reflected in its position within the interplaces matrix. From a spatial-functional perspective, Tervuren can largely be understood as a functional shadow. Although strongly connected to Brussels through commuting and everyday mobility flows, it does not operate as a significant employment centre or metropolitan destination in its own right. Its role within the metropolitan system remains predominantly residential and recreational, resulting in a high degree of dependence on the capital for jobs, services and economic activity (Demuynck et al., 2025).

A similar reading emerges from the political-institutional dimension. Despite being deeply influenced by metropolitan dynamics, Tervuren remains institutionally separated from Brussels through the regional boundary. The municipality is therefore affected by processes occurring at the metropolitan scale without being embedded in a corresponding metropolitan governance structure. This position reflects the broader institutional fragmentation that characterises the Brussels metropolitan area, where functional interdependencies often extend beyond existing political frameworks (Brussels 2040, 2012; Van Wynsberghe et al., 2023).

Its position becomes more nuanced in the cultural-symbolic dimension. Unlike its predominantly shadowed functional and political roles, Tervuren occupies a more hybrid condition. The municipality possesses a strong local identity rooted in the Sonian Forest, Tervuren Park, the historic tram connection and the Africa Museum, yet these same elements contribute to a wider metropolitan image associated with Brussels' eastern green edge. Tervuren is therefore neither simply an extension of Brussels nor an entirely autonomous locality. Instead, it occupies an intermediate position where local identity and metropolitan belonging coexist and reinforce one another (Demuynck et al., 2025).

The resulting profile differs significantly from that of Vilvoorde and demonstrates how metropolitan integration can take multiple forms across the Flemish periphery. While some municipalities are integrated through infrastructure, employment and urban transformation, others are connected through landscape, residential attractiveness and symbolic relations. Tervuren therefore illustrates the value of approaching the Brussels periphery as a collection of differentiated territorial identities rather than as a single homogeneous suburban belt.

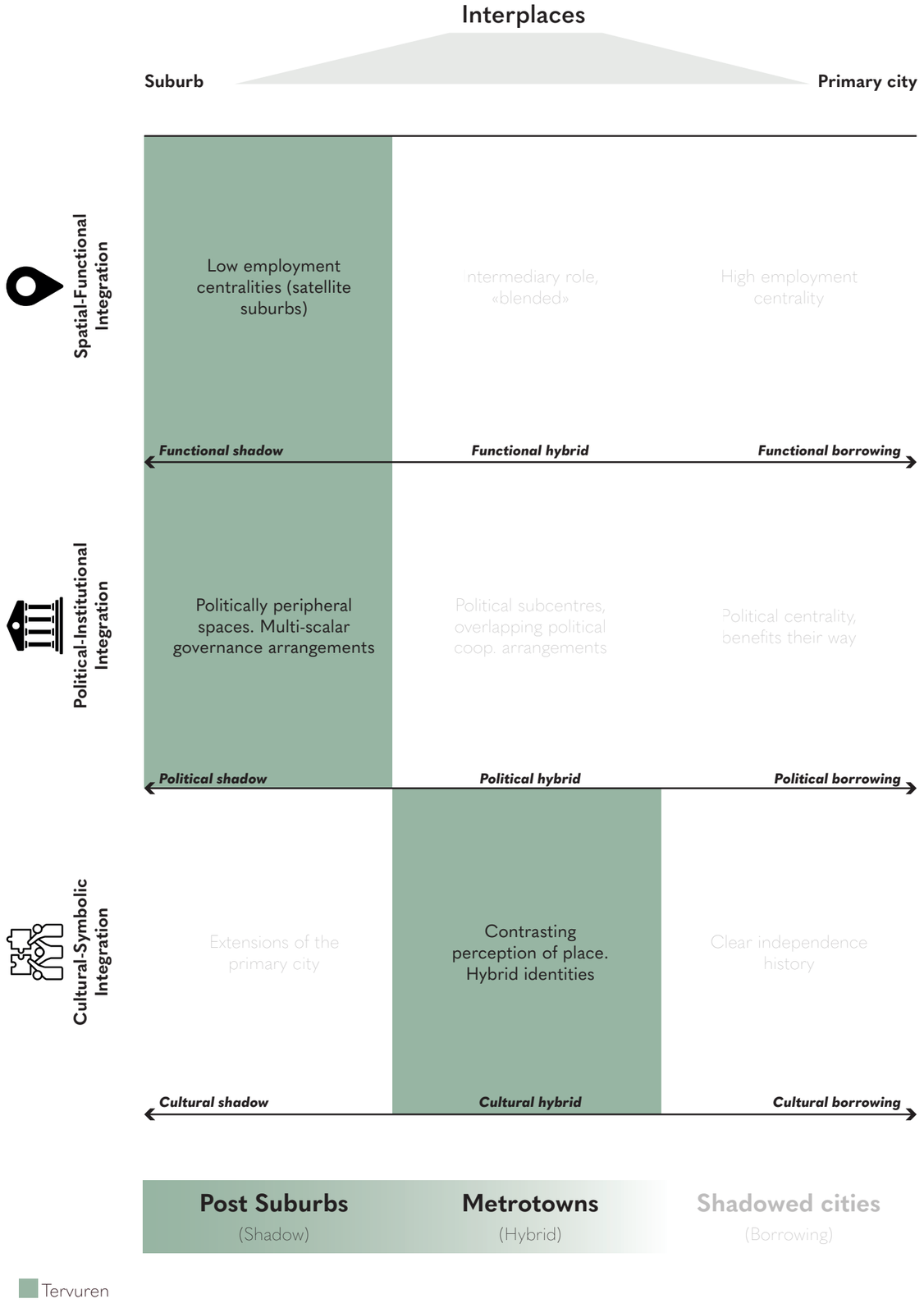


Figure 102 - 3-by-3 framework summarising the different possible characteristics of interplaces in metropolitan regions with focus on Tervuren (adapted by author, retrieved from Demuynck et al. 2025)

.3 Comparator municipality: Sint-Genesius-Rode

Located on the southern edge of the Brussels metropolitan area, Sint-Genesius-Rode (or Rhode-Saint-Genèse in french) represents a different peripheral condition from both Vilvoorde and Tervuren. The municipality is primarily residential, structured by low-density neighbourhoods, local centralities and more direct connections to the Brussels-Capital Region, rather than by productive landscapes or major metropolitan redevelopment zones. Its location along the regional boundary makes it a clear example of a municipality where everyday life is strongly oriented toward Brussels, while institutional belonging remains firmly embedded within the Flemish Region.

Sint-Genesius-Rode is selected as a comparative municipality because it makes the political and cultural dimensions of the Brussels periphery particularly visible. As one of the Flemish municipalities with language facilities for French-speakers, a «facility municipality», it occupies a specific position within the Belgian institutional landscape: territorially Flemish, but socially and administratively marked by the presence of a significant French-speaking population (Istaz, 2000). This makes the municipality an important case for understanding how proximity to Brussels does not only produce mobility and housing dynamics, but also linguistic, institutional and identity-related tensions. In contrast to Vilvoorde, which represents a productive and infrastructural metropolitan edge, and Tervuren, which reflects a green and landscape-oriented periphery, Sint-Genesius-Rode embodies a residential and border-based form of peripherality. Its relevance lies in showing how the Brussels periphery is not a homogeneous suburban belt, but a differentiated territory where spatial proximity, social orientation and institutional separation overlap in different ways (De Maesschalck et al., 2015; Brussels 2040, 2012).



Figure 103 - Tervuren as comparator municipality (own figure, 2026)

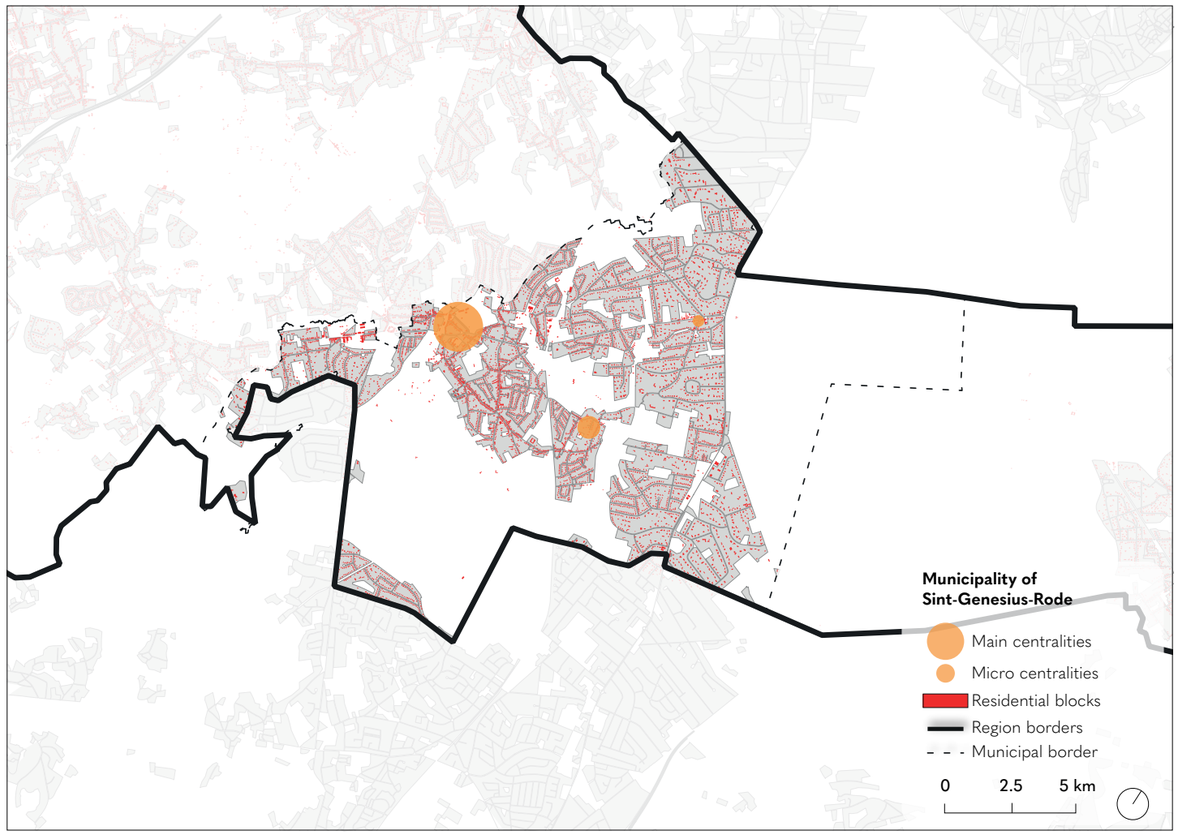


Figure 104 - Main characteristicsof Tervuren (own figure, 2026)



Figure 105 - Sint-Genesius-Rode centre areal view, Belgium (Van Hoof, 2025)



Figure 106 - Train station of Sint-Genesius-Rode, Belgium (Vanhamme & Vierendeels, 2024)



Figure 107 - Old commercial site & parking in Sint-Genesius Rode, Belgium (Own picture, 2026)



Figure 108 - Residential area, Sint-Genesius-Rode, Belgium (Google Earth, 2026)

Sint-Genesius-Rode occupies a specific position within the interplaces matrix because its metropolitan integration is less defined by economic centrality than by residential dependence, institutional ambiguity and cultural hybridity. Spatial-functionally, the municipality can largely be understood as a functional shadow. It is strongly connected to Brussels through commuting, education and everyday mobility, but it does not operate as a significant employment centre or autonomous urban node. The train station (figure 106) strengthens this connection with the capital, but primarily as a gateway to Brussels rather than as a driver of strong local centrality. This hub of mobility is, in fact, far too underutilized given how frequently passengers use it. As shown in Figure 14 (Chapter 2), more than 1,500 people use this station daily, which is significant for a station on the outskirts of Brussels.

The political-institutional dimension is more distinctive. Unlike Tervuren, Sint-Genesius-Rode cannot be read only as a peripheral Flemish municipality separated from Brussels by the regional boundary. Its status as a municipality with language facilities places it in a more hybrid position. It remains part of the Flemish Region, while the presence of a significant French-speaking population creates administrative and political arrangements that reflect the influence of Brussels beyond its formal borders. This makes Sint-Genesius-Rode an example of how the regional boundary functions not only as a spatial limit, but also as a negotiated institutional interface (Istaz, 2000; Demuynck et al., 2025). Culturally and symbolically, Sint-Genesius-Rode also occupies a hybrid condition. The municipality combines a suburban Flemish residential identity with strong social and linguistic ties to Brussels. For many residents, everyday practices, schooling, work, language use and social networks are oriented toward the capital, while the municipality remains embedded in a Flemish territorial and political framework. This produces a form of metropolitan belonging that is neither fully Brussels-based nor fully detached from Brussels. The municipality therefore makes visible the coexistence of proximity and separation that characterises the Brussels periphery.

Compared with Vilvoorde and Tervuren, Sint-Genesius-Rode reveals a third peripheral identity. Vilvoorde shows the productive and infrastructural edge, Tervuren the landscape-oriented edge, and Sint-Genesius-Rode the linguistic and institutional edge. Its position in the matrix demonstrates that metropolitan integration does not always appear through density, employment or major transformation sites. It can also emerge through contested belonging, residential mobility and the everyday negotiation of cultural and institutional boundaries within the metropolitan region (De Maesschalck et al., 2015; Demuynck et al., 2025).

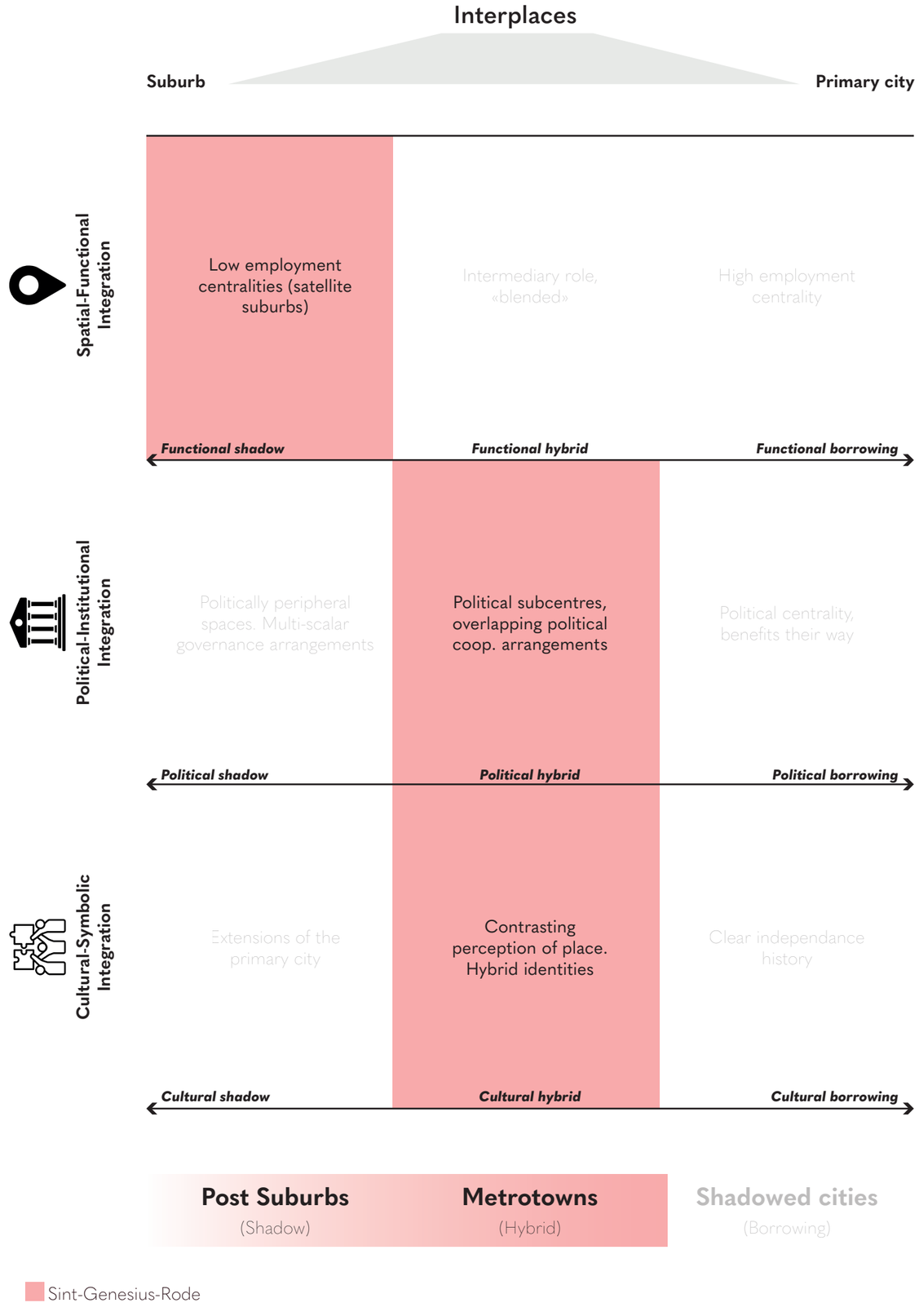


Figure 109 - 3-by-3 framework summarising the different possible characteristics of interplaces in metropolitan regions with focus on Sint-Genesius-Rode (adapted by author, retrieved from Demuynck et al. 2025)

09

GOVERNANCE STRUCTURE

Existing governance structures reveal both the limitations of current metropolitan coordination and the opportunities for future cooperation.

.1 Current situation: Fragmented metropolitan governance 130
.2 Current planning instruments 136
.3 Existing cooperations 138

.1 Current Situation:
Fragmented metropolitan governance



Brussels-Capital Region (BCR):
1.2 Million people

Agglomeration:
1.5 Million people

Functional Urban Area (FUA)
2.7 Million people

Figure 110 - Population within Functional Urban Area Brussels (own figure, 2026)

The growing gap between the administrative boundaries of Brussels and its metropolitan influence is a real phenomenon. While the Brussels-Capital Region (BCR) has a population of approximately 1.2 million across its 19 municipalities, the urban agglomeration already extends beyond these boundaries and is home to approximately 1.5 million people. On an even larger scale, the Functional Urban Area (FUA) encompasses nearly 2.7 million residents spread across 137 municipalities throughout Belgium's three Regions. This analysis underscores that Brussels' urban, economic, and territorial dynamics extend far beyond its institutional boundaries, reflecting a much broader and more interconnected metropolitan reality (ESPON, 2021).

Today, Brussels functions as a metropolis that is deeply integrated with its surrounding regions. Every day, nearly 380,000 commuters travel to the city from the Flemish and Walloon peripheries, creating strong interdependencies in terms of mobility, housing, the economy, and social dynamics. These flows contribute to several major challenges at the metropolitan level, such as congestion, pollution, commuting pressure, and socio-spatial inequalities. Yet, despite this functional reality, there is no true governance structure corresponding to the scale of the Brussels FUA. As ESPON points out, a significant portion of these issues therefore extends beyond the scope of the Brussels-Capital Region (BCR) and requires an approach designed at the metropolitan level (ESPON, 2021).

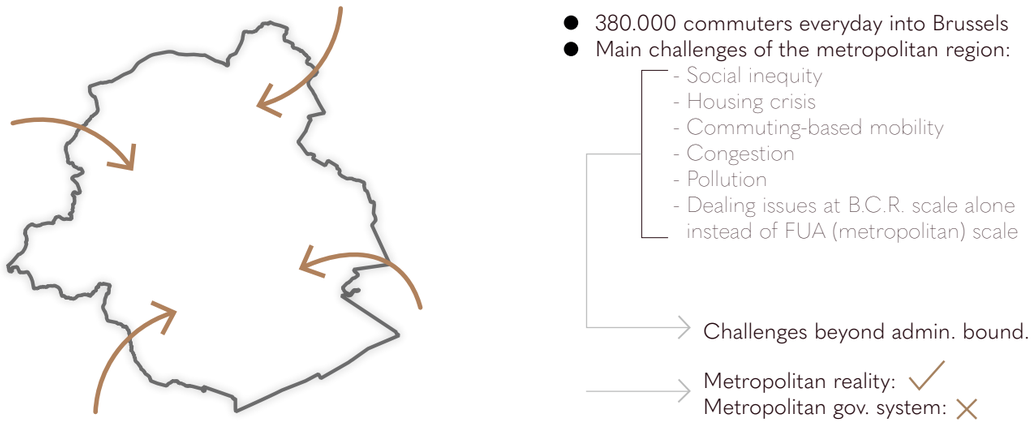
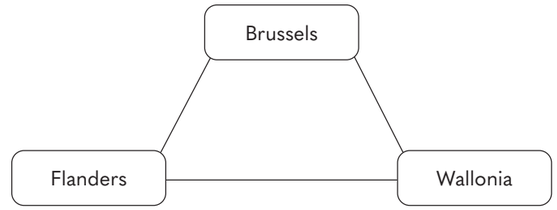
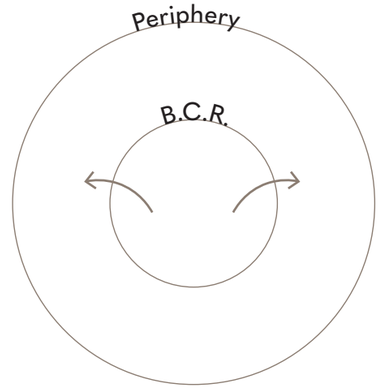


Figure 111 - Conceptual - Brussels as attractive core (own figure, 2026)

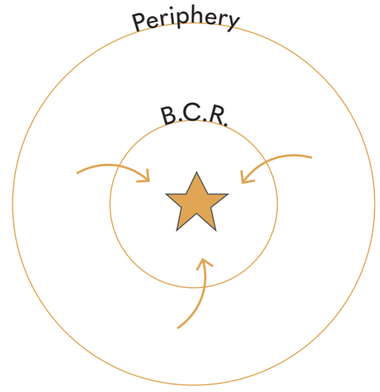
Brussels functions as a single metropolitan system, yet remains institutionally fragmented. Strong competences related to mobility, spatial planning and territorial development are divided between Brussels, Flanders and Wallonia, while no effective metropolitan authority exists at the scale of the Functional Urban Area. Although the "Metropolitan Community of Brussels" was introduced during the 2011 State Reform as a platform for transregional cooperation, it has never been implemented. At the same time, the metropolitan reality of Brussels has progressively expanded far beyond the administrative borders of the Brussels-Capital Region (ESPON, 2021).



1) Suburbanisation has extended the "real Brussels" beyond institutional borders. Since the 1950s, residential migration towards the Flemish and Walloon periphery progressively expanded the social and demographic influence of Brussels outside the BCR, reinforcing metropolitan interdependencies and political tensions (ESPON, 2021).



2) Brussels functions as a metropolitan labour and mobility hub. More than half of the labour force working in Brussels lives outside the BCR, illustrating how everyday commuting flows strongly connect the capital to its surrounding territories. Mobility systems such as the RER/GEN or Brupass XL already operate at this wider metropolitan scale (ESPON, 2021).



3) Economic activities have progressively suburbanised. Since the 1960s, industries, logistics and later service economies have increasingly relocated towards the metropolitan periphery, contributing to a more polycentric urban structure around Brussels .

These dynamics reveal a growing mismatch between the institutional boundaries of the BCR and the reality of the Brussels metropolitan region, where mobility, economy and urbanisation now operate across regional borders.

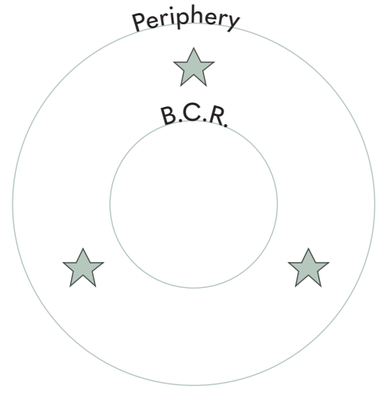


Figure 112 - Conceptual - BCR & periphery dynamics (own figure, 2026)

The governance of the Brussels metropolitan area is structured through several institutional layers that do not correspond to the functional scale of the metropolis. Belgium's federal system is based on the coexistence of the federal state, the regions and the communities, which are legally equal and exercise their competences without a strict hierarchical relationship (Istaz, 2000). As a result, metropolitan issues around Brussels are not governed through one integrated authority, but through a fragmented combination of territorial governments, community institutions and sectoral policy actors.

This fragmentation is particularly visible in the relation between Brussels and the Flemish periphery. Territorial competences such as spatial planning, mobility, housing, public works and economic development belong mainly to the regions, while cultural, linguistic, educational and social matters are linked to the communities (Istaz, 2000). **The Brussels metropolitan area therefore cuts across several systems at once: regional territories, community responsibilities, provincial structures, municipal competences and everyday metropolitan flows.** The diagram illustrates this mismatch by placing the "Brussels Metropolitan Area" not as a formal institution, but as an interface between these overlapping governance logics.

In practice, cooperation often emerges thematically rather than through a fixed metropolitan government. Mobility, spatial planning and socio-economic questions are addressed by different actors, such as Brussels regional institutions, Flemish authorities, the Province of Vlaams-Brabant, public transport operators and community-based institutions. Although a Metropolitan Community of Brussels was foreseen by the 2011 State Reform, it has never been implemented and would in any case have had no binding authority (ESPON, 2021). The metropolitan scale therefore exists strongly as a functional reality, but only weakly as a political and institutional framework.



Figure 113 - Region & communities, governance and main thematics within Brussels metropolitan area (own figure, 2026)

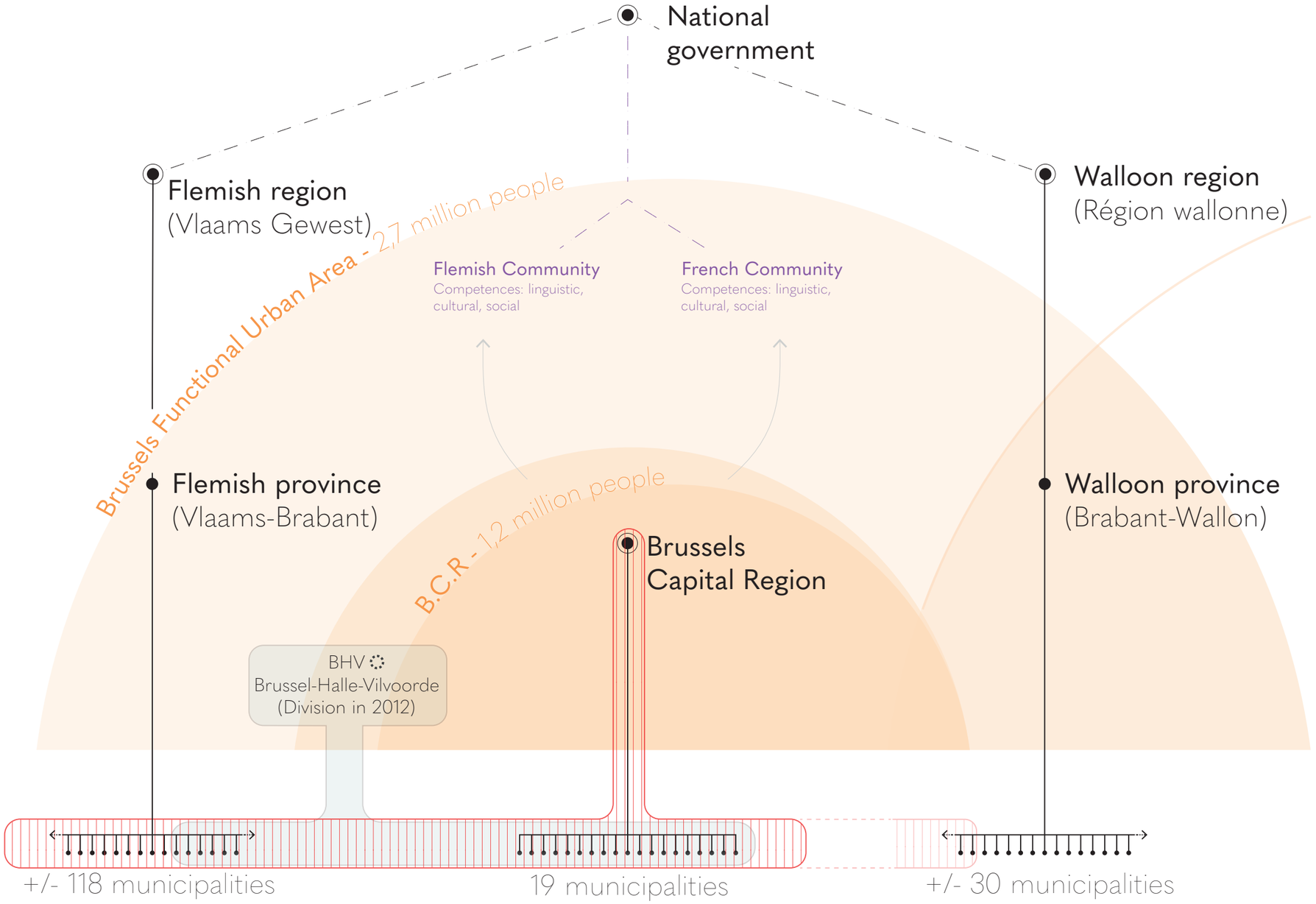


Figure 114 - Main entities and governmental impacts in Brussels metropolitan area, within Belgian system (own figure, 2026, based on Vereniging Deltametropool, 2025)

This diagram (figure 114) situates the Brussels metropolitan area within the layered Belgian governance system, showing how metropolitan reality cuts across institutional structures rather than coinciding with them. The Brussels-Capital Region forms a clearly defined political entity of 19 municipalities, but its functional urban area extends across Flemish Brabant and Walloon Brabant. As a result, the metropolitan scale appears as a spatial reality without a corresponding formal government.

The former Brussels-Halle-Vilvoorde district illustrates this tension particularly well. Before its division in 2012, BHV linked Brussels with the surrounding Flemish periphery within one electoral arrangement. Its split reinforced the separation between Brussels and Halle-Vilvoorde, while the functional relations between both territories continued to intensify. Today, Halle-Vilvoorde remains an important reference for understanding the Flemish periphery: not as a formal metropolitan authority, but as a territorial frame where linguistic, political and spatial tensions around Brussels become visible.

The illustration therefore highlights a double mismatch. **On the one hand, planning power remains distributed across Regions, provinces and municipalities. On the other hand, community competences related to language, culture and social matters overlap with territorial governance, making Brussels' metropolitan condition not only spatial, but also institutional and cultural.** This helps explain why mobility, housing, education and social integration cannot be addressed only within the borders of the Brussels-Capital Region.

Rather than showing a missing layer that could simply be added, the diagram reveals a governance field in which metropolitan coordination must operate between existing institutions. In this sense, the Brussels metropolitan area resembles the broader European condition described by Vereniging Deltametropool: metropolitan regions often emerge through functional dependencies, while formal governance remains tied to older administrative scales. The challenge is therefore not only to recognise the metropolitan scale, but to create forms of coordination capable of working across this institutional fragmentation (Vereniging Deltametropool, 2025; ESPON, 2021).

.2 Current planning instruments

Level	Entity	Instrument	Type	Role / Content
Regional	B.C.R.	Plan Régional de Développement Durable/ PRDD	Strategy / vision	Territorial development - Metropolitan mobility & polycentricity - Statutory, non-binding (ESPON, 2021)
Regional	Flanders	"Beleidsplan Ruimte Vlaanderen" / BRV	Strategy / vision	Flemish spatial framework - Similar role to PRDD - Statutory, non-binding (ESPON, 2021)
Regional	Wallonia	Schéma de Développement du Territoire / SDT	Strategy / vision	Walloon spatial framework - Similar role to PRDD - Statutory, non-binding (ESPON, 2021)
Interregional	3 regions	Forum on Territorial Development	Coordination platform	Interregional consultation - Planning information exchange - Common studies (ESPON, 2021)
Interregional	BCR + Flanders + Vlaams Brabant	"T.OP Noordrand"	Territorial development programme	Cross-border planning - Brussels northern fringe - Project-based cooperation (ESPON, 2021)
Metropolitan/ Mobility	Federal + 3 regions + operators	RER / GEN Brussels	Mobility infrastructure	One ticket, 4 operators - 11.5 km around BCR - Connects Brussels + suburbs (ESPON, 2021)
Metropolitan/ Mobility	STIB/MIVB, SNCB/ NMBS, De Lijn, TEC	Brupass XL	Ticketing / mobility integration	Suburban rail network - Brussels-periphery commuting - Multi-actor implementation (ESPON, 2021)
Provincial	Vlaams-Brabant	"Beleidsplan Ruimte Vlaams-Brabant"	Provincial strategy	Regional coherence - Mobility corridors/open space - Bridges Flemish-municipal levels (Provincie Vlaams-Brabant, 2022)
Municipal	Flemish municipalities	"Gemeentelijk Beleidsplan Ruimte"	Local spatial policy plan	Municipal long-term vision - Can align or justify deviations - Replaces structure planning logic (Provincie Vlaams-Brabant, 2022)
Municipal	Vilvoorde	"Globaal Ruimtelijk Strategisch Plan Vilvoorde" / GRSP	Local strategic plan	Long-term spatial vision - Strategic areas / neighbourhoods / landscapes - Useful for Vilvoorde++ zoom (Stad Vilvoorde, 2017)
Regulatory	Flanders / Province / Municipality	"Ruimtelijk Uitvoeringsplan" / RUP	Binding land-use plan	Translates strategy into zoning - Defines land use/prescriptions - Implementation tool (Departement Omgeving - Vlaanderen, n.d.-b)
Project / operational	Flanders	"Complexe Projecten"	Integrated project procedure	Large territorial projects - Combines planning + participation - Useful for infrastructure interfaces (Departement Omgeving - Vlaanderen, n.d.-a)

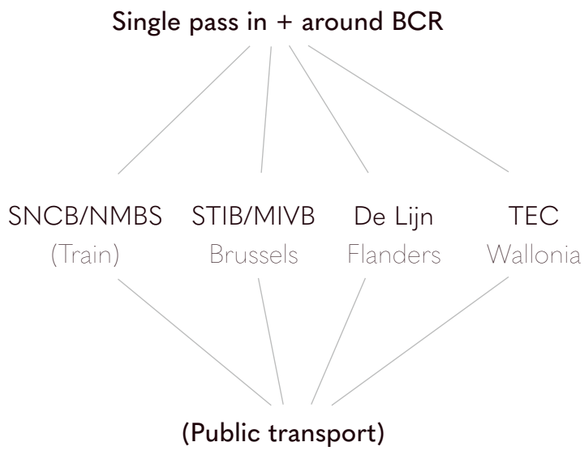
Figure 115 - Table of current planning instruments (own figure, 2026)

.3 Existing cooperations

Despite the absence of a formal metropolitan authority, several forms of cooperation already exist between Brussels, Flanders and Wallonia. These collaborations generally emerge around concrete shared challenges such as mobility, employment, economic development or territorial planning. Most of them rely on soft governance, interregional agreements or project-based initiatives rather than binding metropolitan institutions. Together, they reveal how the Brussels metropolitan area increasingly functions as an interconnected urban system beyond its administrative borders, even if governance structures remain fragmented and sector-specific. (ESPON, 2021)

Mobility:

Metropolitan mobility is one of the clearest fields of cooperation, because daily commuting crosses the Brussels regional border at a large scale. The RER/GEN and Brupass XL link SNCB/NMBS, STIB/MIVB, De Lijn and TEC into a shared metropolitan mobility system, even without a formal metropolitan authority. These tools help make the Brussels FUA legible as one connected urban region rather than separate administrative territories (ESPON, 2021).



Employment:

Brussels' labour market already functions at metropolitan scale, with large daily commuter flows crossing the regional borders between Brussels, Flanders and Wallonia. ESPON identifies inter-regional worker mobility as one of the strongest existing forms of metropolitan cooperation, especially through transport and employment linkages. This reflects a broader European condition in which mobile workers increasingly operate across administrative boundaries, requiring stronger coordination between mobility systems, labour markets and governance structures. The ETUC (European Trade Union Confederation) further highlights how cross-border workers have become essential to metropolitan economies, while remaining dependent on coordinated transport, social and labour frameworks across regions. (ESPON, 2021; European Trade Union Confederation, 2021)

CONFEDERATION SYNDICAT EUROPEAEN TRADE UNION

Figure 116 - ETUC Logo (Wikipedia contributors, 2026)

Spatial planning:

Spatial planning cooperation exists mainly through soft, project-based initiatives. The most relevant example is "T.OP Noordrand", where the Flemish Government, perspective.brussels, the Province of Vlaams-Brabant and OVAM work together on the northern fringe of Brussels, including Vilvoorde, Machelen, Zaventem and Grimbergen. The project is important because it translates cross-border planning into concrete "building sites" rather than creating a new metropolitan institution. (ESPON, 2021; Regio Vlaanderen et al., n.d.).

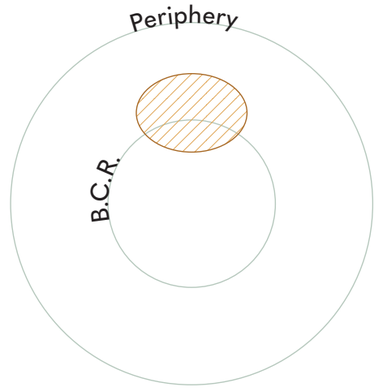


Figure 117 - Conceptual - Project collaboration BCR & Periphery (own figure, 2026)

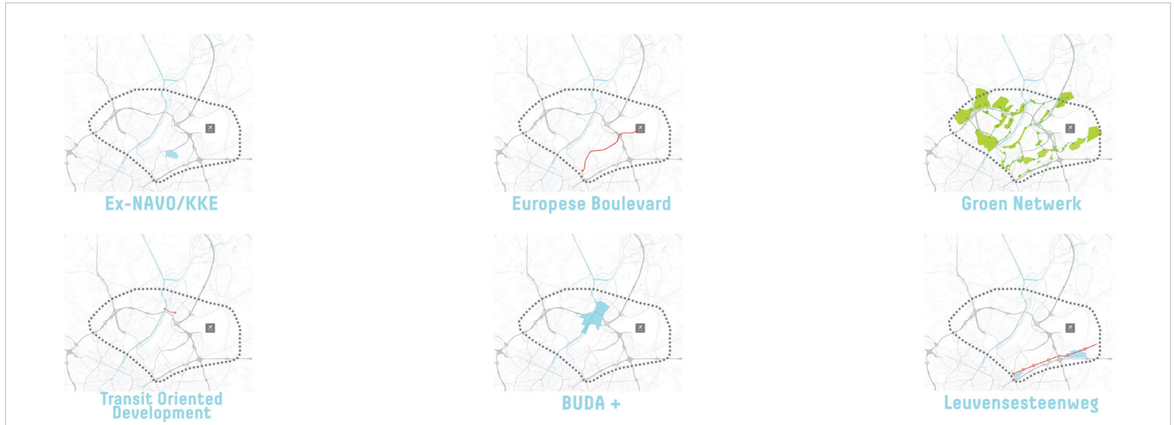


Figure 118 - T.OP Noordrand project (Regio Vlaanderen, Perspective.brussels, et al., n.d.)

Economy / business

Economic cooperation also emerges through networks of non-governmental and interregional actors. Initiatives such as «Business Route 2018 for Metropolitan Brussels» brought together organisations from Brussels, Flanders and Wallonia to strengthen the economic attractiveness and international positioning of the metropolitan area beyond institutional and linguistic boundaries. Rather than relying on a formal metropolitan authority, these collaborations demonstrate how shared economic interests can foster metropolitan integration through flexible partnerships and common strategic agendas. (Van Innis et al., 2018)

10

PATTERNS

Recurring territorial challenges are translated into a pattern language that bridges analysis, governance and spatial design.

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.3 Patterns - Connectivity 146
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.1 Pattern language introduction

The pattern language is introduced as a tool to translate the research into a structured set of intervention principles. The patterns provide a flexible vocabulary through which spatial, infrastructural and institutional actions can be combined, tested and adapted to different contexts within the Brussels periphery. This is particularly relevant in a fragmented metropolitan condition, where mobility systems, administrative borders, local centres, social infrastructures and governance structures overlap but are rarely addressed through one coherent framework.

Within the research-by-design approach, the patterns operate as an intermediate step between analysis and projection. They condense the main findings of the research into visual and verbal principles that can be reused across scales. Each pattern therefore works as an hypothesis: it identifies a recurring condition, proposes a possible direction of intervention, and makes this intervention readable through a diagram, a short description and a set of attributes. The purpose is not to prescribe a final solution, but to create a tool for comparison, discussion and design exploration.

The cards are organised into four main themes. Connectivity refers to mobility, transport systems and the physical links between Brussels and its periphery. Centrality focuses on centres, micro-centres, services and shared facilities. Borders addresses edges, limits and transition zones, where territorial, infrastructural or functional discontinuities become visible. Cooperation refers to governance, participation and policy-oriented mechanisms, while also supporting the implementation of spatial strategies. Each card is numbered within its own theme, allowing the patterns to be read both individually and as part of a wider family.

Each pattern is further described through several attributes. The stakeholder type identifies which actors are involved, ranging from institutions to collectives and users. The intervention type clarifies whether the pattern is mainly strategic, design-based, policy-oriented, or a combination of these. The situation indicates the spatial condition addressed by the intervention: a node, a corridor, a fabric or an edge. The scale situates the pattern between neighbourhood, municipality, Brussels periphery and Brussels agglomeration, while recognising that interventions at one scale can influence dynamics at another.

The lower part of each card introduces the values guiding the project: adaptability, polycentrality, reciprocity, resilience and cohesion. These values are not used as fixed performance indicators, but as a way to compare the emphasis of each pattern. Some patterns mainly strengthen spatial cohesion, others support polycentric development, while others focus more on reciprocity between actors and territories. The approach symbol adds another layer by positioning each pattern between bottom-up and top-down modes of action. This is important because metropolitan integration cannot rely only on institutional strategies from above, nor only on local initiatives from below.

Finally, the "connected to" section shows that the patterns are not isolated interventions. They form a language precisely because they can be combined. A mobility spine can support a station core; a shared social infrastructure can require cross-border investment; a border transition zone can depend on both design interventions and soft governance structures. In the following chapters (11 and 12), these combinations will be used to structure both the institutional shift and the spatial strategies. The pattern language therefore becomes a bridge between the analytical part of the thesis and the projective phase, helping to move from understanding the Brussels periphery as a fragmented metropolitan condition towards testing possible forms of integration.

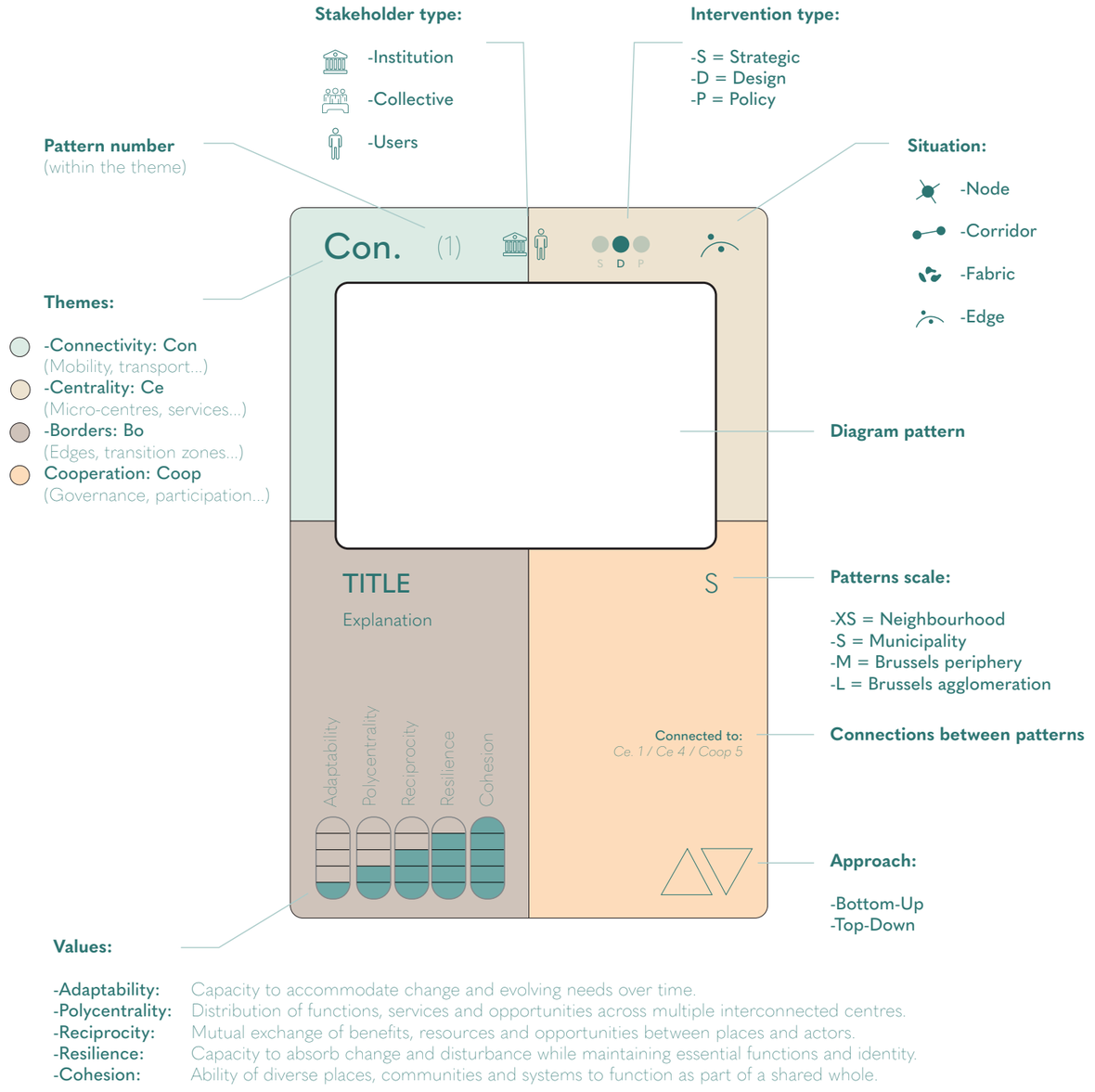

Figure 119 - Pattern language: Card introduction (own figure, 2026)

.2 Bottom-up, Top-down approaches

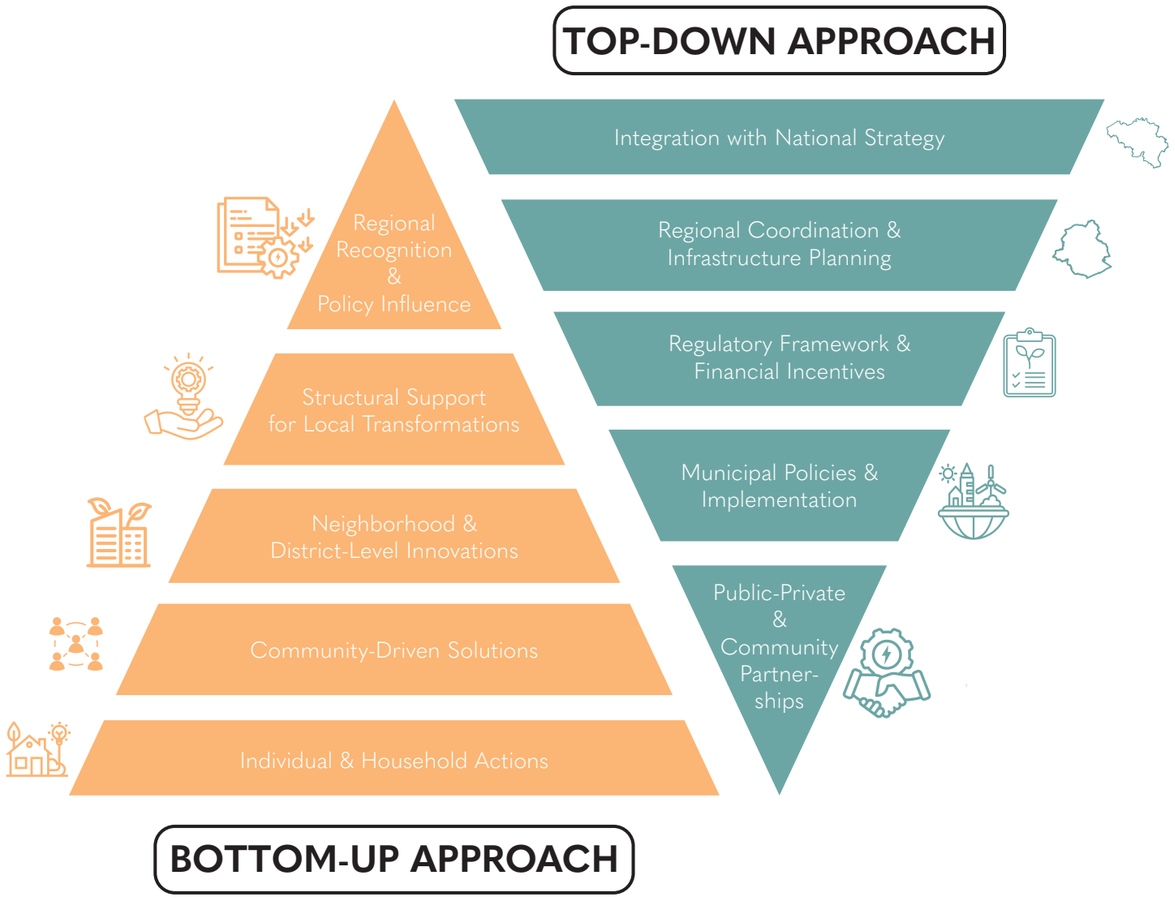

Figure 120 - Different Bottom-up Top-Down approaches within the project scope (adapted by author, retrieved from Jacovy et al., 2025)

The bottom-up and top-down approaches clarify how each pattern can be initiated, supported and implemented. In this project, they are not treated as opposite models, but as complementary directions of action. Together, they help explain whether an intervention depends mainly on institutional coordination, local initiative, or a combination of both.

The top-down approach is essential for issues that exceed the capacity of individual municipalities or local actors. Regional mobility networks, infrastructure investment, cross-border governance and long-term spatial planning require institutional recognition, shared regulations, funding mechanisms and coordination between different authorities. This is why several patterns rely strongly on regional or metropolitan decision-making.

The bottom-up approach adds another layer by grounding interventions in everyday use. It refers to actions emerging from residents, users, communities, local organisations or neighbourhood-level experiments. These initiatives can reveal specific needs, test small-scale solutions and make larger strategies more responsive to local conditions.

The diagram (figure 120) shows both approaches as graduated scales. Bottom-up action begins with individual and household practices, then grows through community-driven solutions, neighbourhood innovations and structural support for local transformations. Top-down action begins with national or regional strategies, then moves through coordination, regulation, municipal implementation and partnerships with local or private actors.

Each pattern card positions the intervention within this spectrum. A governance platform or investment package will usually require stronger top-down support, while a participatory workshop or local service cluster depends more on bottom-up involvement. Other patterns, such as mobility hubs or shared social infrastructure, need both: strategic coordination to make them possible and local appropriation to make them meaningful.

This calibration is important for the next stages of the project. The patterns are used not only to propose spatial interventions, but also to understand which actors and levels of action are needed to activate them. In this sense, the approach links design and governance by showing how metropolitan strategies can be translated into locally embedded transformations.

.3 Patterns - Connectivity

«Connectivity» forms the first family of patterns because mobility and accessibility constitute one of the most visible expressions of metropolitan fragmentation in and around Brussels. While the Brussels-Capital Region benefits from a dense public transport network and a high concentration of destinations, connections often become weaker, more discontinuous and increasingly car-dependent when crossing into the surrounding periphery. As demonstrated throughout the analytical chapters, many municipalities remain strongly connected to Brussels individually, yet are often poorly connected to one another. This creates a territorial structure where movement is largely organised around the metropolitan core, while transversal relations across the periphery remain limited.

The «Connectivity» patterns seek to address this condition by shifting mobility from a collection of isolated infrastructures towards a more integrated metropolitan network. Rather than focusing solely on transport efficiency, these patterns understand mobility as a tool for social interaction, economic exchange and territorial cohesion. Improving connectivity is therefore not only about moving people faster, but also about creating new relationships between places, services, employment centres and communities across administrative boundaries.

The five patterns (figure 121) operate across multiple scales and intervention types. At the metropolitan scale, they strengthen the major mobility backbones linking Brussels with its surrounding territories and encourage new transversal connections between peripheral municipalities. At the municipal and local scales, they focus on upgrading existing mobility nodes, improving multimodal exchanges and reinforcing everyday accessibility between neighbourhoods. Together, these interventions create a more continuous and legible network capable of supporting both regional and local forms of movement.

A recurring objective throughout this 'patterns-family' is the reduction of dependency on a single centre-oriented mobility logic. By complementing radial connections with lateral links, multimodal interfaces and locally accessible routes, the patterns promote a more polycentric metropolitan structure. In this sense, connectivity is not considered as an isolated transport issue, but as a spatial framework through which other ambitions of the project (centrality, cooperation and border integration) can emerge and interact.

The «Connectivity» family therefore establishes the physical foundations of metropolitan integration. It creates the conditions through which people, services, resources and opportunities can circulate more effectively across the Brussels periphery, while simultaneously supporting the broader transition towards a more connected, reciprocal and cohesive metropolitan territory.

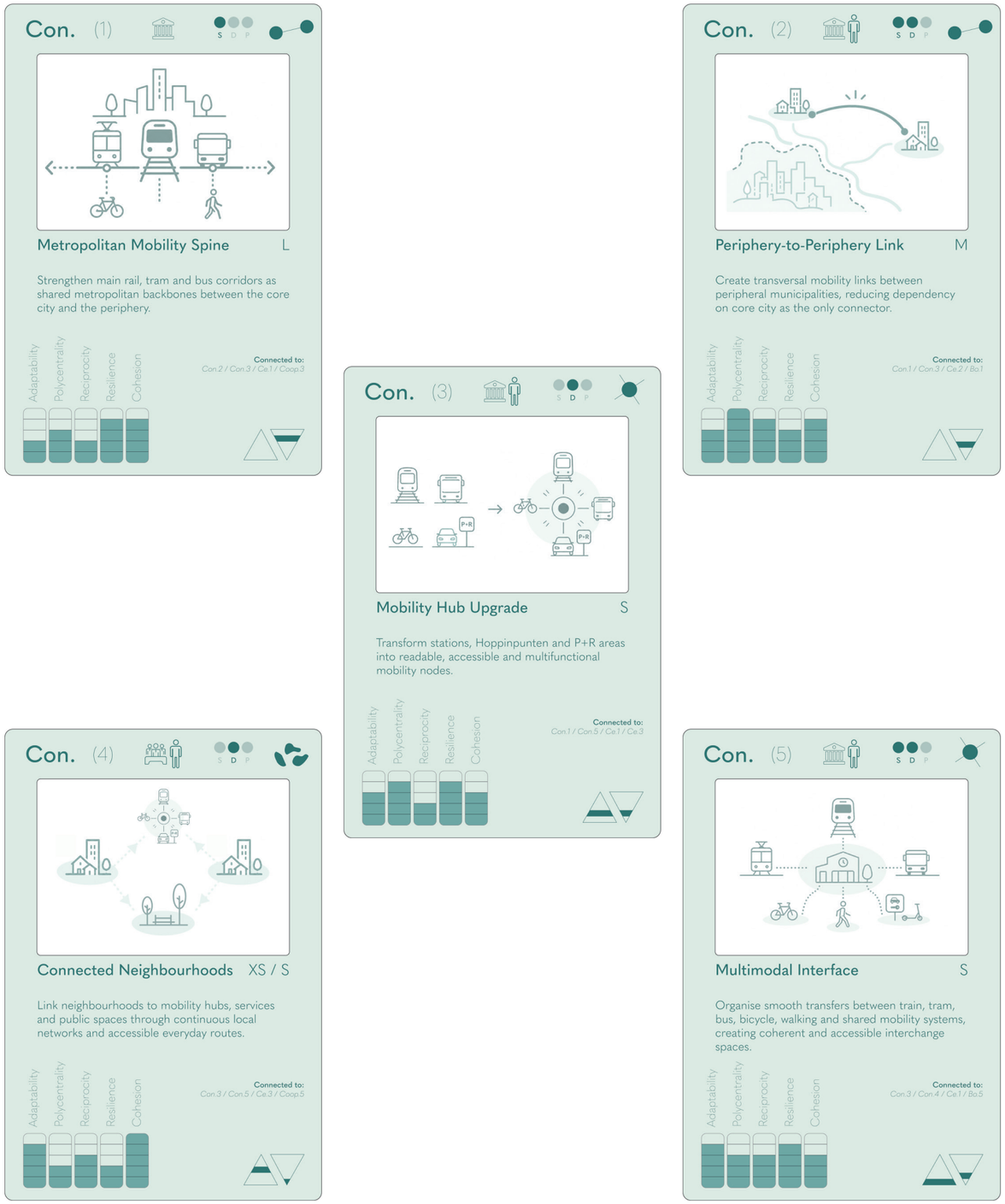

Figure 121 - Pattern language: five Connectivity intervention cards (own figure, 2026)

.4 Patterns - Centrality

The «Centrality» family focuses on the places where metropolitan life becomes visible and accessible through services, facilities, employment, education, culture and public space. While «Connectivity» establishes the networks that link territories together, «Centrality» addresses the destinations, meeting points and activity centres that give meaning to these connections. The two families are therefore closely related: mobility enables access, while centralities provide the functions and opportunities that justify movement across the metropolitan region.

One of the recurring challenges identified throughout the research is the strong concentration of functions within Brussels and a limited distribution of metropolitan opportunities across the surrounding periphery. Many peripheral municipalities depend heavily on the capital for employment, higher-level services, cultural facilities and administrative functions. This dependency reinforces daily commuting patterns and contributes to an imbalance between the metropolitan core and its surrounding territories. The «Centrality» patterns seek to address this condition by promoting a more distributed and interconnected metropolitan structure.

Rather than proposing the creation of new urban centres everywhere, the family builds upon existing assets and strategic locations already present within the territory. Station areas, local centres, civic facilities, productive zones and social infrastructures are reinterpreted as potential centralities capable of serving broader populations. The objective is not to compete with Brussels, but to develop complementary centres that strengthen the overall metropolitan system while responding to local needs and identities.

The five patterns (figure 122) operate across different scales. Some focus on major metropolitan nodes capable of concentrating mobility, services and economic activity, while others support neighbourhood-level services and everyday facilities. Together they create a hierarchy of centres ranging from local service clusters to metropolitan-scale hubs. This layered approach reflects the idea that polycentrality is not achieved through a few dominant centres, but through a network of interconnected places offering different functions and levels of accessibility.

A second objective of the family is to improve proximity. By bringing services, education, care, culture, workspaces and public facilities closer to residents, the patterns reduce the need for unnecessary travel and support more balanced daily living environments. In this sense, centrality is not only an economic or spatial concept, but also a social one, influencing accessibility, inclusion and quality of life.

The «Centrality» family therefore contributes to metropolitan integration by strengthening the relationship between places rather than concentrating opportunities within a single core. Through a network of complementary centres, shared facilities and locally embedded services, the patterns support a more polycentric, accessible and resilient metropolitan structure in which the Brussels periphery becomes a more active component of the wider urban system rather than merely its hinterland.

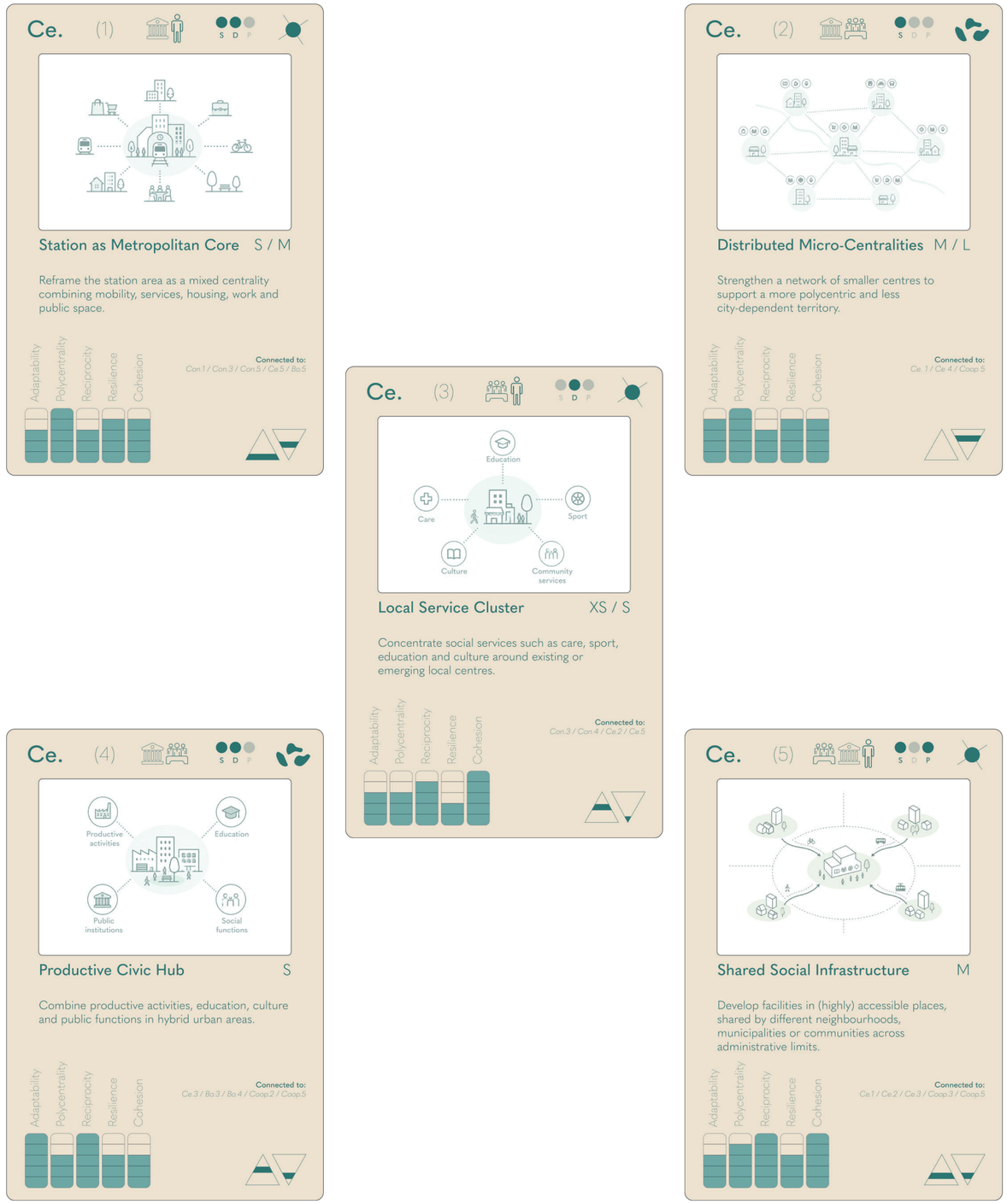

Figure 122 - Pattern language: five Centrality intervention cards (own figure, 2026)

.5 Patterns - Borders

The «Borders» family addresses one of the central conditions of the Brussels periphery: the presence of limits that are not only administrative, but also spatial, infrastructural, functional and symbolic. The border between Brussels and its surrounding territories is often experienced through discontinuities in mobility, public space, land use, governance and identity. These limits do not always appear as clear physical lines, but they shape how places relate to one another and how the metropolitan system is perceived.

The objective of this family is not to erase borders. Instead, the patterns explore how borders can become active transition spaces. A border can be thickened, crossed, softened, marked or reprogrammed depending on its condition. In this sense, the border is understood less as a separation and more as a potential project space where different territories, functions and actors can meet.

The five patterns (figure 123) approach this question through different spatial situations. Some focus on the regional border itself, transforming it from a hard administrative line into a zone of gradual exchange. Others address infrastructures such as railways, roads or the circumferential highway, which often divide territories but could also become connectors through better crossings, public spaces and ecological continuities. The canal is treated as another important interface, capable of linking productive, ecological and public functions between the core city and the periphery.

At a smaller scale, the family also works with abrupt transitions between housing, industry, landscape and infrastructure. These edges are often the places where urban fragmentation becomes most visible. By replacing buffers with gradients, the patterns propose more gradual spatial sequences that can improve coexistence between different uses. Metropolitan gateways then complement this logic by giving strategic entry points a clearer identity, orientation and public quality.

Together, the «Borders» patterns help reframe the periphery as a space of connection rather than separation. They show that metropolitan integration is not only achieved by adding new mobility links or centres, but also by transforming the thresholds between territories. This makes the family particularly important for the following spatial and institutional strategies, where local interventions will need to negotiate between administrative boundaries, infrastructural barriers and everyday urban conditions.



Figure 123 - Pattern language: five Borders intervention cards (own figure, 2026)

.6 Patterns - Cooperation

The «Cooperation» family addresses the institutional dimension of metropolitan integration. While «Connectivity», «Centrality» and «Borders» focus primarily on spatial conditions, their implementation ultimately depends on the capacity of different actors to collaborate across administrative boundaries. In the Brussels metropolitan context, many challenges emerge not from the absence of opportunities, but from the fragmentation of responsibilities, planning cultures, funding mechanisms and decision-making structures. As a result, cooperation becomes a spatial project in itself.

Rather than proposing the creation of a new metropolitan authority, this family explores more flexible forms of collaboration capable of operating within the existing governance landscape. The patterns recognise that the Brussels metropolitan area is composed of multiple institutions, municipalities, regions, agencies, organisations and communities, each operating with different priorities and competencies. The objective is therefore not institutional centralisation, but the creation of interfaces through which coordination, knowledge exchange and collective action can emerge.

The five patterns (figure 124) approach cooperation through different mechanisms and scales. Some focus on establishing soft governance structures capable of bringing actors together around shared objectives, while others translate cooperation into concrete project mandates, investment frameworks or implementation agreements. Additional patterns address the importance of shared data, common knowledge production and collective monitoring processes, creating a stronger basis for informed decision-making across territorial boundaries.

Particular attention is also given to participation and stakeholder engagement. Metropolitan integration cannot rely exclusively on top-down institutional agreements, but must also incorporate local knowledge, everyday experiences and community priorities. Through participatory workshops and collaborative design processes, the patterns seek to connect institutional objectives with the realities of municipalities, neighbourhoods and users. In this sense, cooperation becomes not only a governance tool, but also a mechanism for building trust, legitimacy and long-term commitment.

Together, the «Cooperation» patterns provide the organisational framework through which the other pattern families can be activated and maintained over time. They transform governance from a background condition into an active component of metropolitan design, creating the institutional capacity necessary to support spatial interventions across the Brussels periphery. As such, they form a crucial bridge between the institutional shifts discussed in chapter 11 and the spatial strategies developed in chapter 12, where cooperation becomes an essential condition for implementation rather than a separate objective.

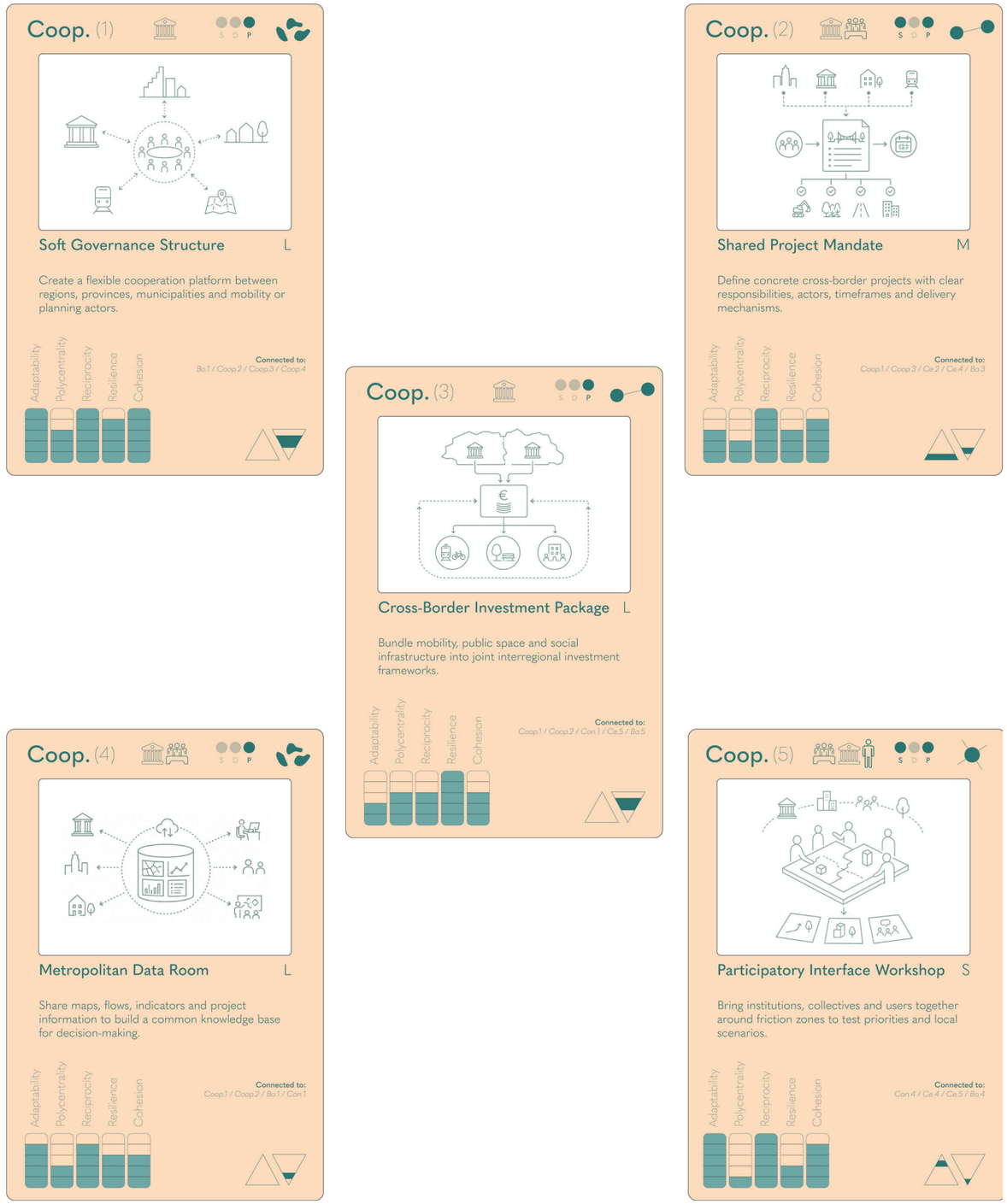

Figure 124 - Pattern language: five Cooperation intervention cards (own figure, 2026)

11

INSTITUTIONAL SHIFT(S)

Rather than proposing a new metropolitan authority, the project investigates how cooperation can emerge through softer and more adaptive forms of governance.

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.1 Role of planners & cooperation model

Changing the role of planners

In a fragmented metropolitan context, planning cannot only be understood as the production of spatial visions or regulatory frameworks. It also depends on the capacity to connect actors, align interests and translate strategic intentions into concrete action. Heurkens et al. describe planners as "market actors", meaning that they do not stand outside development processes, but actively shape the decision environment in which other actors operate (Heurkens et al., 2015). This is particularly relevant for Brussels, where metropolitan challenges rarely correspond to one administrative scale. Mobility, housing, productive landscapes and social inclusion all operate across the border between the Brussels-Capital Region and the Flemish periphery.

From this perspective, **the planner becomes a mediator between institutions, operators, municipalities and local actors.** The goal is not to replace existing authorities, but to create conditions in which they can work together more coherently. Planning therefore moves from a purely regulatory role towards a more strategic and relational one, where visions, agreements, investments and shared knowledge become equally important tools.

Four dimensions of metropolitan action

The cooperation model builds on four complementary roles (figure 126). Shaping refers to the creation of a shared metropolitan vision, able to frame Brussels and its periphery as one functional territory rather than as separate planning systems. Regulating translates this vision into coordinated rules, agreements and development guidelines across regional and municipal boundaries. Capacity building supports the long-term ability of actors to work together through shared data, expertise, participatory processes and institutional learning. Stimulating focuses on activating transformation through (for example) pilot projects, public investment and demonstrative interventions that can make cooperation tangible.

Together, these roles suggest that **metropolitan planning is not only about deciding what should happen where. It is also about building the cooperation capacity needed to make spatial change possible.** In the Brussels metropolitan region, this means moving from fragmented sectoral action towards a softer, more coordinated model of governance, capable of connecting vision, implementation and trust between actors.

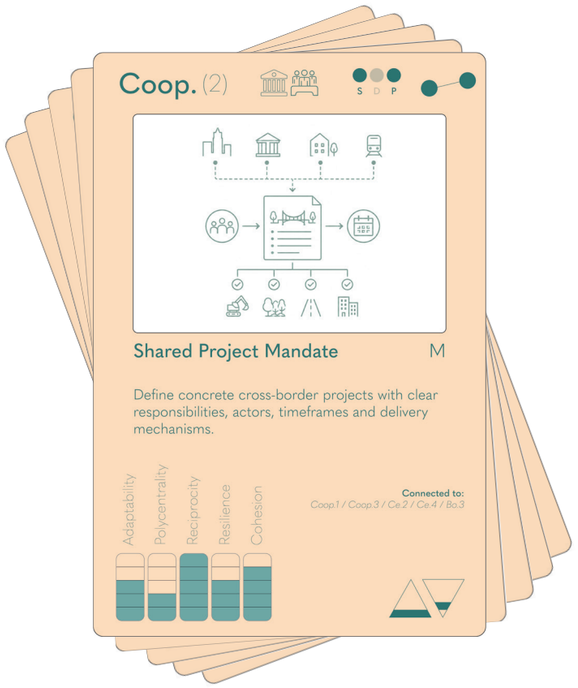


Figure 125 - Cooperation pattern cards (own figure, 2026)

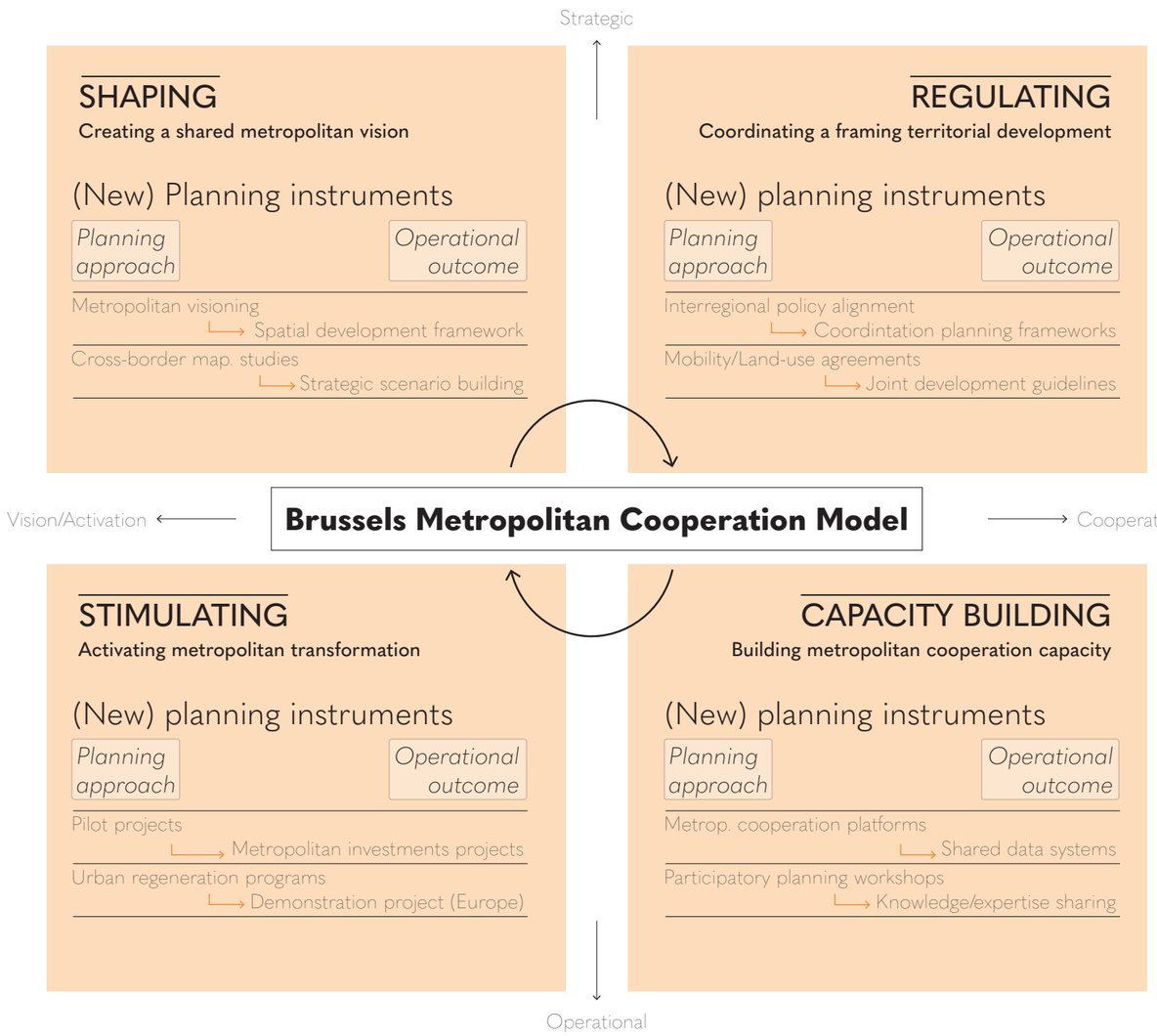


Figure 126 - Brussels Metropolitan Cooperation model (own figure, 2026, based on Heurkens et al. 2015)

.2 Towards a soft governance structure

What is 'soft governance' ?

Soft governance refers to a form of coordination that works through shared objectives, voluntary cooperation and negotiated commitments rather than through a new hard institutional layer. In the Brussels metropolitan context, this is especially relevant because responsibilities are divided between Regions, municipalities, provinces, federal actors and mobility operators. **The aim is not to erase institutional boundaries, but to make them less blocking.** Such a model allows actors to keep their own competences and identities while creating a common framework for issues that clearly exceed administrative borders, such as mobility corridors, housing pressure, open space systems and social inclusion (Dąbrowski et al., 2025).

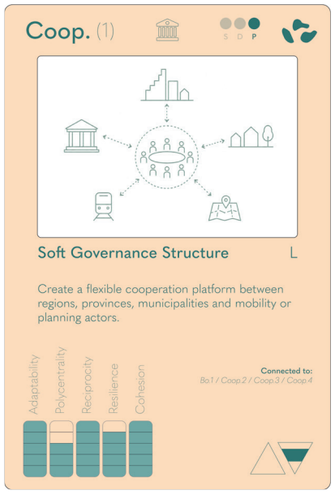


Figure 127 - Cooperation pattern card: Soft Governance Structure (own figure, 2026)

Learning from territorial instruments

The SENPO case studies show that territorial instruments usually depend on three principles: a clear territorial focus, integration between policy fields, and governance arrangements able to connect different levels of decision-making (Ferry, Kah, et al., 2025a). This is useful for Brussels because the metropolitan issue is not only about defining a bigger region on a map. It is about identifying where functional relations already exist and where cooperation is needed. **A soft governance structure should therefore work with variable geographies rather than one fixed metropolitan border.** Some coalitions may concern for example the canal and productive economy, others the airport corridor, the rail network, or the municipalities directly affected by suburban growth.

Implementing a Non-SUD ITI strategy

An 'Integrated Territorial Investment' (ITI) could make this cooperation more concrete by linking metropolitan collaboration to funding. A non-SUD ITI, meaning an ITI not limited to the official 'Sustainable Urban Development' framework, could be particularly relevant because it can be applied to functional territories beyond strictly urban areas. In Belgium, Brussels used a 'Sustainable Urban Development Operational Programme', while Flanders also implemented non-SUD ITI strategies in territories such as Limburg, Kempen and West-Flanders, combining ERDF and ESF support (Dąbrowski et al., 2025). The Porto Metropolitan Area provides an additional example of how a non-SUD ITI can support cooperation across a functional metropolitan territory by building on existing inter-municipal structures and coordinating projects through a shared strategic framework (Dąbrowski & Lurling, 2025). For the Brussels periphery, a similar logic could be adapted as an incentive-based tool: municipalities, regional actors and operators would receive support when they develop joint projects across the Brussels-Flemish boundary. **The subsidy would not force cooperation, but reward it where shared metropolitan problems are addressed collectively.** (Dąbrowski & Lurling, 2025).

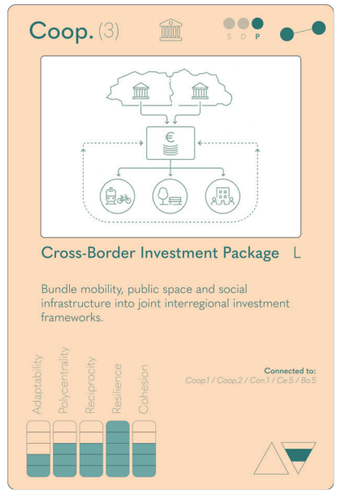


Figure 128 - Cooperation pattern card: Cross-Border invertment package (own figure, 2026)

Case studies and lessons for Brussels

The NOVEX programme in the Netherlands is a useful reference because it translates national spatial objectives into specific territories through development perspectives, implementation agendas and regional investment agendas (Ferry, Kah, et al., 2025a). Its value lies in connecting different government levels while still allowing each area to respond to its own local conditions. For Brussels, this suggests that a metropolitan cooperation model should not treat Vlaams-Brabant as one uniform periphery. Municipalities such as Vilvoorde, Zaventem, Tervuren or Sint-Genesius-Rode have different identities and priorities. **The challenge is therefore to build cooperation around shared projects, while leaving space for local difference.**

Proposed system: Soft Governance Model

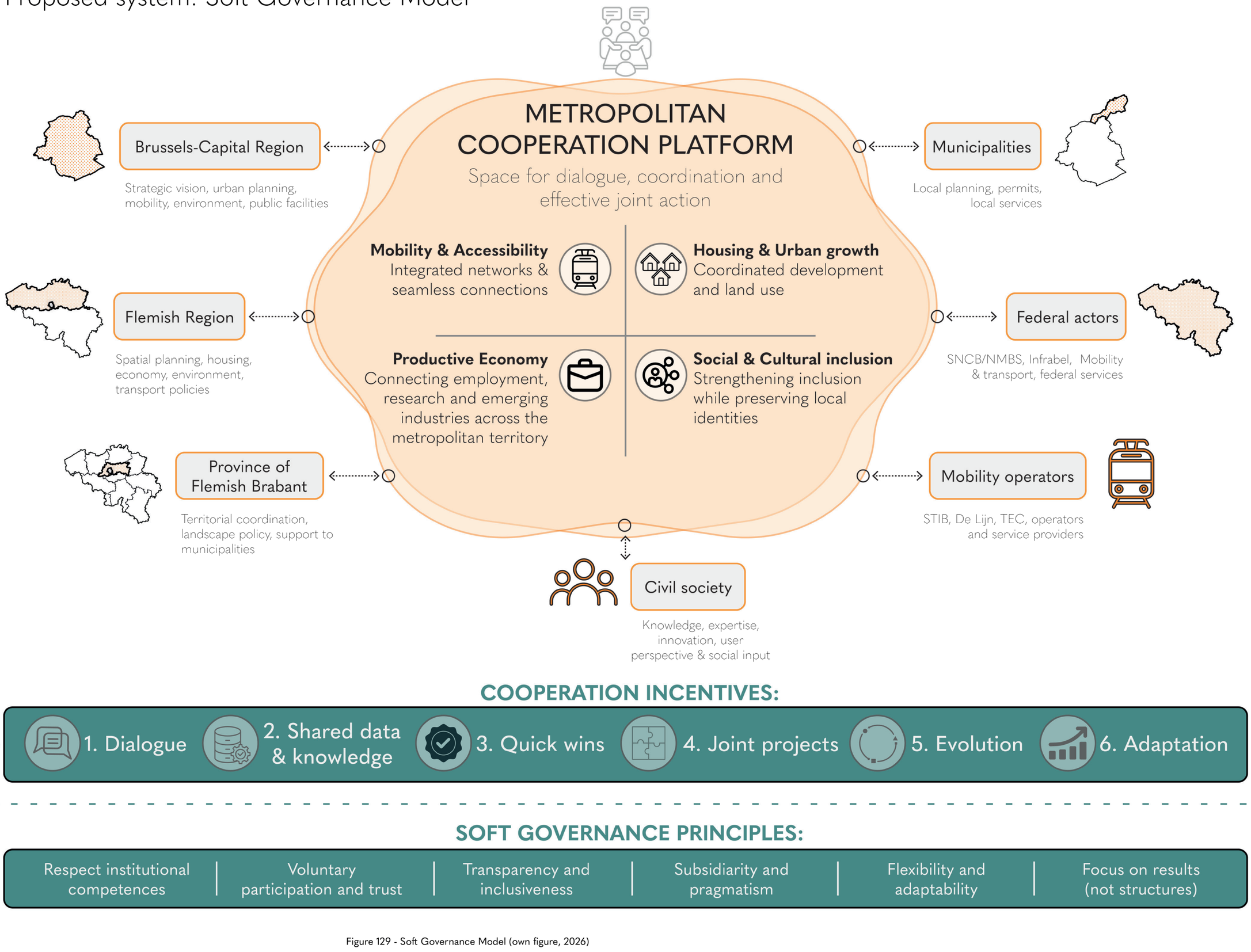


Figure 129 - Soft Governance Model (own figure, 2026)

Soft Governance: Who is driving it?

The proposed soft governance model should be driven by a small metropolitan coordination unit, rather than by a new metropolitan authority. Its role would not be to replace existing competences, but to organise the conditions through which cooperation can happen: preparing shared agendas, coordinating data, facilitating negotiations, monitoring joint projects and keeping the process active over time. In the Belgian context, this is essential because the Federal State, the Regions and the Communities are not organised in a simple hierarchy, but share powers across different territorial and policy fields (Istaz, 2000). The most realistic driver is therefore a neutral metropolitan secretariat supported by the Brussels-Capital Region, the Flemish Region and the Province of Flemish Brabant, with the Federal State and the European level acting as enabling actors. The Federal State remains important for rail, national infrastructure and arbitration between Regions, while the European level can provide legitimacy, funding frameworks and pressure to work beyond administrative borders. In this sense, the platform would be driven by a light but permanent coordination body, politically backed by the main institutional levels, and operationally focused on shared projects rather than institutional reform.

Has it been tried before?

As explained in Chapter 9.3, Brussels has already experimented with several forms of metropolitan cooperation, but these have remained partial, sectoral or project-based. The T.OP Noordrand is one of the clearest examples: it brought together perspective.brussels, the Flemish administration, the Province of Flemish Brabant and OVAM around a shared territorial project in the northern edge of Brussels (Regio Vlaanderen, Perspective.brussels, et al., n.d.). This shows that cooperation can work when it is attached to a concrete territory and a limited set of common issues. Other examples, such as the Forum on Territorial Development, the Metropolitan Landscapes study, the RER, Brupass XL or the cooperation around the Sonian Forest, also show that collaboration already exists where cross-border coordination becomes unavoidable. However, these initiatives do not yet form a stable metropolitan system. In parallel, territorial funding instruments such as ITI strategies have been used in Brussels and in Flanders, but mostly within separate regional frameworks. The proposed shift is therefore not to invent cooperation from scratch, but to connect existing experiences into a more continuous metropolitan instrument: a platform able to link territorial projects, shared data, investment packages and funding incentives across the Brussels-Flemish boundary (ESPON, 2022).

Stakeholder's roles: a review

The stakeholder analysis presented at the beginning of the report in Chapter 2.2 identified the main actors involved in mobility, spatial development and governance around the Brussels metropolitan area. At that stage, the diagram mainly clarified who was present, at which scale (approximately), and in which institutional or sectoral field. In the soft governance model, the same actors would not be replaced, but repositioned according to their role in cooperation. The Regions, the Federal State and the European level become strategic anchors, providing legitimacy, policy frameworks and financial leverage. Provinces, municipalities and intermunicipal structures act as territorial mediators, translating metropolitan objectives into local conditions. Mobility operators and infrastructure agencies become operational actors, responsible for turning shared visions into feasible projects. Planning agencies, universities and data platforms provide knowledge, scenarios and monitoring. Finally, residents, commuters, NGOs, neighbourhood associations and economic actors provide social legitimacy by revealing everyday needs, conflicts and priorities. This review therefore shifts the stakeholder map from a static inventory towards an operational reading: not only who is involved, but what each actor can contribute to shared metropolitan action.

Strategic anchors
Provide direction, legitimacy and funding frameworks

* European Union
* Belgian Federal State
* Brussels-Capital Region
* Flemish Region
* Walloon Region

Knowledge & Facilitation Actors
Produce data, scenarios and shared expertise

* perspective.brussels
* Urban.brussels
* Universities and research institutions
* Shared data platforms

Territorial mediators
Translate metropolitan objectives into local realities

* Province of Flemish Brabant
* Municipalities
* Intermunicipal cooperation structures

Legitimacy Actors
Represent everyday needs, interests and local priorities

* Residents and commuters
* NGOs and environmental groups
* Neighbourhood associations
* Economic actors and employers

Operational Actors
Deliver infrastructure, services and projects on the ground

* STIB/MIVB
* De Lijn
* TEC
* SNCB/NMBS & Infrabel
* Brussels Mobility, AWV

.3 Brussels metropolitan region's position

Positioning Brussels

Brussels occupies an ambiguous position in the European metropolitan landscape. Its functional reality clearly extends beyond the Brussels-Capital Region, through commuting flows, housing pressure, economic corridors and shared mobility infrastructures. Yet this metropolitan scale is not matched by a formal governance structure. As the Gov/met study argues, metropolitan regions often emerge through spatial and systemic relations without a clear fixed border or dedicated administrative body (Vereniging Deltametropool, 2025). **Brussels is therefore not absent as a metropolis, but institutionally incomplete as one.**

A strategic but soft trajectory

The proposed direction is not towards full legal formalisation, as in the Paris model, nor towards a purely operational structure focused on one sector, as in the Ruhr example. Instead, Brussels should move from tactical and fragmented cooperation towards a more strategic metropolitan platform. This means producing shared visions, common data, coordinated investment agendas and joint projects, while leaving formal competences with existing institutions. **The aim is to make cooperation more stable and visible, without turning the metropolitan region into a competing authority.**

Between Amsterdam and Copenhagen-Malmö

The position of BMR in the diagram reflects this in-between condition. Like Amsterdam, Brussels would benefit from a cooperation platform that allows municipalities and regions to coordinate without creating a heavy new government layer. Like Copenhagen-Malmö, it also faces strong institutional and identity differences across borders. However, unlike both cases, the Brussels metropolitan region is marked by a particularly sensitive regional and linguistic divide. **Its future governance should therefore move towards stronger strategic coordination, while remaining flexible enough to respect local autonomy and political realities.**

Cooperation before institution

This chapter therefore proposes an institutional shift based on cooperation before institution-building. The role of planners is to shape, regulate, stimulate and build capacity across existing borders. Soft governance and ITI-like funding mechanisms can support this shift by rewarding joint action rather than imposing uniformity. The 'Brussels Metropolitan Region' should be understood less as a new administrative territory than as a gradually constructed cooperation space. Its strength would lie in its ability to connect actors around shared metropolitan problems, while keeping enough flexibility to adapt to different local identities and territorial conditions.

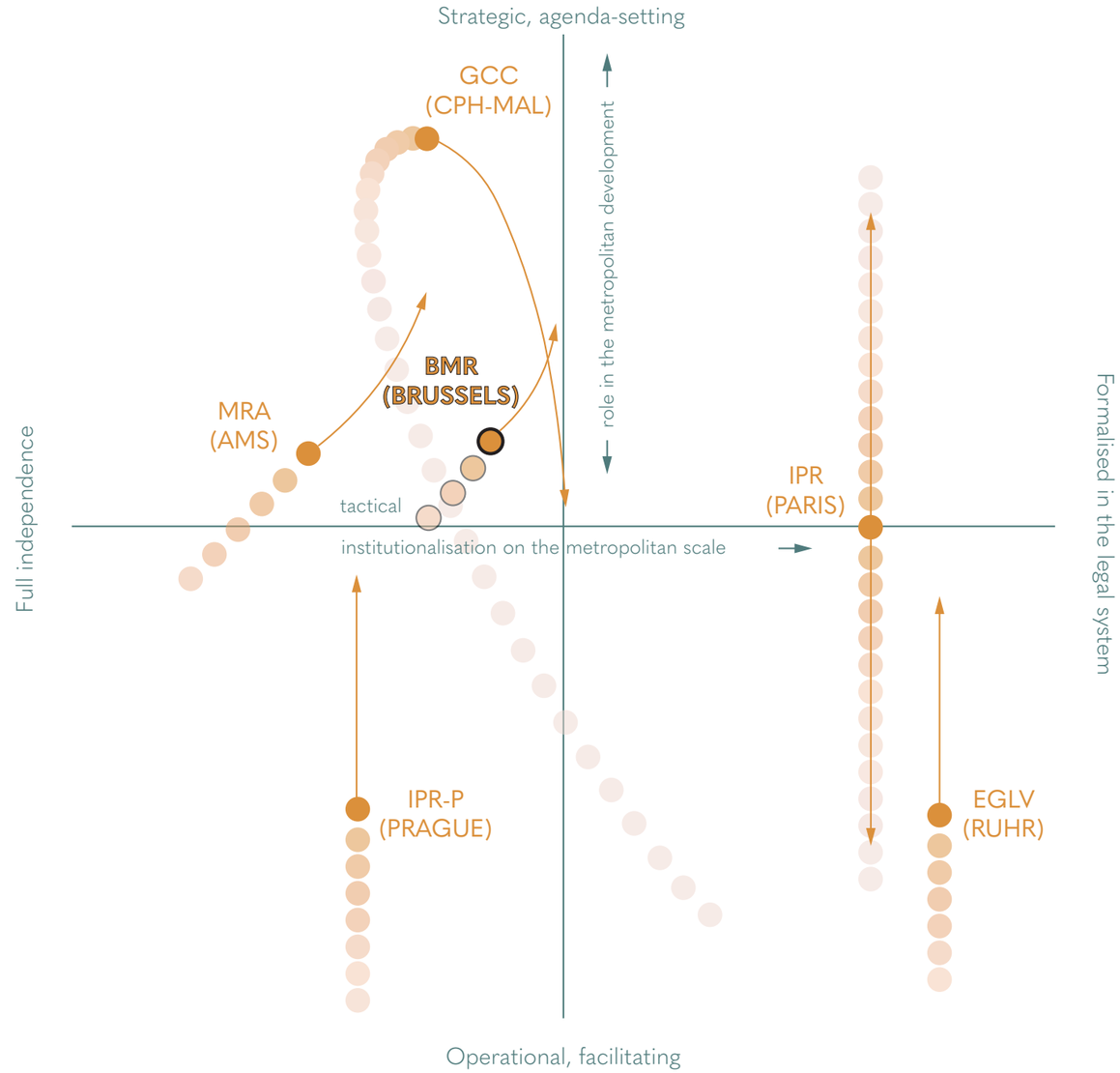


Figure 130 - Brussels metropolitan region's position (adapted by author, retrieved from Vereniging Deltametropool, 2025)

12

SPATIAL STRATEGIES

The spatial proposals test how metropolitan ambitions can be translated into interventions operating across multiple scales.

.1 Main objectives 168
.2 Regional strategies 170
.3 Zoom ins 178
.4 Regional vision 208
.5 Phasing interventions 210
.6 Evaluation and recommendations 212

.1 Main objectives

Three dimensions of intervention

The proposed project is structured around three complementary dimensions that together address the metropolitan interface between Brussels and its Flemish periphery. Rather than approaching mobility, social inclusion and governance as separate themes, they are understood as interdependent layers of intervention operating across the territory. Mobility and infrastructure provide the physical framework through which places become accessible, connected and less dependent on private car use. Social inclusion focuses on the everyday dimension of metropolitan life, seeking to create spaces, facilities and encounters that strengthen interaction between different communities and user groups. Governance acts as the enabling layer, linking local initiatives, municipal ambitions and regional strategies through forms of cooperation capable of addressing challenges that extend beyond administrative boundaries. Together, these dimensions transform the research themes into a spatial design framework capable of connecting physical, social and institutional integration within the Brussels Metropolitan Region.



Figure 131 - Three dimensions of intervention (own figure, 2026)

Linking scales and themes

The proposed design approach (in this chapter 12) is based on the understanding that metropolitan transformation cannot be addressed through a single scale of intervention. The challenges identified throughout this research emerge from the interaction between regional systems, municipal realities and everyday spatial experiences. As a result, the project operates through a multi-scalar perspective in which different levels of action remain interconnected rather than isolated. The relationship between scales is not hierarchical, but reciprocal: larger territorial visions influence local development, while local initiatives and place-specific conditions can collectively shape broader metropolitan trajectories. The diagram therefore illustrates how the three project dimensions: mobility and infrastructure, social inclusion, and governance, interact across scales, creating a framework capable of connecting strategic ambitions with tangible spatial change. Metropolitan integration is understood not as a single intervention's scale, but as a continuous process of coordination between actors, territories and scales of action.

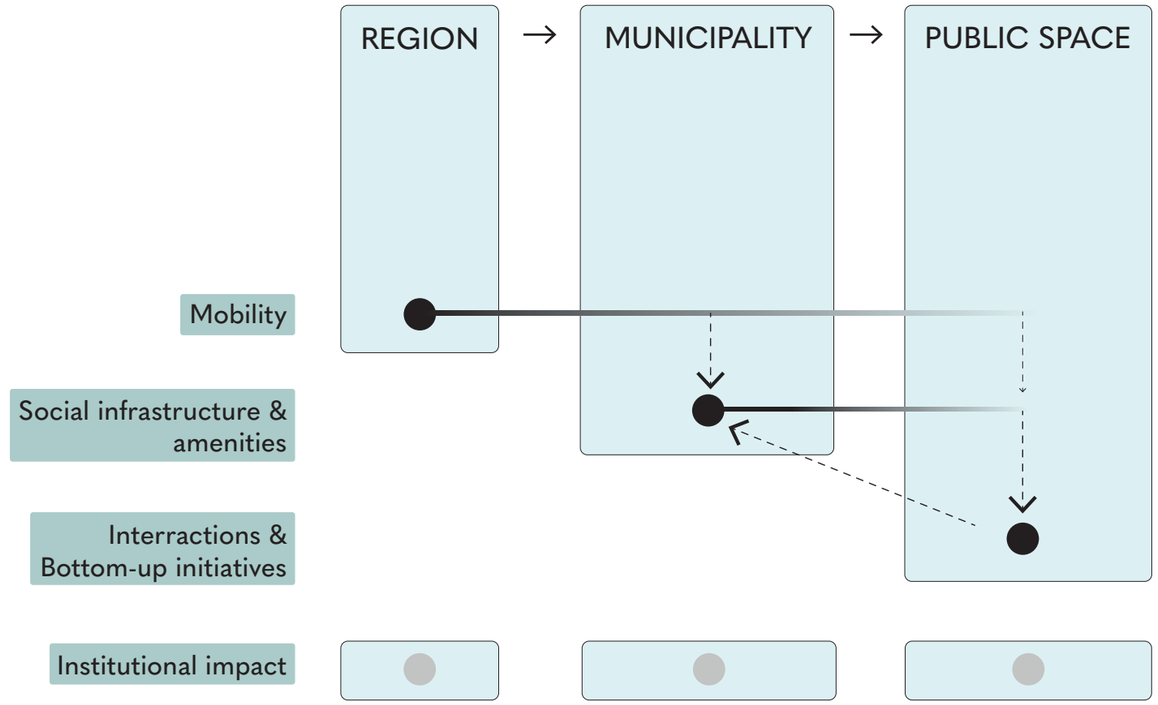
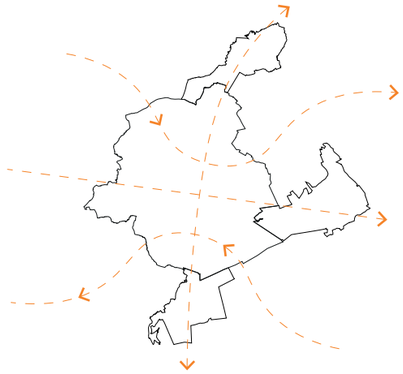


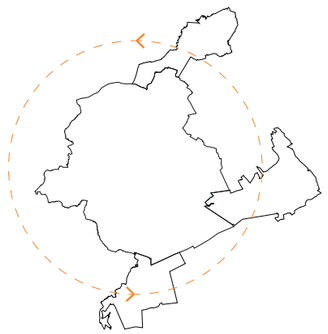
Figure 132 - Link between scales and themes (own figure, 2026)

.2 Regional strategies



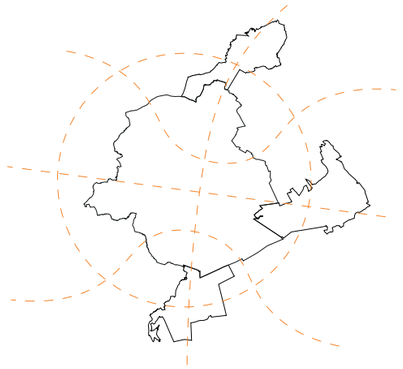
From periphery to Brussels

This first strategy aims to strengthen the connection between the Flemish periphery and Brussels by improving accessibility while reducing car dependency. Mobility acts as the initial trigger: better rail, tram, bus, cycling and intermodal connections can make the metropolitan movements easier to reach without reinforcing road-based commuting. However, the objective is not limited to transport. Improved connectivity should also support access to jobs, education, services, public spaces and cultural facilities. **In this sense, mobility becomes a spatial and social instrument, helping peripheral municipalities participate more actively in the Brussels metropolitan system while addressing environmental pressure, congestion and unequal access to opportunities** (ESPON, 2022; Province of Flemish Brabant, 2022).



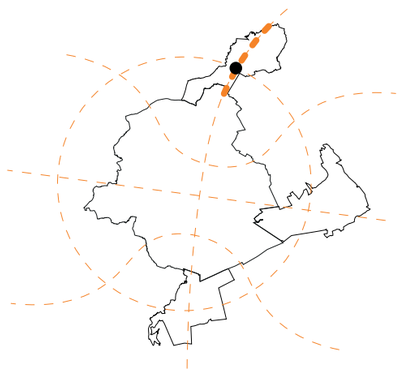
From periphery to periphery

The second strategy focuses on the links between peripheral municipalities themselves. The Flemish periphery should not only be understood through its relationship to Brussels, but also as a network of distinct towns, landscapes and local identities. Strengthening 'periphery-to-periphery' connections can support more balanced development by linking local centres, employment areas, schools, landscapes, stations and public facilities across municipal borders. **This approach allows the periphery to function as a complementary territorial system rather than as a series of isolated municipalities.** At the same time, it recognises that places such as Vilvoorde, Tervuren or Sint-Genesius-Rode have different spatial characters, social profiles and environmental conditions, which should be connected without being homogenised.



Combine metropolitan strategies

The third strategy combines radial connections towards Brussels with transversal connections across the periphery. Together, these two logics can support a more integrated Brussels Metropolitan Region: not a single expanded city, but a connected metropolitan field composed of different centres, landscapes and municipalities. This reflects the idea of metropolisation as a process in which spatial-functional, political-institutional and cultural-symbolic dimensions interact over time (Demuynck et al., 2025). In design terms, this means combining mobility networks, landscape structures, public space systems, local centralities and cooperation frameworks. **The aim is therefore not to erase existing borders or identities, but to create stronger relationships between them.**

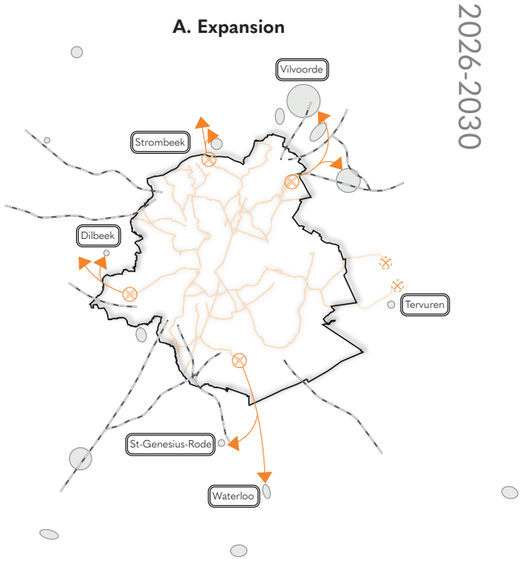


Municipality role

Municipalities play a crucial role in translating metropolitan ambitions into concrete spatial change. Regional strategies can provide larger frameworks for mobility, housing, landscape, public space and economic development, but their impact depends on how they are interpreted and implemented locally. Conversely, municipalities can also influence metropolitan development by identifying strategic sites, testing local interventions, protecting specific identities and revealing everyday needs that are often invisible at the regional scale. **They act as mediators between regional visions and local realities, making it possible to connect metropolitan integration with place-specific development, democratic legitimacy and municipal identity.**

Figure 133 - Regional strategies (own figure, 2026)

PHASE 1:
Expansion



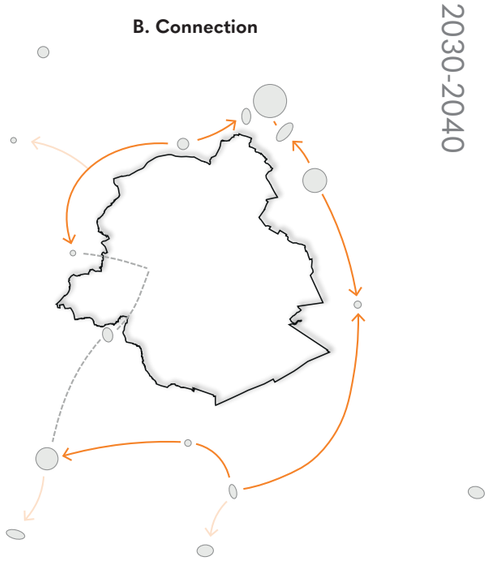
Current tram terminus: strategic extensions

Current ageing tram terminus on the Flemish side: upgrade

Figure 134 - Regional Phase 1 Expansion (own figure, 2026)

The first regional intervention focuses on extending existing public transport connections from Brussels towards the Flemish periphery. Rather than introducing an entirely new mobility system, the strategy starts from **existing tram and rail structures**, especially at the current edges of the Brussels network at strategic last tram stops, and **exploring how they could be prolonged towards key peripheral municipalities.** This remains a conceptual proposal, since each extension would depend on morphology, density, landscape conditions, technical feasibility and political coordination. However, the objective is clear: to reduce the dependency on car-based commuting and to make the Brussels-periphery relationship less abrupt. By extending metropolitan mobility beyond the administrative border, the periphery can become better connected to the city while also gaining new opportunities for local development around strategic nodes.

PHASE 2:
Connection

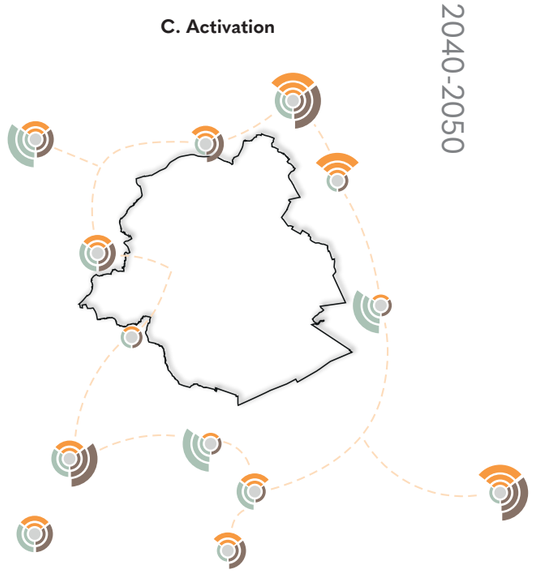


Strategic connections between periphery cores

Figure 135 - Regional Phase 2 Connection (own figure, 2026)

The second phase shifts the focus from Brussels-oriented mobility to connections between peripheral municipalities themselves. The aim is to avoid a purely radial metropolitan structure in which every movement depends on the city centre. **By linking the main urban cores of the periphery, this strategy strengthens transversal relations and supports a more balanced metropolitan system.** These connections can improve access between local centres, employment areas, stations, landscapes and services, while allowing each municipality to remain part of a wider territorial network. The periphery is therefore not treated as a passive edge of Brussels, but as a system of interconnected places with its own internal structure. This phase helps transform the periphery from a set of separate municipalities into a complementary metropolitan network.

PHASE 3:
Activation



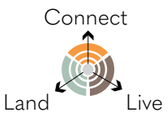
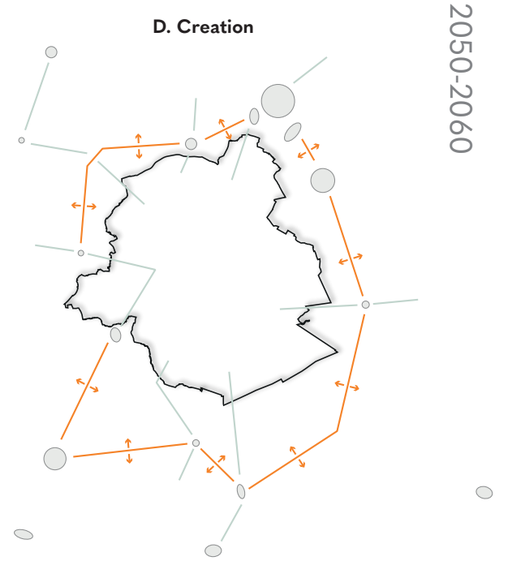


Figure 136 - Regional Phase 3 Activation (own figure, 2026)

The third phase focuses on the **activation of urban cores** within the flemish periphery. Once municipalities are better connected, each place can be assessed according to its own qualities, limitations and development potential. The three criteria used here - **Connect, Land and Live** - provide **a simple way to understand how each locality relates to accessibility, open landscapes and urban life.** Some places may be strong mobility nodes, others may be closely linked to green or open-space systems, while others may already contain a stronger everyday urban life. This reading helps avoid generic development and instead supports place-specific activation. The goal is to allow each municipality to develop within the metropolitan framework while preserving and strengthening its own identity, role and spatial character.

PHASE 4:
Creation

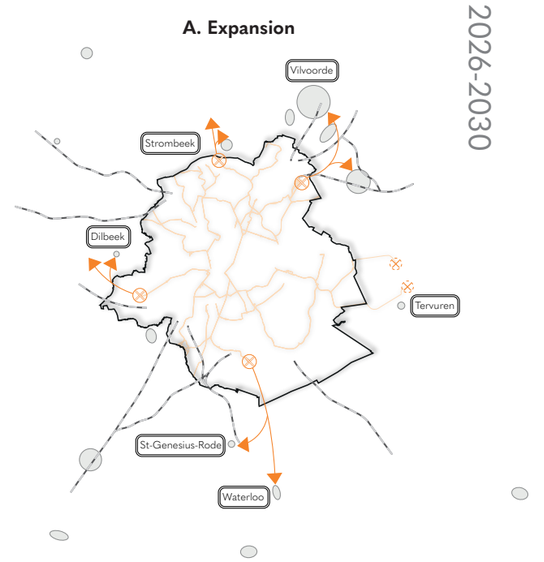


Use main connection axes for development

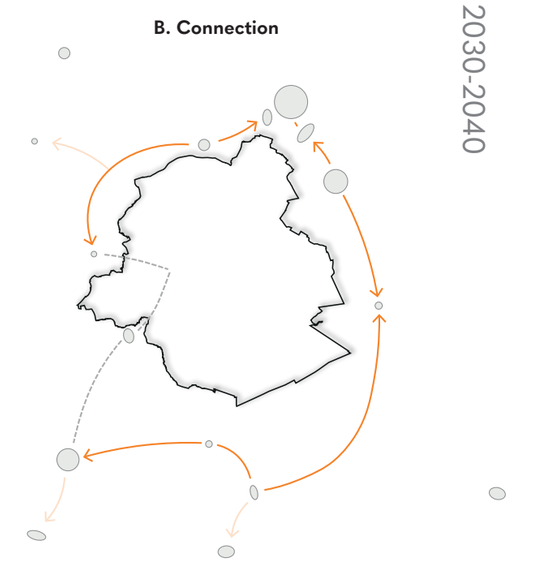
Figure 137 - Regional Phase 4 Creation (own figure, 2026)

The final phase addresses the spaces between the existing urban cores and the newly strengthened mobility connections. After improving links from Brussels to the periphery and between peripheral centres, the question becomes **how the intermediate areas along these axes can evolve**. These spaces should not simply be filled with generic urbanisation, but carefully developed according to their accessibility, landscape value, existing functions and local needs. The strategy therefore focuses on **creating new spatial relationships along the main connection corridors**: public spaces, mixed-use nodes, social infrastructure, productive landscapes or ecological continuities can emerge where appropriate. This phase turns mobility connections into territorial opportunities, showing how the "in-between" spaces of the periphery can become active parts of the Brussels Metropolitan Region rather than residual zones between municipalities.

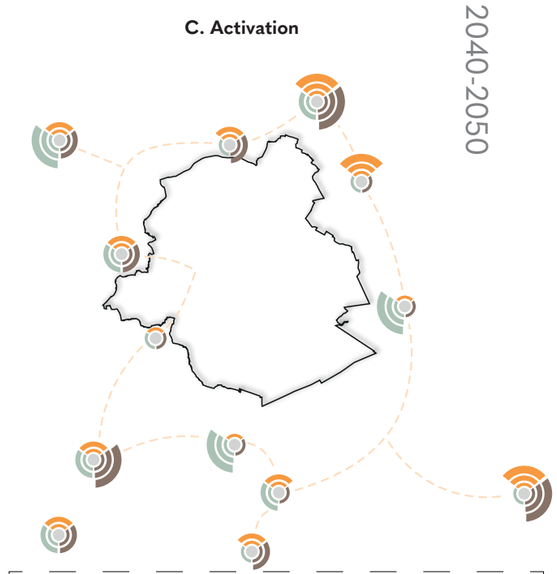
PHASE 1:
Expansion



PHASE 2:
Connection



PHASE 3:
Activation



PHASE 4:
Creation

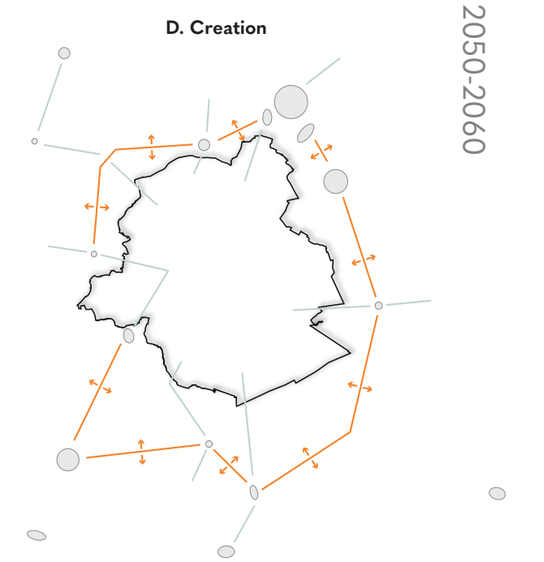
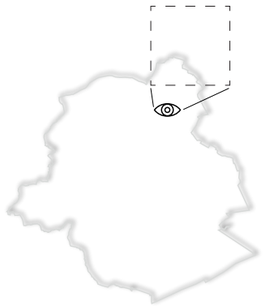


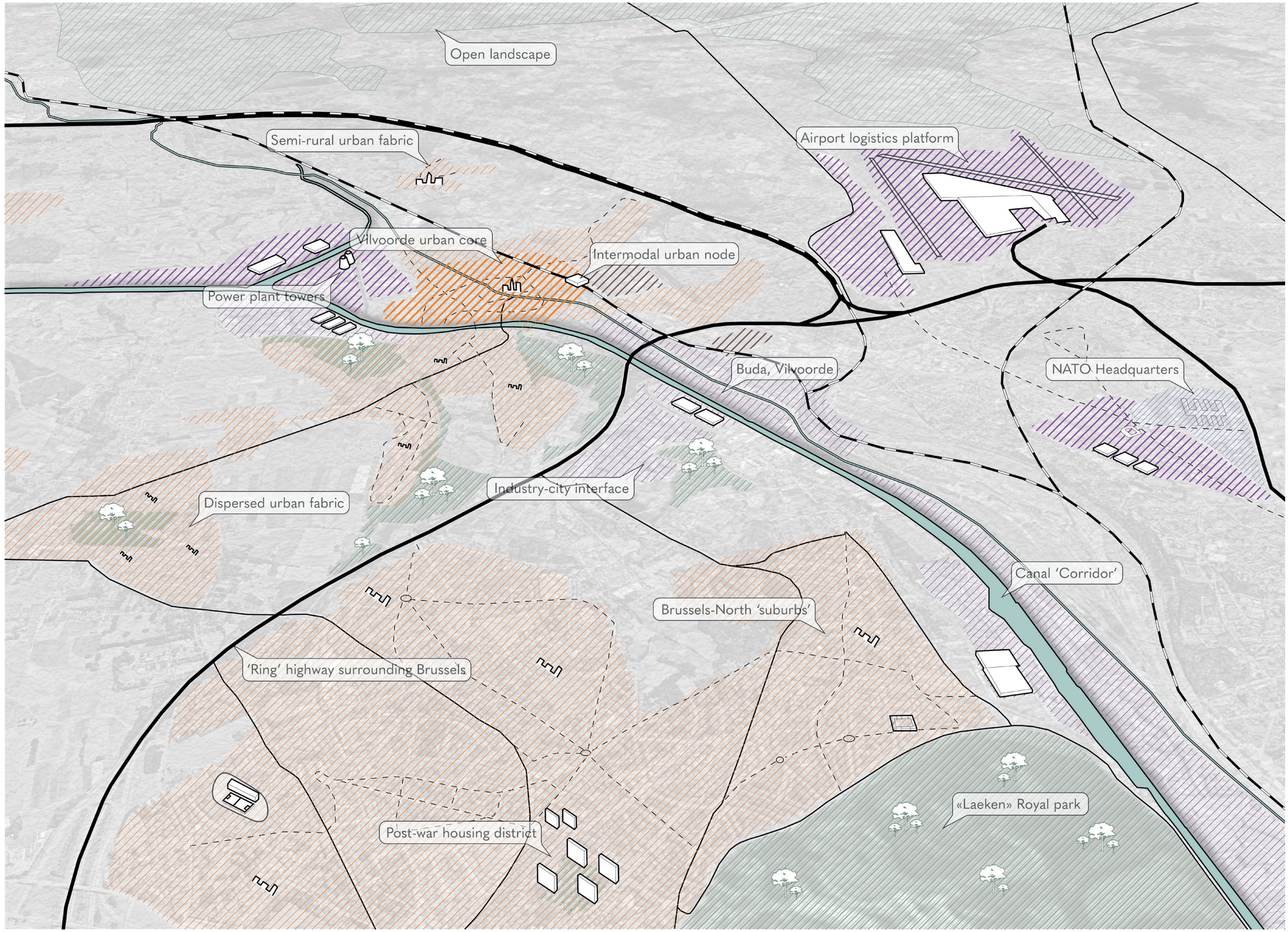
Figure 138 - Phase 1 with suitable cards (own figure, 2026)

Figure 139 - Phase 2 with suitable cards (own figure, 2026)

Figure 140 - Phase 3 with suitable cards (own figure, 2026)

Figure 141 - Phase 4 with suitable cards (own figure, 2026)





- Main urban core
- Dispersed urban fabric
- Green structure
- Productive area *(Industrial)*
- Brownfields
- Institutional area
- Rail lines
- (micro) Centralities

Figure 142 - Bird-eye view current situation Brussels North (own figure, 2026)

.3 Zoom ins

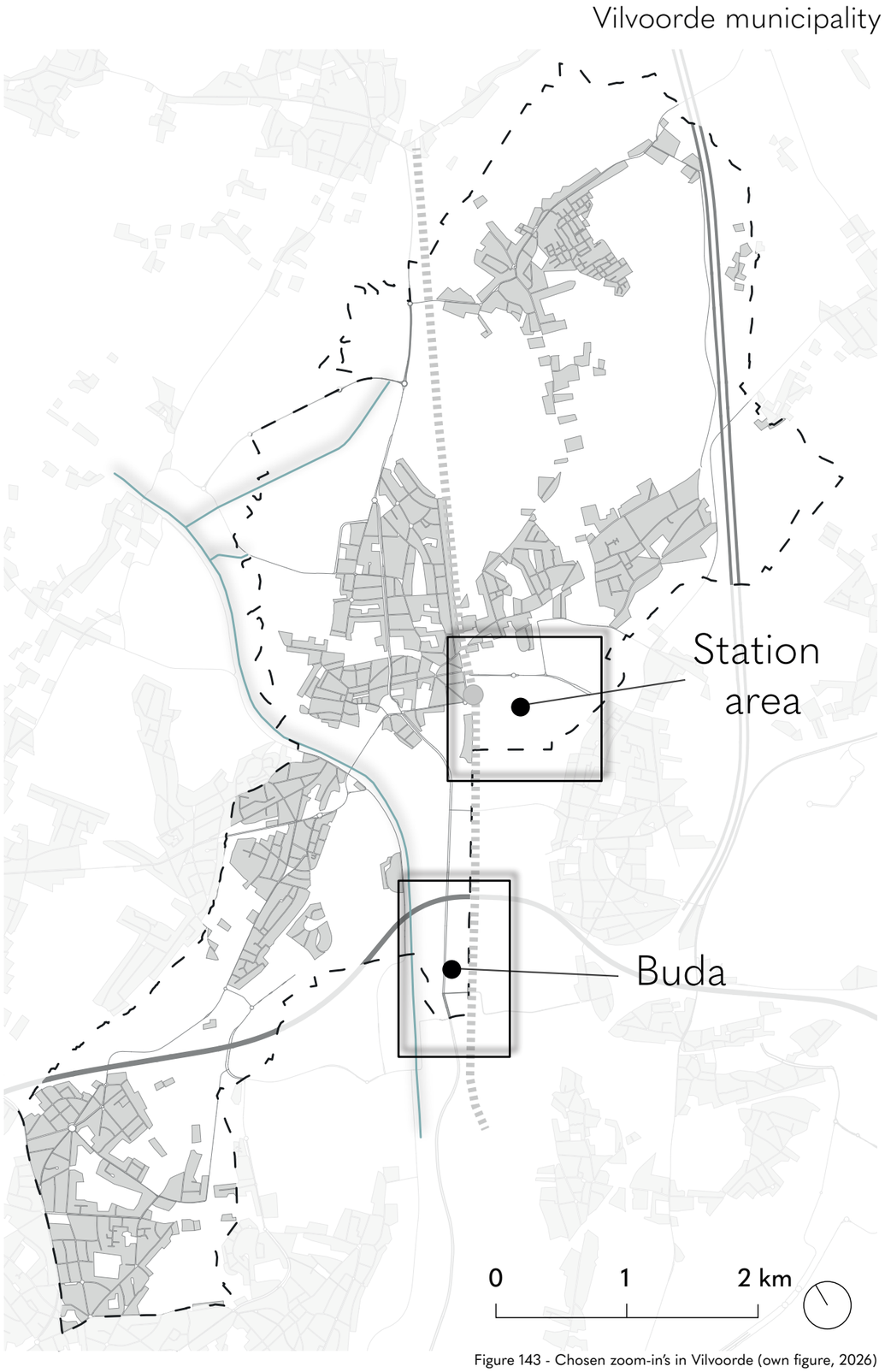


Figure 143 - Chosen zoom-in's in Vilvoorde (own figure, 2026)

Zoom in 1: Station Area, Vilvoorde



Figure 144 - Station area, aerial view (google earth, 2026)

0 250 500 m



Figure 145 - Station area, urban fabric (own figure, 2026)

0 250 500 m

The station area is approached as a strategic zone: a place where necessary and more radical renewal can support Vilvoorde's wider urban transformation. Its position between rail infrastructure, existing urban fabric and future metropolitan accessibility makes it suitable for testing two contrasting alternatives. The first one based on mixed-use densification with housing and social infrastructure, and another one exploring a more regional impact with a possible stadium, park structure and selective densification. This zoom-in therefore acts as a design test for what type of centrality could work in this strategic location.

Zoom in 2: Buda, Vilvoorde



Figure 146 - Buda, aerial view (google earth, 2026)

0 250 500 m

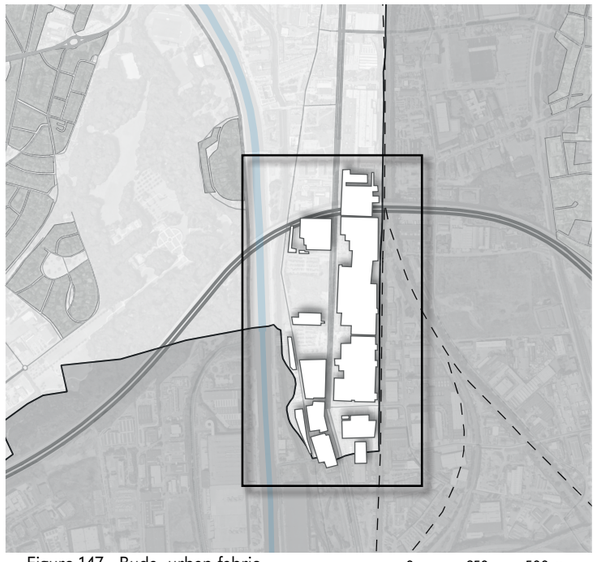


Figure 147 - Buda, urban fabric (own figure, 2026)

0 250 500 m

Buda, located at the border with the Brussels-Capital Region, is introduced as a neighbourhood with a strong existing character, shaped by its industrial identity, productive activities and mixed work-live fragments. Rather than proposing a complete transformation, the aim is to activate its underused potential through smaller-scale interventions. The alternative "Industrious Neighborhood" explores how Buda could evolve from a mostly industrial, mono-functional area into a more hybrid, multifunctional and lively district, while keeping its productive identity.

Zoom in 1: Station Area, Vilvoorde

Current situation



Figure 148 - Site zoom in 1 (Google earth, 2026)



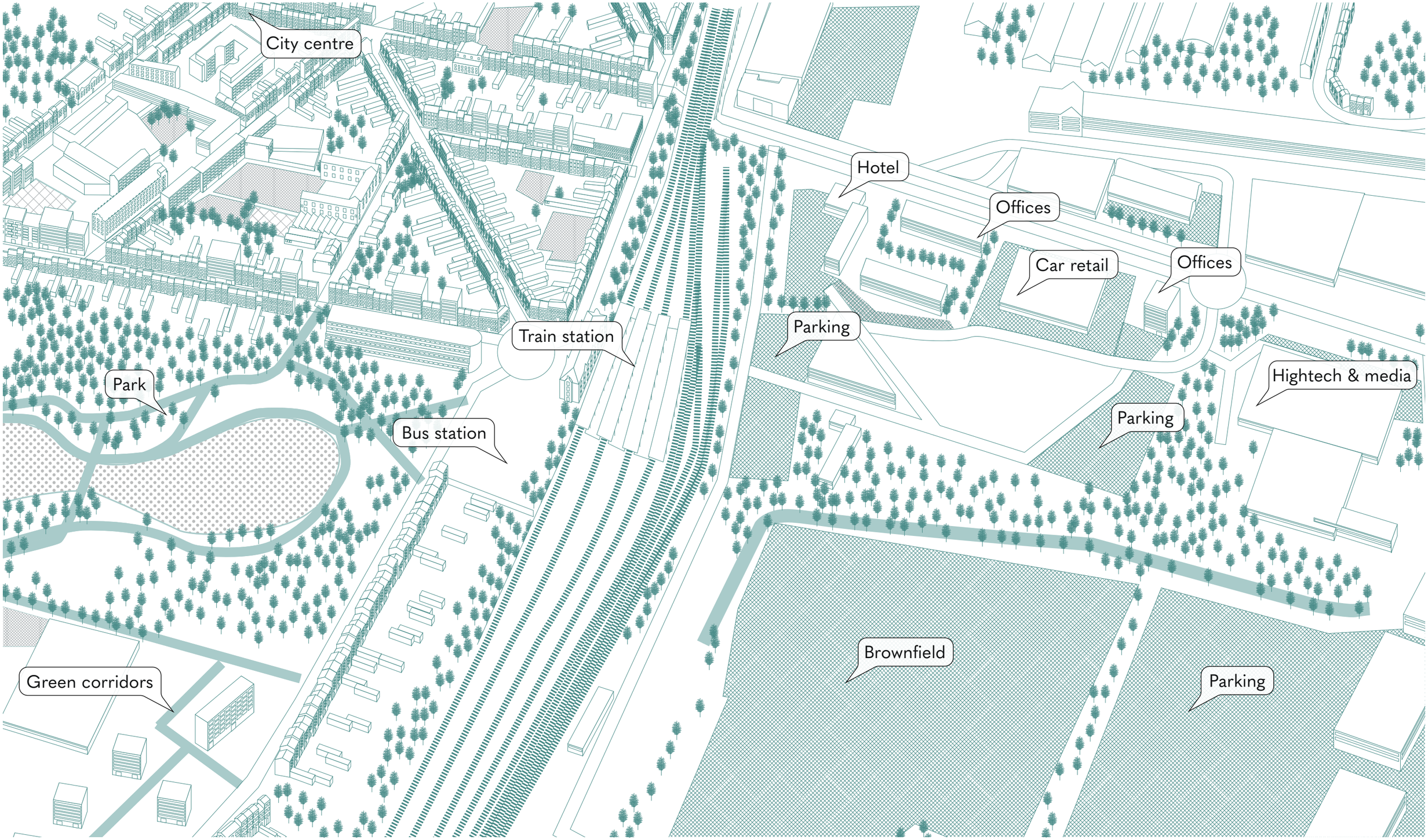


Figure 149 - Zoom in 1 current situation (adapted by author, retrieved from Stad Vilvoorde, 2017)

Strategic area: potentials

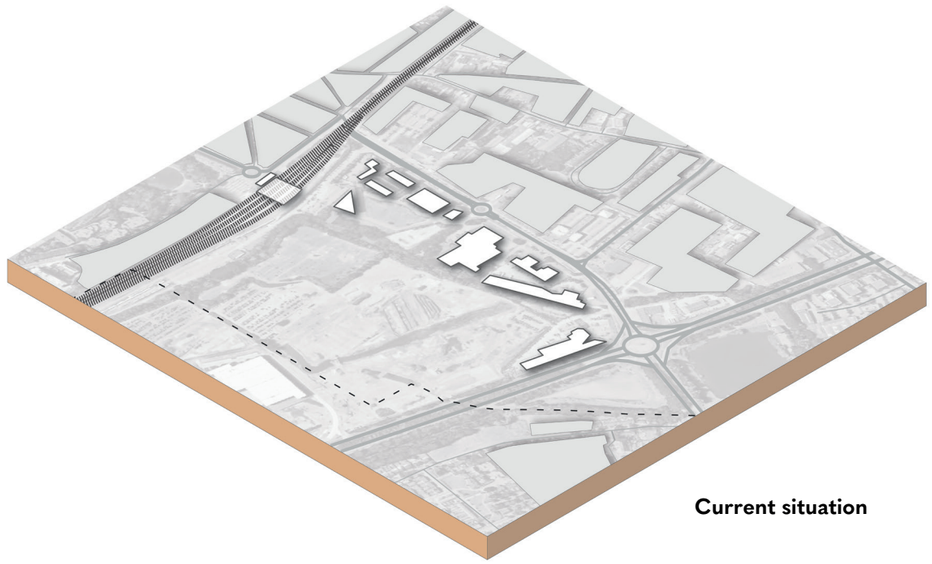
The station area represents one of Vilvoorde's most strategic development sites. Located directly opposite the railway station and multimodal transport hub, the area occupies a unique position between the city centre, productive districts and the wider metropolitan network. Large underused plots, extensive surface parking and former industrial land provide a rare opportunity for transformation within an already urbanised environment.

At the same time, the site is structured by several existing assets: excellent rail accessibility, proximity to the city centre, surrounding economic activities and a green-blue structure. These conditions make the area capable of accommodating new metropolitan functions while reinforcing local urban life. Rather than treating the brownfield as an isolated development site, the project approaches it as a strategic step for the future evolution of Vilvoorde, and even the periphery of Brussels. (Stad Vilvoorde, 2017)

Alternative A:
Mixed-use densification

The first alternative explores how the station area could evolve into a compact mixed-use urban district. Building upon the existing mobility hub, the proposal introduces new housing, social infrastructure, public amenities and local services that are currently underrepresented in Vilvoorde. The objective is not simply to increase density, but to create a more complete urban environment capable of attracting residents, supporting daily life and strengthening the relationship between the station and the city centre.

The following pages illustrate a sequence of spatial steps that could progressively transform the brownfield into a connected and multifunctional neighbourhood. These interventions establish a framework for transit-oriented development while also preserving the site's ecological structure and public accessibility.



Current situation

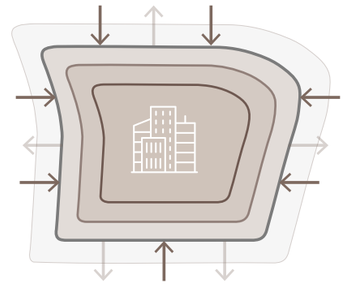
Figure 150 - Zoom in 1 current situation (own figure, 2026)



Alternative B:
Regional core stadium

The second alternative investigates the potential of introducing a more metropolitan-scale programme within the station area. Instead of primarily focusing on housing growth, this scenario uses a (regional or national) stadium as a catalyst for wider urban transformation. The stadium is conceived as a new destination connected to the railway station and embedded within a large public landscape that remains active beyond event days.

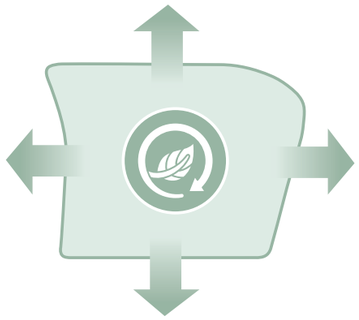
Rather than functioning as a standalone object, the facility becomes the centrepiece of a broader development strategy combining public space, recreation, mobility improvements and complementary urban programmes. A sequence of steps is also shown in 190-191 to gradually establish a new regional centrality while maintaining strong connections with the surrounding city.



Urban intensity



Productive identity



Ecological integration

Design values

The two alternatives differ in programme and spatial character, yet both are guided by a shared set of design values. Together these principles seek to transform the station area into a more connected, sustainable and metropolitan part of Vilvoorde:

Urban Intensity-
Concentrating new development around existing mobility infrastructure to reinforce accessibility and urban life.
Productive Identity-
Building upon Vilvoorde's economic and industrial heritage while allowing new programmes and activities to emerge.
Ecological Integration-
Preserving and strengthening green-blue structures as a framework for future development.
Social Inclusion-
Creating spaces, facilities and public amenities that support diverse users and everyday interaction.
Metropolitan Connectivity-
Using the station area as a gateway between Vilvoorde, Brussels and the wider metropolitan region.



Social inclusion



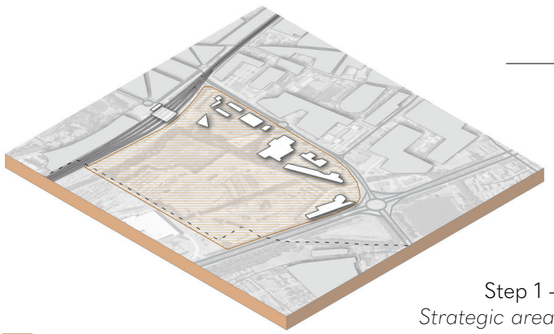
Metropolitan connectivity

Figure 151 - Design values (own figure, 2026)

Zoom in 1: Station Area, Vilvoorde

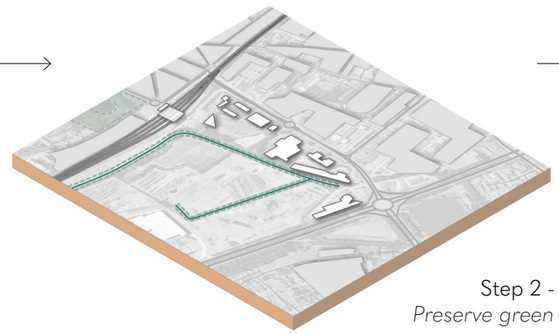
Alternative A : Mixed use densification





Step 1 -
Strategic area

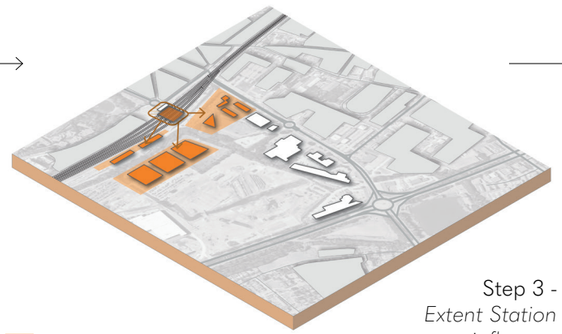
Strategic zone



Step 2 -
Preserve green structure

Green structure

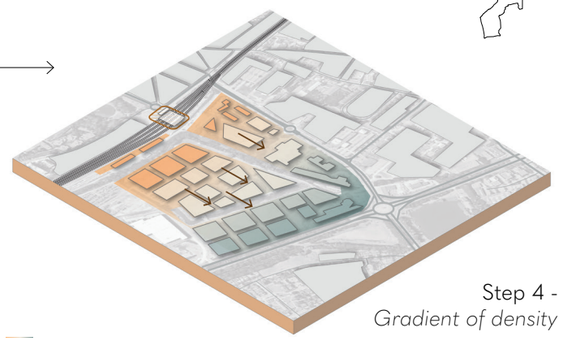
Blue structure



Step 3 -
Extent Station influence

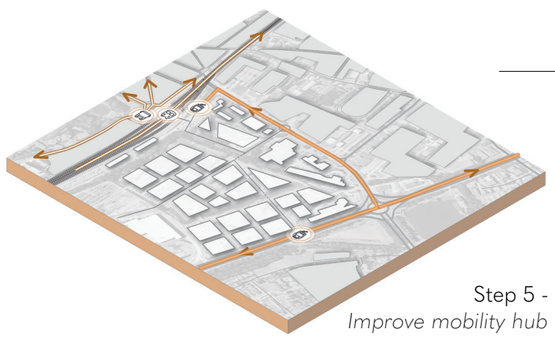
Area of 'attraction'

Social infrastructure



Step 4 -
Gradient of density

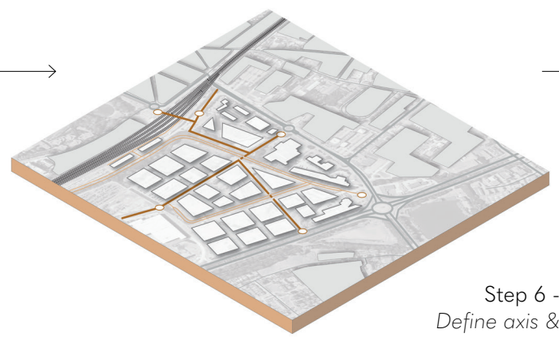
Functions gradient



Step 5 -
Improve mobility hub & lines

Existing mobility network

New tram line

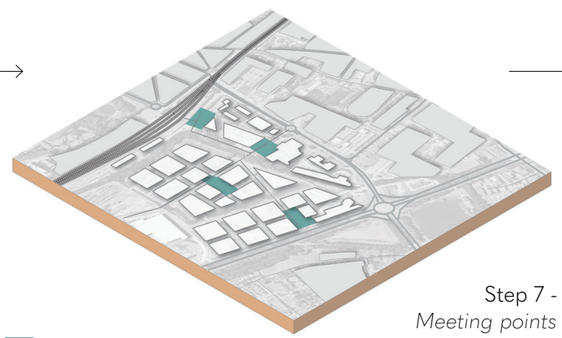


Step 6 -
Define axis & 'entrances'

Main axis

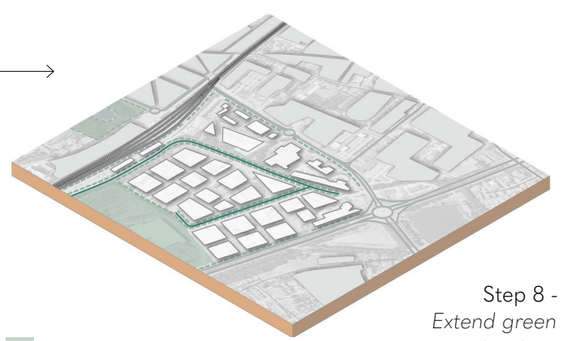
Secondary axis

Entrances



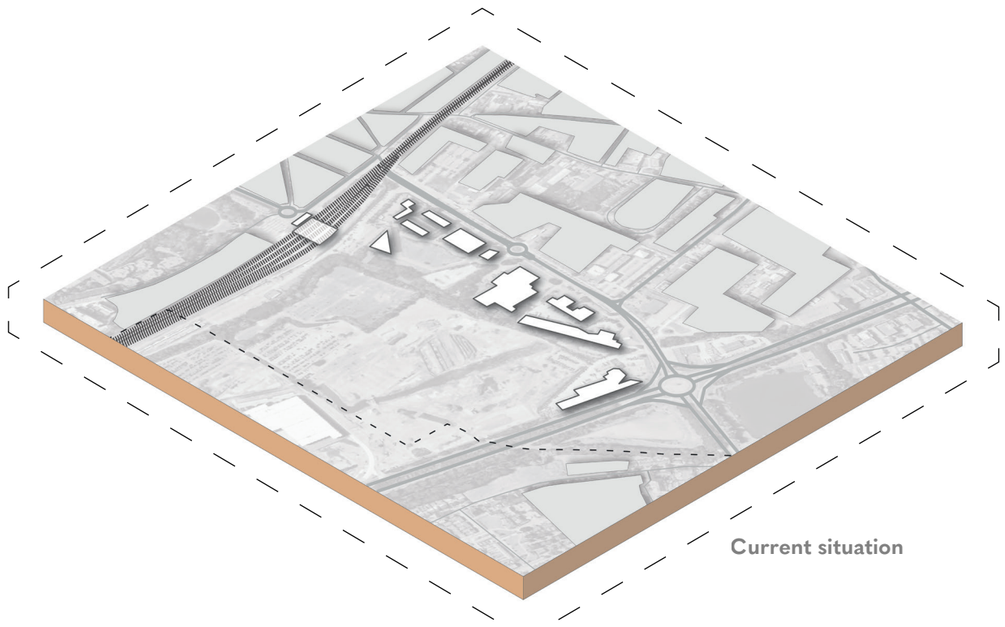
Step 7 -
Meeting points

Meeting areas



Step 8 -
Extend green structure

Current + New green structure



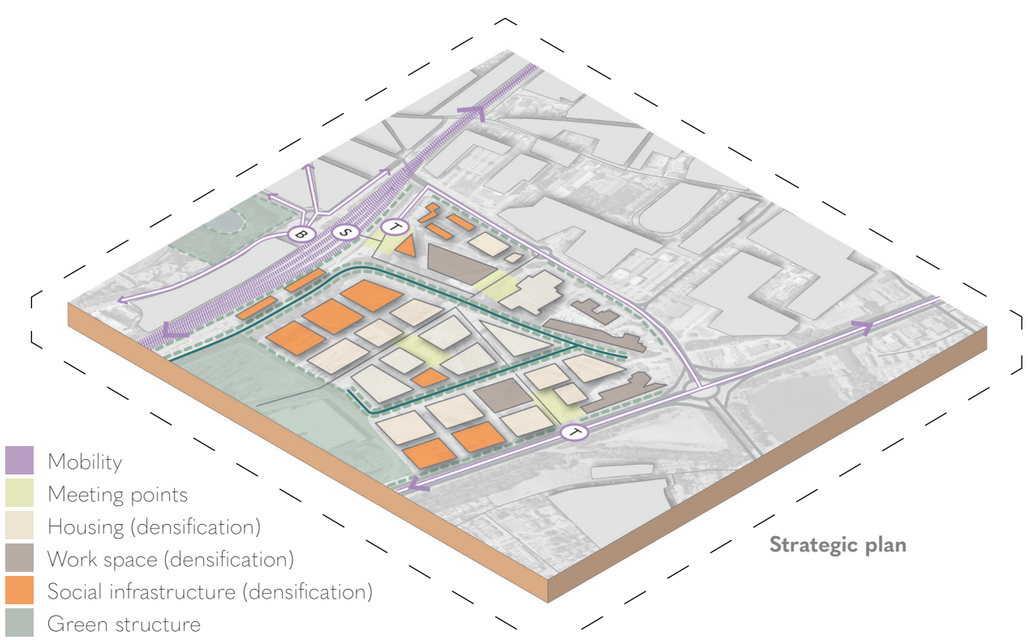


Figure 152 - Zoom in 1 Alternative A - From current situation to strategic plan (oxn figure, 2026)

Why a Mixed use densification?

This alternative translates the strategic potential of the station area into a step-by-step (figure 152) urban transformation. The process starts by defining the site as a redevelopment zone, while preserving the existing green-blue structure as a spatial backbone. From there, the station's influence is extended into the brownfield through new social infrastructure, a gradient of density, improved mobility links, clearer entrances and new meeting points. The aim is therefore not only to build more, but to organise densification around accessibility, public life and ecological continuity. In a context where Vilvoorde faces demographic growth, housing pressure and a lack of social infrastructure, this alternative tests how a vacant site next to the station can become a complete mixed-use neighbourhood.

Block types:

The block types (figure 153) show how this density can be translated into varied urban forms rather than one repetitive development model. Inspired by Merwede in Utrecht, a mixed-use urban district planned as one of the largest inner-city car-free districts in the Netherlands, the proposal combines density with reduced car dependency, active ground floors, shared spaces and strong green connections. Each block can therefore respond differently to its position: higher and more intense near the station, more open towards the green corridor, more public along main axes, and more collective around courtyards. This creates a flexible system in which housing, workspaces, amenities and social infrastructure can be combined while maintaining human scale, permeability and neighbourhood identity (BURA, n.d.).



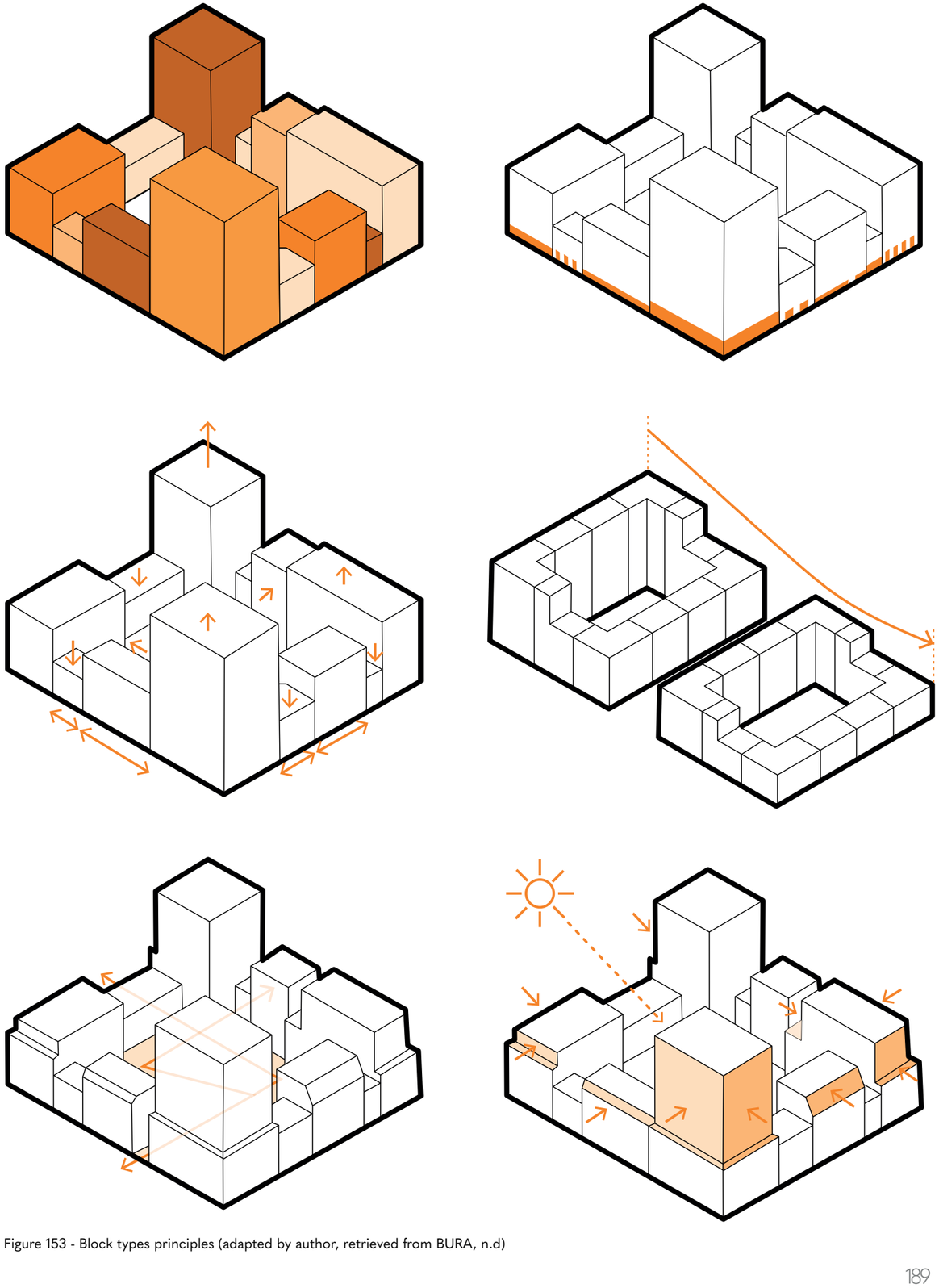
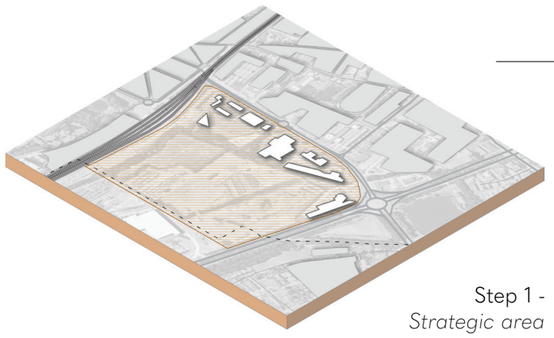


Figure 153 - Block types principles (adapted by author, retrieved from BURA, n.d)

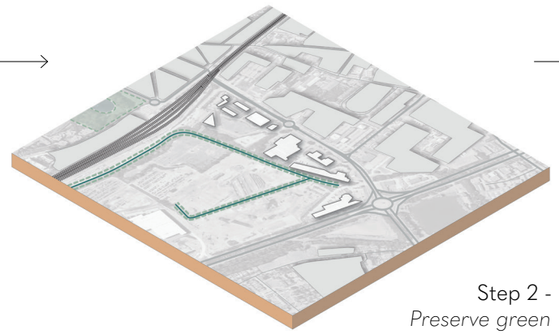
Zoom in 1: Station Area, Vilvoorde

Alternative B: Regional core stadium



Step 1 -
Strategic area

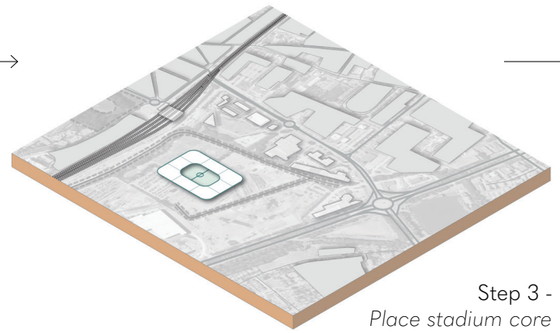
Strategic zone



Step 2 -
Preserve green structure

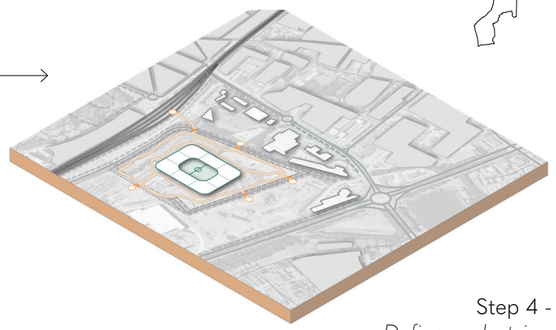
Green structure

Blue structure



Step 3 -
Place stadium core

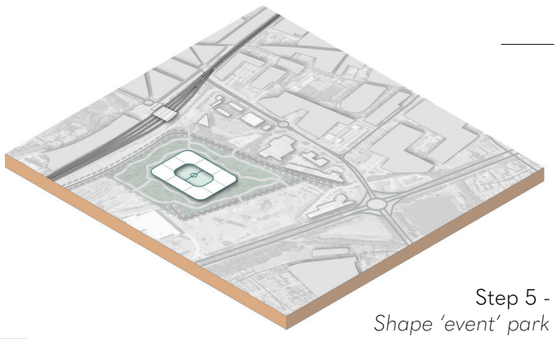
On-scale stadium
(capacity: 40/60.000 seats)



Step 4 -
Define pedestrian structure

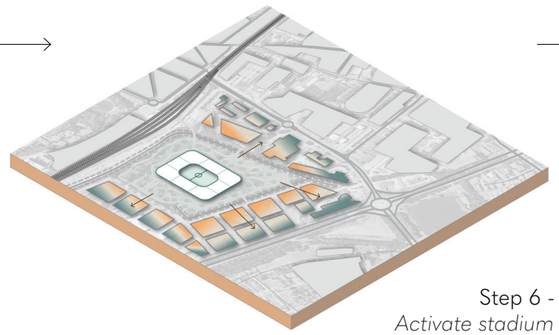
New pedestrian paths

Entrances



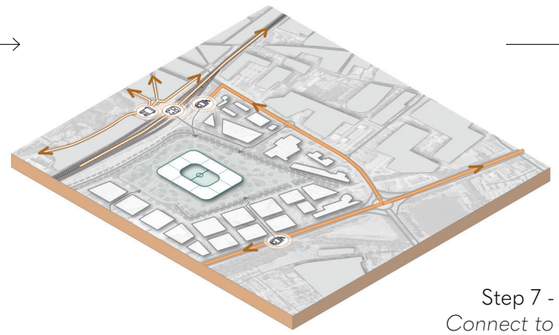
Step 5 -
Shape 'event' park

New park



Step 6 -
Activate stadium edge (gradient)

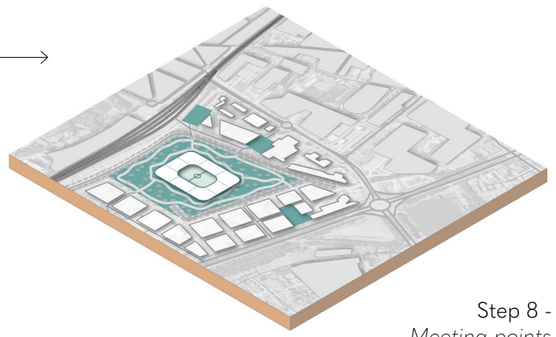
Gradient of functions



Step 7 -
Connect to mobility hub

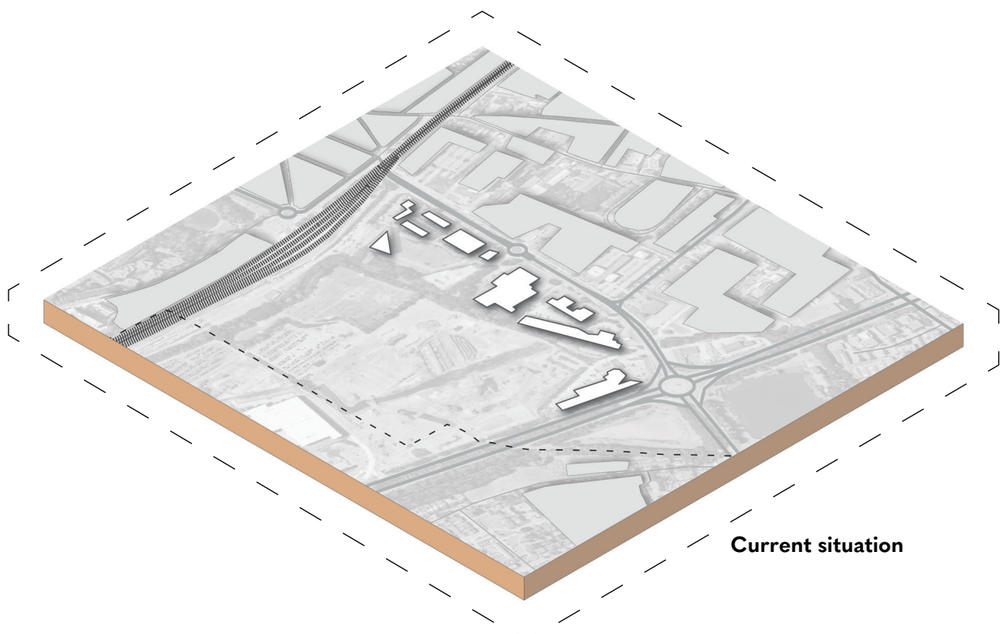
Existing mobility network

New tram line



Step 8 -
Meeting points

Meeting areas



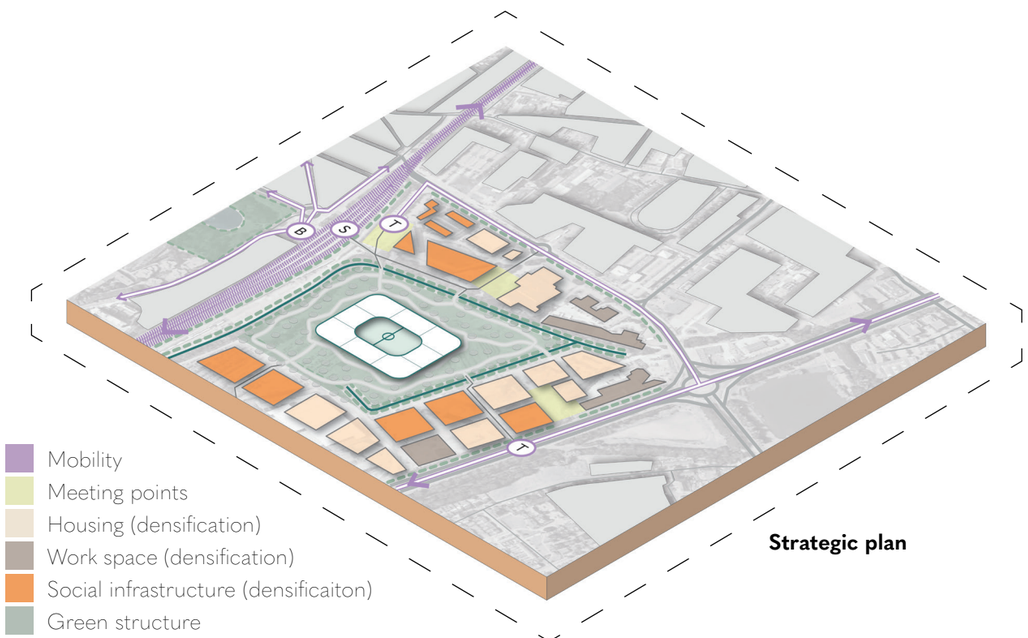


Figure 154 - Zoom in 1 Alternative B - From current situation to strategic plan (oxn figure, 2026)



Why a regional core stadium?

Rather than primarily addressing local housing demand, this alternative explores how the station area could accommodate a metropolitan-scale programme capable of serving a much wider territory. Building upon the site's exceptional accessibility, the proposal introduces a regional stadium as the catalyst for a new urban centrality. Located directly next to the railway station and connected to the wider public transport network, the stadium is conceived not as an isolated sports facility but as the anchor of a broader urban district. In this scenario, Vilvoorde assumes a role that extends beyond the municipal scale, potentially accommodating functions of regional or even national significance while reinforcing its position within the Brussels metropolitan system.

The transformation (figure 154) begins by preserving the existing green-blue structure and positioning the stadium within a large public landscape. Around this central element, new pedestrian routes, public spaces and meeting areas establish strong connections with the station, surrounding neighbourhoods and future tram infrastructure. Importantly, the proposal does not aim to create a district that is only active on match days. Housing, workplaces, social infrastructure and recreational spaces are introduced around the stadium in order to support everyday urban life and ensure a continuous use of the area throughout the year. The stadium therefore acts as a catalyst rather than a destination in itself, helping to structure a multifunctional district that remains accessible and relevant beyond major events.

Inspired by MVRDV's Super Stadium proposal (figure 155) in Durrës, Albania, this alternative explores how a large sporting facility can be embedded within a compact and multifunctional urban environment rather than occupying an isolated enclave. While the scale and programme remain intentionally speculative, the reference demonstrates how major metropolitan functions can coexist with housing, public space and daily urban activities, transforming a single destination into a catalyst for wider urban development (MVRDV, n.d.).

At the same time, this alternative should be understood as an exploratory scenario rather than a fixed proposal. Its implementation would raise important questions regarding governance, institutional cooperation and metropolitan identity. If the stadium were to accommodate a function of regional or even national importance, questions emerge regarding ownership, management and symbolic representation within the Brussels metropolitan area. The prospect of locating a major national facility outside the Brussels-Capital Region, yet directly connected to it, illustrates how spatial interventions can also challenge existing administrative boundaries and encourage new forms of metropolitan cooperation.



Figure 155 - Super Stadium project in Durres, Albania (MVRDV, n.d)



Pattern integration in Zoom in 1 (both alternatives)

In both alternatives, the transformation of the area combines some patterns from the Connectivity, Centrality and Borders families. Together, they support the ambition of turning the station district into a metropolitan node that connects local neighbourhoods, productive activities and regional mobility networks.

Station as Metropolitan Core (Ce.1)

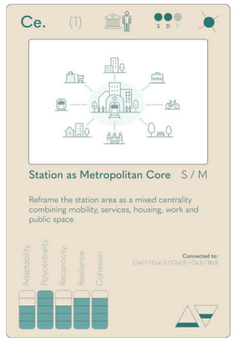
The station area is reimagined as a metropolitan centre rather than a purely transport-oriented space. By concentrating housing, services, workplaces and public functions around an accessible node, the proposal strengthens Vilvoorde's role within the wider metropolitan region while creating a new focal point for everyday urban life.

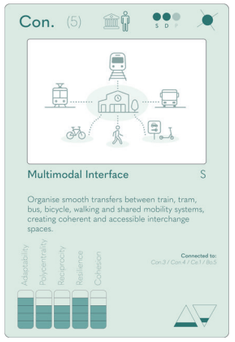
Multimodal Interface (Con.5)

Beyond transport efficiency, the station becomes a place of exchange between different mobility systems and users. The project improves the quality of transfers and public spaces around the station, creating a more accessible and user-friendly metropolitan interface.

Productive Civic Hub (Ce.4)

The proposal combines residential development with employment, services and public programmes. Rather than creating a mono-functional district, the station area evolves into a mixed and active urban environment capable of supporting both local communities and metropolitan functions.







Shared Social Infrastructure (Ce.5)

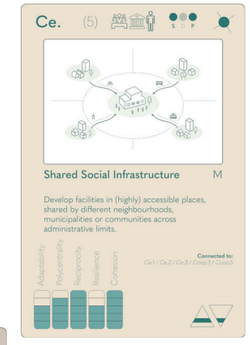
The station area is envisioned not only as a mobility and economic centre, but also as a place of collective urban life. New social facilities, public amenities and shared spaces help support both existing and future residents while creating opportunities for interaction between different communities. By concentrating accessible services around a highly connected location, the proposal strengthens the station area as a shared metropolitan destination that extends beyond municipal boundaries.

Buffer to Gradient (Bo.4)

Gradual transitions are introduced between the denser station district and the surrounding urban fabric. This approach avoids abrupt spatial changes and helps create stronger relationships between residential areas, productive zones and public spaces.

Combined Contribution

Together, these patterns demonstrate how the station area can evolve from a fragmented transport node into a multifunctional metropolitan centre where mobility, urban life and economic activity reinforce one another across multiple scales.



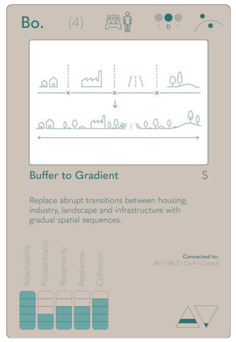


Figure 156 - Suitable pattern cards for Zoom in 1 (own figure, 2026)

Zoom in 2: Buda, Vilvoorde

Current situation





Figure 157 - Site zoom in 2 (Google earth, 2026)



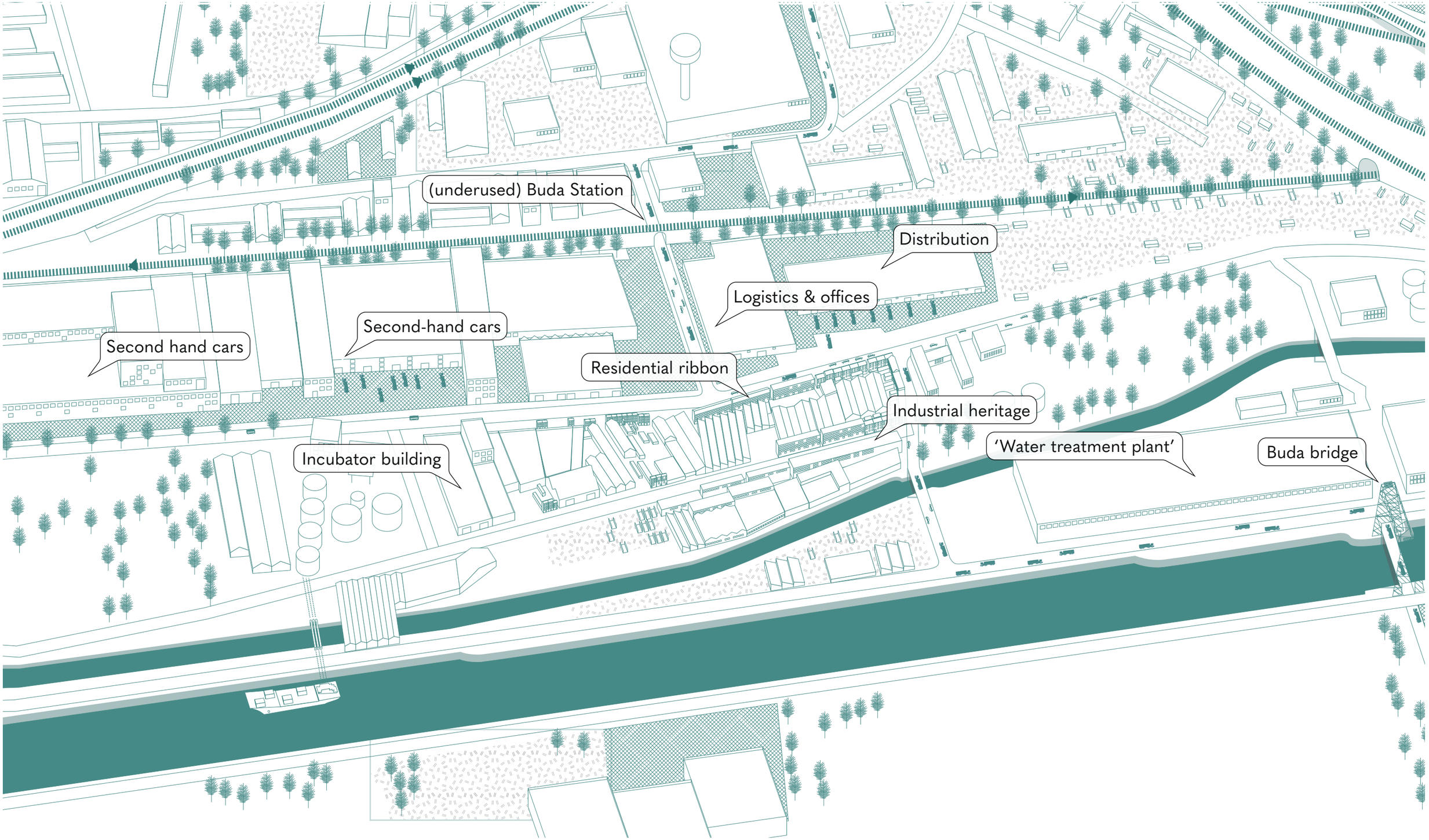


Figure 158 - Zoom in 2 current situation (adapted by author, retrieved from Stad Vilvoorde, 2017)

Neighbourhood with character: Potentials and Challenges

Buda occupies a unique position within Vilvoorde, situated along the 'Brussels-Scheldt' Canal and directly connected to major rail, road and logistics infrastructures. Historically developed as an industrial district, the area continues to accommodate productive activities, warehouses, distribution facilities and employment clusters that contribute significantly to the municipality's economic profile. Unlike the station area, Buda is therefore not characterised by a lack of identity, but rather by the presence of a strong productive character that has shaped its urban form over time.

Despite these assets, many parts of the district remain fragmented and underutilised. Large mono-functional plots, extensive surface parking, disconnected public spaces and the limited use of the existing Buda station reduce the area's integration within the wider urban structure of Vilvoorde. At the same time, the canal corridor, industrial heritage buildings, productive landscapes and strategic accessibility offer significant opportunities for future development. Its location on the border with the Brussels-Capital Region also adds an interesting cross-border dimension. Rather than viewing industry and urbanity as opposing conditions, Buda presents the potential to establish a stronger relationship between production, public life and metropolitan accessibility, transforming existing assets into drivers for future regeneration.

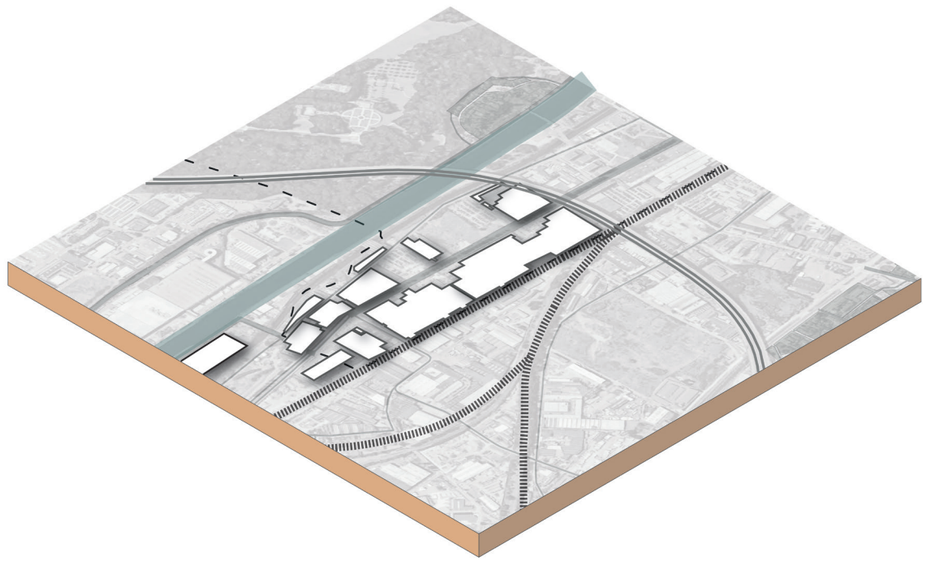


Figure 159 - Zoom in 1 current situation (own figure, 2026)



Proposed Alternative: *Industrious neighbourhood*

The proposed alternative (figue 161) explores how Buda could evolve into an *Industrious Neighbourhood*: a contemporary productive district where economic activity, innovation and everyday urban life coexist. Rather than replacing existing industries through large-scale redevelopment, the objective is to gradually diversify the area's programme while preserving its productive identity. New workspaces, educational facilities, creative industries, community and social functions or public amenities can be introduced alongside existing economic activities, creating a more resilient and multifunctional urban environment.

This approach seeks to activate underused spaces, strengthen connections between different parts of the district and improve accessibility through the canal corridor and the wider mobility network. In doing so, Buda becomes more than an isolated industrial zone; it becomes an integrated part of Vilvoorde's urban structure and a productive gateway within the Brussels metropolitan region. The following steps therefore illustrate a gradual process of transformation, demonstrating how targeted interventions can reinforce local identity while simultaneously contributing to broader municipal and metropolitan ambitions.

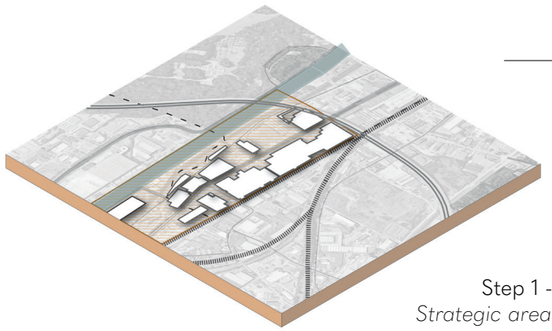


Figure 160 - Underused station in Buda, Vilvoorde (Unsplash, 2026)

Zoom in 2: Buda, Vilvoorde

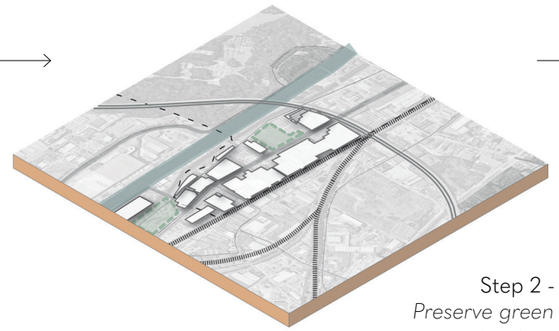
Alternative: Industrious neighborhood





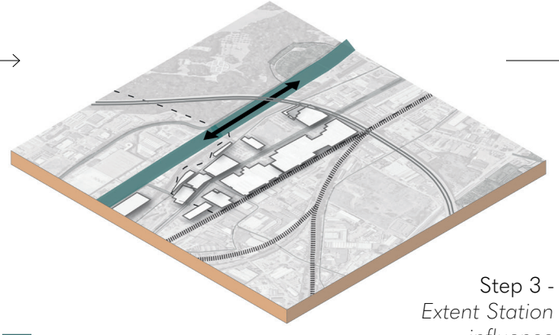
Step 1 -
Strategic area

Strategic zone



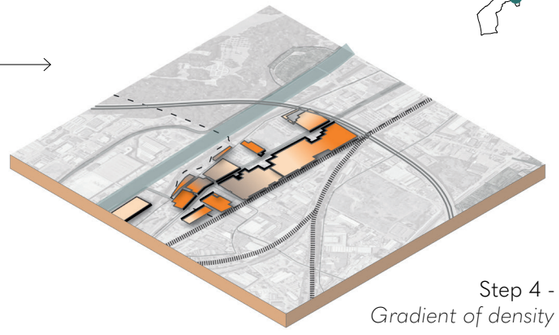
Step 2 -
Preserve green structure

Green structure
Green corridor
Vilvoorde-Brussels border



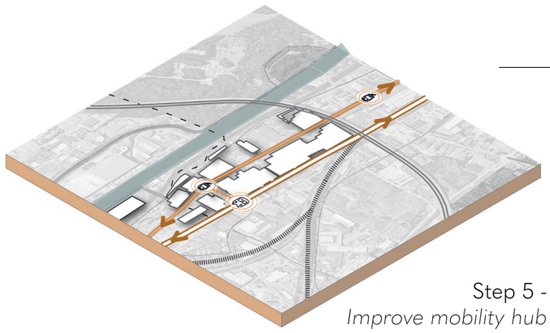
Step 3 -
Extent Station influence

Canal (re)activation



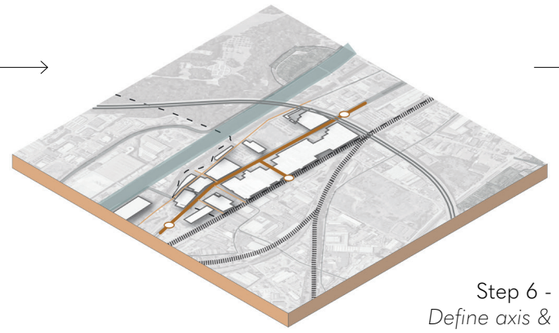
Step 4 -
Gradient of density

Housing densification
Social infr. densification
Work space densification



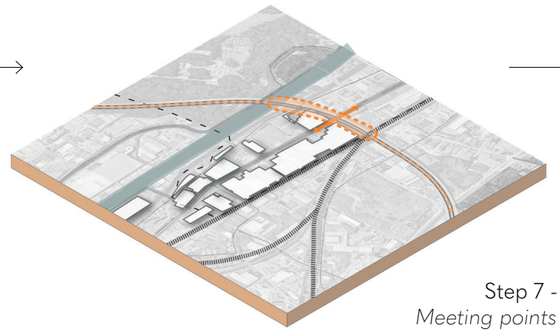
Step 5 -
Improve mobility hub & lines

Existing mobility network
New tram line



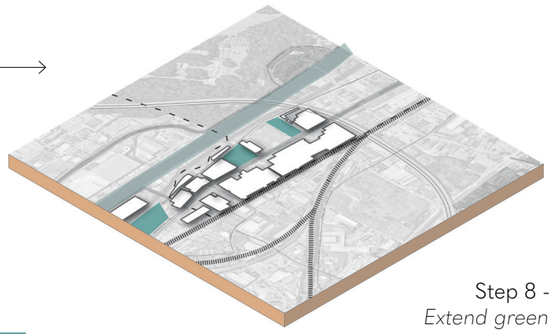
Step 6 -
Define axis & 'entrances'

Main axis
Secondary axis
Entrances

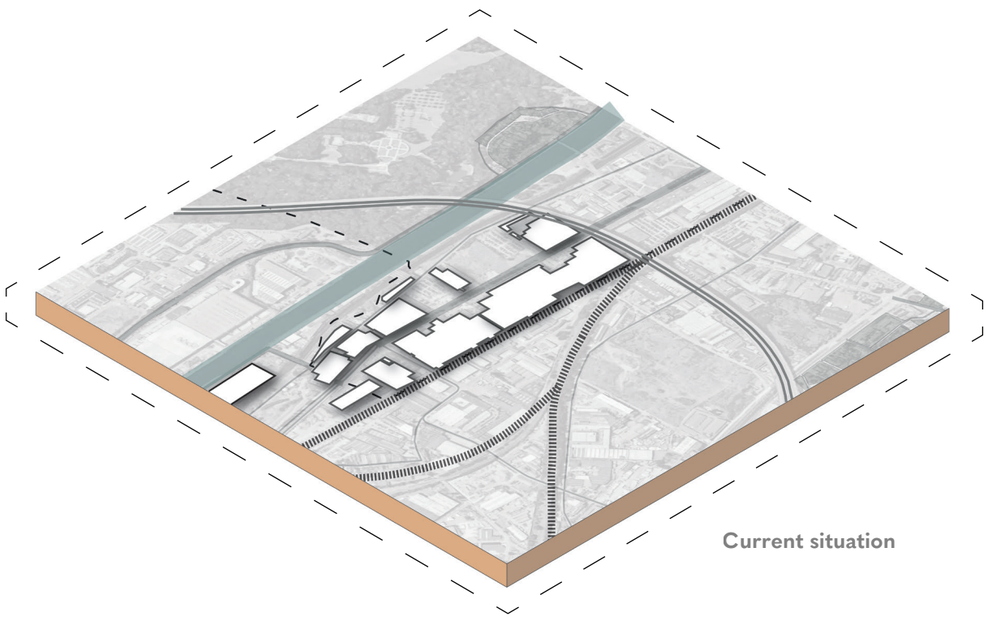


Step 7 -
Meeting points

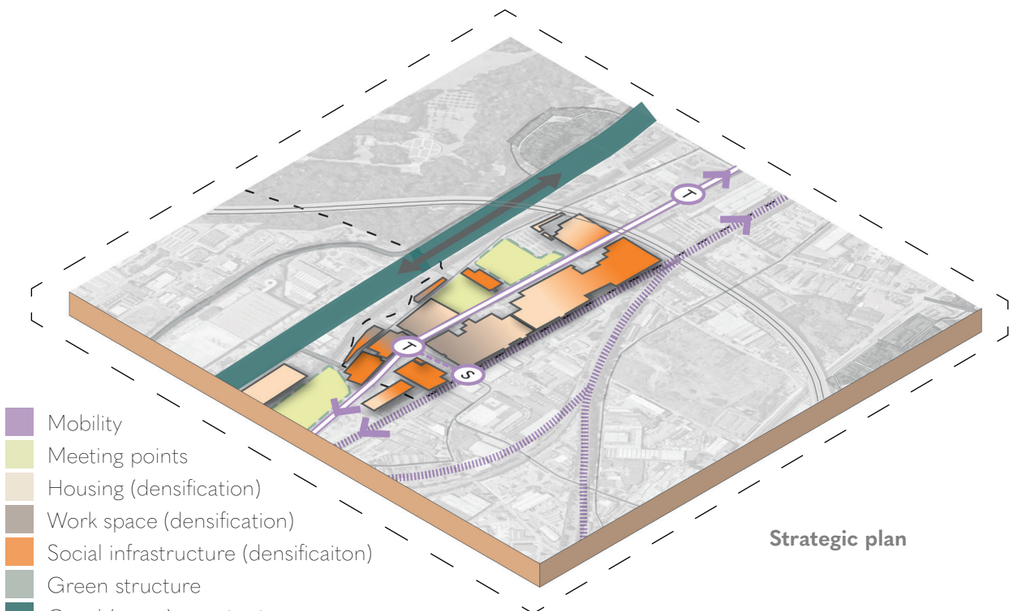
Softening of infrastructural barrier:
Circumferential highway
Meeting areas



Step 8 -
Extend green structure



Current situation



Mobility
Meeting points
Housing (densification)
Work space (densification)
Social infrastructure (densificaiton)
Green structure
Canal (water) reactivation

Strategic plan

Figure 161 - Zoom in 2 - From current situation to strategic plan (oxn figure, 2026)



Pattern integration in Zoom in 2

Unlike many contemporary regeneration projects that replace industrial functions with new urban programmes, the Buda proposal explores how metropolitan integration can emerge through the transformation of existing productive landscapes. Production, logistics, innovation and everyday urban life are therefore approached as complementary components of the same territorial system. Through a combination of mobility improvements, public spaces and productive activities, the proposal demonstrates how Buda can evolve into an industrious neighbourhood that strengthens both its local identity and its metropolitan role.

Canal Interface (Bo.3)

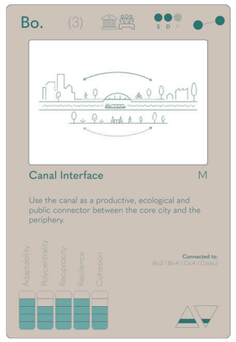
The canal is used as one of the main spatial anchors of the proposal. Instead of functioning only as a logistical or infrastructural edge, it becomes a public and productive interface that can connect Buda to Vilvoorde, Brussels and the wider canal corridor.

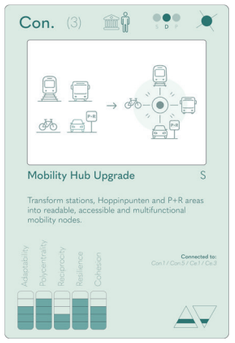
Mobility Hub Upgrade (Con.3)

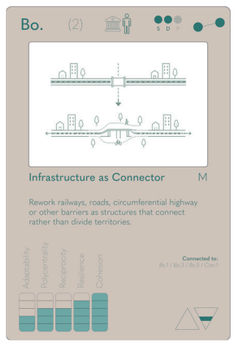
The underused Buda station becomes an important trigger for the neighbourhood's transformation. By improving its accessibility and relation to surrounding streets, workspaces and public spaces, the station can support a more sustainable mobility structure and reduce the isolation of the area.

Infrastructure as Connector (Bo.2)

Major infrastructures such as the Ring, rail lines and road corridors currently contribute to Buda's fragmented condition. This pattern is used to reinterpret these infrastructures as potential connectors through new crossings, clearer links and better integration between separated urban fragments.







Buffer to Gradient (Bo.4)

The proposal introduces gradual transitions between productive zones, mixed-use areas, public spaces and possible residential fragments. Instead of replacing industry with a completely different urban fabric, Buda evolves through gradients that allow different functions to coexist.

Connected Neighbourhoods (Con.4)

Buda's transformation depends on reconnecting it to nearby districts and larger mobility networks. Improved pedestrian, cycling and local mobility links help transform the area from an isolated productive enclave into a neighbourhood that participates more actively in Vilvoorde's urban structure.

Combined Contribution

Together, these patterns support Buda's evolution from a fragmented industrial zone into an industrious neighbourhood: a place where production, mobility, public space and local life can coexist while reinforcing Vilvoorde's role within the Brussels metropolitan edge.

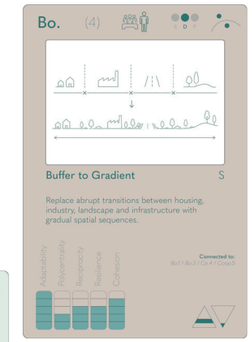
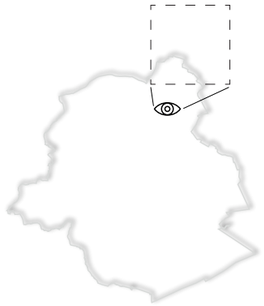




Figure 162 - Suitable pattern cards for Zoom in 2 (own figure, 2026)



Returning to the scale of northern Brussels, this intervention bird-eye view illustrates how local projects can contribute to wider metropolitan ambitions, and how regional strategies can in turn support place-specific development. Rather than providing a comprehensive masterplan, the bird-eye view highlights a selection of interventions linked to patterns, and connections that reveal the relationship between different scales of action. Together, they demonstrate how municipal identities, local opportunities and strategic metropolitan objectives can be linked through a coherent story of mobility, public space, landscape and cooperation. The purpose is not to prescribe a fixed future, but to illustrate the types of interventions capable of strengthening the integration of the Flemish periphery within the larger scale.

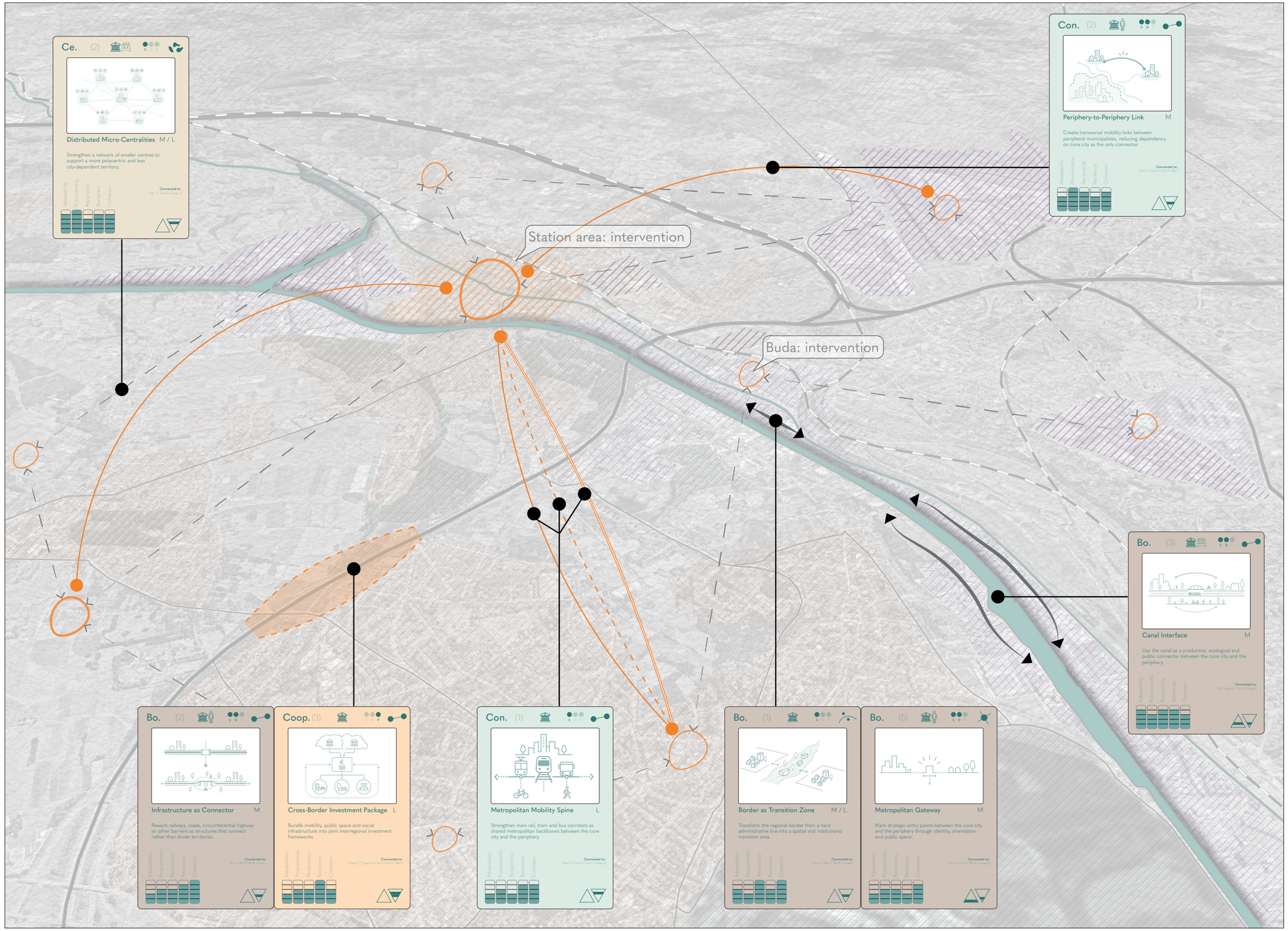


Figure 163 - Bird-eye view Brussels North with interventions (own figure, 2026)

.4 Regional vision

The regional vision reimagines the Brussels edge as a shared metropolitan interface rather than a fixed administrative boundary. Instead of reinforcing existing divisions, it seeks to strengthen the relationships between municipalities, infrastructures, landscapes and communities across the Brussels metropolitan region. Through a combination of improved mobility connections, activated local centralities, productive landscapes and collaborative governance structures, the vision promotes a more integrated yet differentiated metropolitan territory. Integration is therefore understood not as the absorption of peripheral municipalities into Brussels, but as the creation of stronger functional, spatial and institutional connections between distinct places. The four strategic phases: expansion, connection, activation and creation, provide a framework through which this long-term metropolitan transition can gradually emerge.

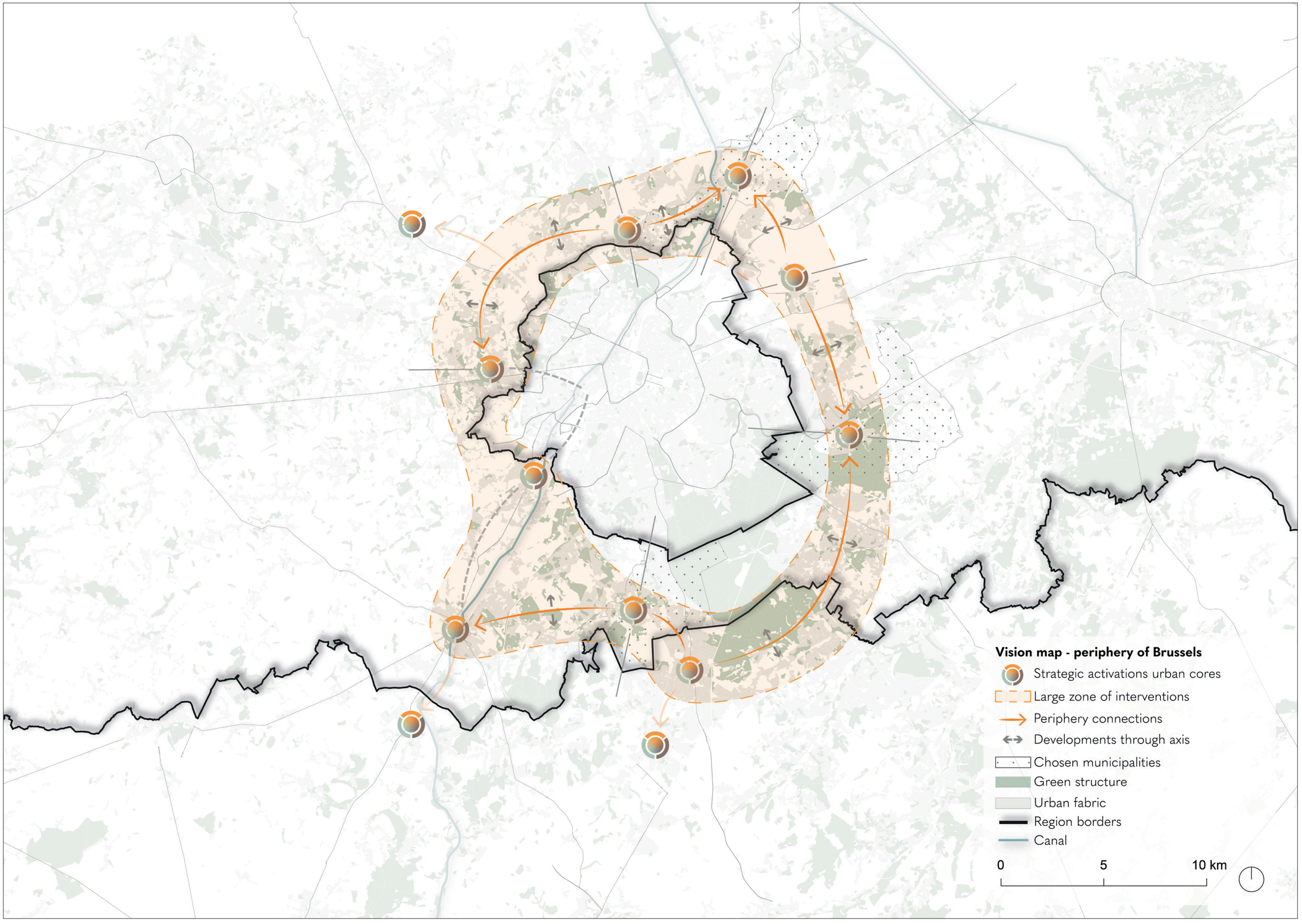


Figure 164 - Vision map regional scale (own figure, 2026)

.5 Phasing interventions

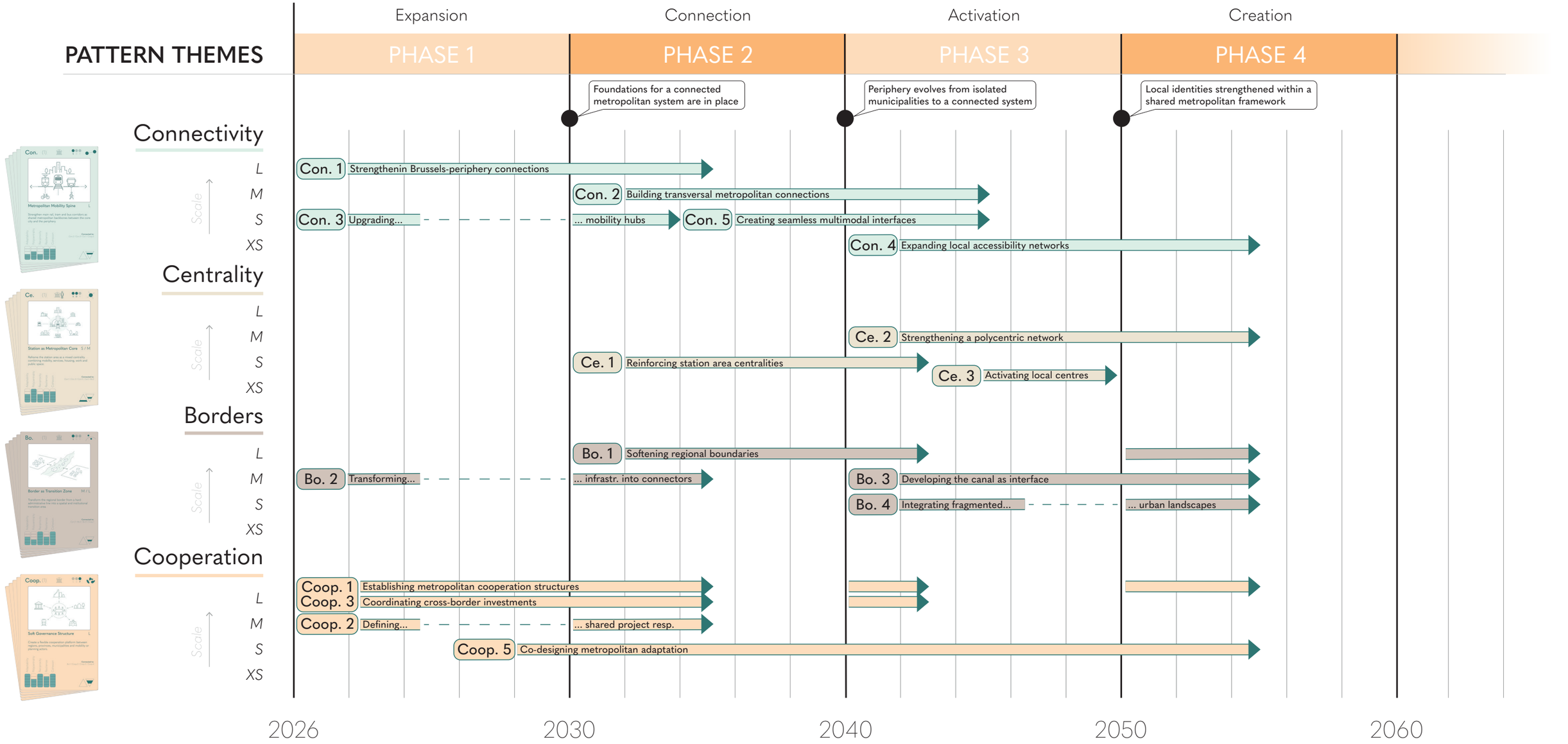


Figure 165 - Timeline phasing interventions linked with pattern cards (own figure, 2026)

This phasing timeline translates the regional, municipal and local visions into a long-term implementation strategy. Rather than presenting a fixed masterplan, it organises the different pattern cards across time, themes and scales, showing when certain types of interventions could become relevant. The sequence begins with the basic conditions for metropolitan integration: strengthening the Brussels-periphery mobility corridors, upgrading strategic hubs, reframing infrastructures as connectors and establishing shared governance and investment structures.

The second phase shifts the emphasis from expansion to connection. Once the first corridors and institutional frameworks are in place, the strategy moves towards transversal links between peripheral urban cores, station-area centralities and softer regional boundaries. In this phase, design interventions and policy instruments start to work together more explicitly: spatial projects create new connections and centralities, while governance frameworks make cooperation, funding and coordination between entities possible.

The third and fourth phases move from activation to creation. Local centres, services, canal interfaces and fragmented urban landscapes are gradually activated according to their specific qualities. The aim is not to impose one uniform metropolitan model, but to allow different places to strengthen their own identities within a shared metropolitan framework. In this sense, **design operates through spatial transformation, while policy and governance provide the continuity needed to align local, municipal and regional ambitions over time.**

The years indicated on the timeline should therefore be read as indicative rather than definitive. They create a structure for understanding the sequence of interventions, but remain flexible and partly fictional. The process does not end after Phase 4: it continues, adapts and evolves as new needs, actors and opportunities emerge. Ideally, the phasing itself should be revised throughout the process, allowing cooperation mechanisms and design priorities to be adjusted according to evaluation, negotiation and changing ambitions between the different territorial entities.

.6 Evaluation and recommendations

Evaluating the spatial strategies

To give a quick summary, the spatial strategies developed throughout the report explore how the Brussels periphery can be understood not as a residual edge, but as an active metropolitan interface. Rather than attempting to remove the institutional border between Brussels and Flanders, the project investigates how its spatial effects can be softened through mobility, centrality, productive transformation and cooperation. The regional concept, the Vilvoorde zoom-ins and the phasing strategy together demonstrate that metropolitan integration cannot rely on a single intervention or actor. Instead, it emerges through the combination of infrastructural links, local activation, adaptive governance and design-based experimentation operating across different scales.

Looking back at the regional vision, one of the main contributions of the project is the attempt to reconnect Brussels and its surrounding municipalities through a more coherent metropolitan structure. The proposed extensions of tram and rail logics toward the periphery, the strengthening of links between peripheral urban cores, and the activation of local centralities are not intended as fixed infrastructure projects, but as strategic directions that help reveal future opportunities. Together, these interventions suggest how the metropolitan system could become less fragmented, less dependent on administrative boundaries and more capable of supporting everyday relationships across the region. In this sense, the phasing strategy functions primarily as a framework for action, illustrating possible trajectories rather than prescribing a definitive roadmap.

At the municipal scale, Vilvoorde demonstrates how a peripheral municipality can become more than a place between Brussels, the airport, the canal and the Flemish landscape. The station area, the canal corridor and Buda reveal different forms of metropolitan potential: mobility-oriented development, productive transformation, mixed-use densification, and the reactivation of underused industrial fabrics. The two alternatives around the station and the industrious neighbourhood proposal for Buda should therefore be read as complementary explorations rather than isolated design solutions. Together, they test how Vilvoorde could support both local urban life and broader metropolitan integration. More importantly, they illustrate how regional concepts can be translated into spatial interventions at the local scale, while local projects themselves can contribute to larger metropolitan ambitions. Rather than operating independently, interventions across scales are conceived as part of a shared narrative, where regional strategies provide direction for local transformation and local developments reinforce wider metropolitan structures. In this way, integration emerges not through a single large-scale project, but through the continuous interaction between regional visions and municipal initiatives.

A key evaluation point is the role of the pattern language. The pattern cards do not prescribe a single masterplan, but create a vocabulary through which spatial, social and institutional issues can be translated into design actions. They allow the project to move between analysis and proposition, between top-down regional ambitions and bottom-up local adaptation. In that sense, the patterns become a tool for comparison, communication and implementation. They make it possible to imagine how similar principles could be adapted in other peripheral municipalities, without assuming that Tervuren, Sint-Genesius-Rode, Vilvoorde or other places require the same response.

Recommendations for implementation

The first recommendation is to treat the proposed strategies as an evolving framework rather than a fixed end-state. The phasing presented in the previous sub-chapter provides structure and direction, yet metropolitan development rarely follows a linear path. Conditions, priorities and partnerships inevitably change over time. For that reason, the proposed phases should be understood as indicative moments within a longer process of adaptation, negotiation and learning. Their value lies less in the exact sequence of interventions than in establishing a shared trajectory through which different actors can gradually work toward stronger metropolitan integration.

A second recommendation emerging from the project is the need to continuously connect spatial design and governance. Throughout the thesis it became evident that many of the proposed interventions depend on cooperation beyond municipal and regional boundaries. Mobility extensions, productive neighbourhoods, shared centralities or cross-border public spaces cannot be achieved by design alone. They require institutional agreements, shared funding mechanisms and coordinated planning instruments. Conversely, governance without spatial translation risks remaining abstract. Building upon the 'Research-by-Design' approach adopted throughout the thesis, the project therefore recommends using design as a mediating tool: not only to represent future possibilities, but also to test alternatives, reveal spatial implications and structure dialogue between actors. In this sense, design becomes more than a final outcome; it operates as a platform through which governance ambitions, spatial opportunities and stakeholder interests can be explored, negotiated and aligned across scales.

The third recommendation is to work with differentiated peripheral conditions. The Brussels periphery should not be approached as one homogeneous ring. Vilvoorde, Tervuren and Sint-Genesius-Rode show that each municipality relates to Brussels differently in terms of mobility, landscape, identity, social composition and institutional positioning. Future strategies should therefore avoid generic solutions and instead use the pattern framework to identify which combinations of connectivity, centrality, borders and cooperation are most relevant in each place.

Finally, the project recommends maintaining a critical and adaptive stance. The proposals remain conceptual and would require further technical, financial, environmental and participatory studies before implementation. Their purpose is not to deliver a ready-made plan, but to demonstrate how spatial strategies can help reframe metropolitan fragmentation as a design and governance challenge. The value of the project lies in showing that the Brussels edge can become a space of negotiation, experimentation and shared metropolitan development, rather than a line of separation between territories.

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CONCLUSION

The findings of the project are brought together to answer how spatial and institutional strategies can mediate metropolitan integration.

.1 Answering the sub-research questions 216
.2 Answering the main research question 218

.1 Answering the sub-research questions

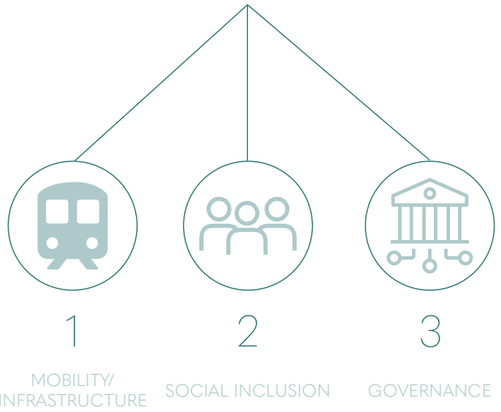

Figure 166 - Three dimensions of intervention (own figure, 2026)

The Brussels metropolitan region is characterised by a strong functional interdependence between the Brussels-Capital Region and its surrounding Flemish municipalities. Daily mobility flows, economic activities, housing dynamics and social interactions increasingly transcend administrative boundaries, yet planning, governance and spatial development remain largely organised according to fragmented institutional structures. As a result, the Brussels periphery occupies a complex position: simultaneously connected to and separated from the metropolitan core.

This thesis set out to investigate how spatial design and institutional strategies can contribute to a stronger integration of the Flemish periphery within the Brussels metropolitan system. Through a combination of literature review, comparative analysis, governance research, pattern development and Research-by-Design, the study explored the relationship between connectivity, social integration and metropolitan cooperation across multiple scales. Rather than approaching the periphery as a homogeneous suburban belt, the research examined it as a collection of diverse interplaces, each characterised by distinct spatial, social and institutional conditions.

This chapter reflects upon the main findings of the research by revisiting the three sub-questions and the overarching research question. It synthesises the lessons emerging from the governance framework, the pattern language and the spatial strategies developed throughout the project, and discusses how these components together contribute to a more integrated and cooperative metropolitan future for Brussels and its periphery.

(Sub) Research Question 1:

How can mobility systems and infrastructural connections between Brussels and the Flemish periphery be improved to provide credible alternatives to car dependency and support daily cross-border flows?

The research approached mobility as one of the primary challenges affecting the relationship between Brussels and its Flemish periphery. Daily commuting patterns reveal a strong functional dependence between both territories, yet transport networks and planning approaches often remain fragmented across administrative boundaries. While Brussels benefits from a dense public transport system, connections beyond the regional border frequently become less integrated, reinforcing car dependency and limiting accessibility.

Throughout the research, it became evident that the challenge is not necessarily the absence of infrastructure, but rather the fragmented way in which existing infrastructures operate. The introduction of the Brussels Metropolitan Region (BMR) as an analytical framework helped to understand the territory beyond its administrative boundaries and reveal the extensive network of rail corridors, tram lines, cycling routes and waterways that already connect the wider region. However, these systems often function as separate networks rather than as a coherent metropolitan structure. Connectivity therefore needs to be understood not only as a mobility issue, but also as a spatial and institutional challenge.

The regional strategies developed in Chapter 12 demonstrate how mobility infrastructure can support metropolitan integration beyond its traditional transport function. Proposed tram extensions, strengthened rail nodes and improved connections between peripheral urban cores seek to reinforce a more continuous and polycentric metropolitan structure. Existing infrastructures such as the railway network and canal corridor are therefore reconsidered as spatial frameworks capable of guiding future development and strengthening relationships between municipalities.

At the same time, the research shows that spatial interventions alone are insufficient. Many opportunities already exist within the territory, but their implementation depends on cooperation between regions, municipalities and transport operators. As discussed in Chapter 11, stronger connectivity therefore requires governance mechanisms capable of coordinating actors across institutional boundaries. The research concludes that improving connectivity is not primarily about building entirely new infrastructure, but about better connecting, coordinating and activating existing networks through a combination of spatial design and soft governance strategies.

(Sub) Research Question 2:

How can planning interventions & urban design foster greater social and cultural inclusion between French- and Flemish-speaking communities in the suburban interface?

The research initially approached social and cultural inclusion through the relationship between French- and Flemish-speaking communities within the Brussels periphery. However, throughout the study it became evident that the challenges of inclusion cannot be reduced to a purely linguistic question. The suburban interface is shaped by a combination of spatial, institutional, cultural and historical factors that influence how different communities relate to one another and to the wider metropolitan region. Social integration therefore needs to be understood within a broader metropolitan context.

The comparative analysis of Vilvoorde, Tervuren and Sint-Genesius-Rode demonstrated that there is no single peripheral condition. Each municipality maintains a different relationship with Brussels in terms of mobility, identity, landscape, governance and urban development. Building upon the concept of «Interplaces» (Demuynck et al., 2025), the research revealed that the Brussels periphery is composed of multiple intermediate conditions rather than a homogeneous suburban ring. Metropolitan integration should therefore not be understood as the disappearance of local identities, but as the strengthening of relationships between different territorial identities.

The spatial strategies developed throughout the project demonstrate how design can support these relationships. New centralities, shared public spaces, mobility hubs and productive neighbourhoods can create opportunities for interaction between different communities while reinforcing local qualities. Rather than promoting uniformity, these interventions seek to create places where metropolitan and local identities can coexist and complement one another. In this sense, design becomes a tool for fostering encounters, visibility and exchange across existing borders.

At the same time, the research shows that spatial interventions alone cannot guarantee social inclusion. Meaningful integration also depends on cooperation between municipalities, institutions, organisations and local communities. Cultural initiatives, shared programmes and collaborative projects require governance structures capable of supporting interaction beyond administrative boundaries. The research therefore concludes that greater social and cultural inclusion within the Brussels metropolitan region depends on the combined role of spatial design and institutional cooperation, enabling diverse communities to participate in a shared metropolitan condition while maintaining their own local character.

(Sub) Research Question 3:

What governance mechanisms or collaborations (top-down and bottom-up) could help harmonize planning approaches across regional and municipal boundaries in order to reduce fragmentation?

The research identifies institutional fragmentation as one of the principal challenges affecting the integration of the Brussels metropolitan region. While mobility networks, economic relationships and daily activities increasingly transcend administrative boundaries, planning and decision-making remain divided across multiple regional, municipal and sectoral actors. The challenge is therefore not only spatial, but also institutional: how can actors with different responsibilities and interests work together towards shared metropolitan objectives?

Throughout the research, it became evident that a traditional form of metropolitan governance is unlikely to emerge within the Belgian context around Brussels. Rather than proposing a new metropolitan authority, the thesis argues for soft governance mechanisms capable of fostering cooperation while respecting existing institutional structures. Flexible platforms, project-based partnerships and interregional collaborations can help align objectives and coordinate investments across administrative boundaries. Existing initiatives such as T.OP Noordrand (Regio Vlaanderen, Perspective. brussels, et al., n.d.) demonstrate both the potential and the limitations of such collaborative approaches.

The research further demonstrates that effective metropolitan cooperation requires a balance between top-down and bottom-up approaches. Top-down mechanisms provide strategic direction, funding opportunities and institutional coordination, while bottom-up initiatives ensure that interventions remain connected to local needs and place-specific conditions. Metropolitan integration emerges most effectively when these two perspectives continuously inform and reinforce one another.

In this context, funding instruments, collaborative frameworks and shared planning tools can encourage municipalities and regions to work towards common goals. The pattern language developed throughout the research supports this process by providing a shared vocabulary through which spatial, social and governance challenges can be discussed across scales.

The research therefore concludes that reducing fragmentation within the Brussels metropolitan region depends less on institutional restructuring and more on creating mechanisms that enable cooperation. Through a combination of soft governance, strategic partnerships, top-down support and bottom-up engagement, actors can collectively address metropolitan challenges while maintaining their individual responsibilities and identities.

.2 Answering the main research question

Main Research Question:

How can spatial design and institutional strategies mediate the integration of the Flemish periphery into the Brussels metropolitan system?

This thesis asked how spatial design and institutional strategies can mediate the integration of the Flemish periphery into the Brussels metropolitan system. The research shows that this integration cannot be achieved through one single intervention, scale or actor. The Brussels periphery is already functionally connected to the capital through mobility, housing, employment, education and everyday practices, yet these relations remain fragmented by administrative borders, institutional divisions and uneven spatial conditions.

The answers to the three sub-questions demonstrate that integration depends on the interaction between connectivity, social inclusion and governance. Mobility and infrastructure can reduce car dependency and strengthen metropolitan continuity, but only when existing networks are coordinated and activated beyond regional boundaries. Social and cultural inclusion can be supported through shared public spaces, centralities and local programmes, but only if different territorial identities are recognised rather than erased. Governance, in turn, becomes the enabling condition through which these spatial and social ambitions can be translated into shared action.

Spatial design contributes by making metropolitan relationships visible and testable. Through regional strategies, pattern-based interventions and the Vilvoorde zoom-ins, the project explored how abstract metropolitan challenges can be translated into concrete spatial possibilities. Design therefore does not function as a final solution, but as a mediating tool: it reveals where integration could happen, how different scales can support one another, and how local projects can contribute to a broader metropolitan vision.

Institutional strategies are equally necessary because spatial opportunities cannot be implemented without cooperation. The proposed soft governance approach, supported by flexible platforms, project-based partnerships and funding incentives, aims to bring actors together without requiring a complete restructuring of the Belgian institutional system. In this sense, governance does not replace design, and design does not replace governance. As explained earlier, their value lies in their combination: design gives spatial direction to metropolitan cooperation, while governance creates the conditions for those spatial strategies to become collective projects.

The main conclusion of the thesis is therefore that the Flemish periphery can be integrated into the Brussels metropolitan system through a process of mediation rather than absorption. In this context, mediation refers to the creation of stronger connections between municipalities, institutions, communities and spatial systems that often operate separately despite being part of the same metropolitan reality. Integration should not mean the disappearance of local identities or the expansion of Brussels as a single dominant core. Instead, it should be understood as a process of bridging differences, fostering cooperation and strengthening relationships across existing boundaries. By linking spatial design with soft institutional strategies, the Brussels edge can gradually evolve from a line of separation into a shared metropolitan interface, where local specificities are maintained while metropolitan connections are reinforced.

From theory to practice

The research demonstrates that theoretical concepts become most valuable when they can be translated into spatial and institutional action. Ideas such as metropolitan fragmentation, interplaces, soft governance and border mediation helped frame the problem, but their relevance emerged through their application to concrete territorial conditions. Research-by-Design played an important role in this translation process, allowing analysis and projection to inform one another rather than remain separate stages.

The pattern language became a main instrument through which this translation was structured. Instead of moving directly from theory to a fixed masterplan, the patterns transformed recurring spatial, social and governance challenges into adaptable principles of intervention. They created a common language between abstract concepts and practical strategies, making it possible to connect themes such as connectivity, centrality, borders and cooperation across different scales and contexts.

A key contribution of the project is the cross-scalar approach. The research moved continuously between the Brussels Metropolitan Region, the Flemish periphery, individual municipalities and specific local sites. This movement revealed that regional visions need local spatial translation, while local projects can also contribute to broader metropolitan ambitions. In this way, the project does not propose a single model for the periphery, but a framework through which different municipalities can identify their own role within a shared metropolitan system.

From theory to practice, the role of the planner also changes. Rather than acting only as a designer of spatial form, the planner becomes a mediator between actors, scales and forms of knowledge. Spatial design helps reveal possibilities, while governance strategies help make cooperation possible. Together, they provide a way to move from understanding metropolitan fragmentation toward constructing more concrete, negotiated and context-specific forms of integration.

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REFLECTION

Looking back on the process reveals both the possibilities and limitations of designing within a complex metropolitan landscape.

.1 Personal and methodological reflection 222

.1 Personal and methodological reflection

Personal positioning

The project began from a personal motivation. I come from a French-speaking family and spent my entire childhood in the municipality of Sint-Genesius-Rode, which is highlighted in this report, on the Flemish side, with the Brussels-Capital Region located directly above it and the Walloon Region directly below it, effectively placing it in between Belgium's three regions. Most of my "centres" were ultimately located in Brussels, and living in a Flemish municipality with language facilities (administrative facilities for French speakers) always felt somewhat strange to me, given that very few of my activities took place near where I lived, mainly for linguistic and community-related reasons. Although I lived in the periphery, I therefore always considered Brussels as the city where I grew up.

Given my location, I always regarded these regional borders as almost non-existent in everyday life, considering my movements between two, or even three, regions. Ironically, it was only after moving to the Netherlands and learning Dutch intensively in order to begin my university studies that I became closer, through language, to Flemish culture and to the neighbours who had lived next to me throughout my childhood. In doing so, I gained a better understanding of the community-related complexities that exist in and around Brussels.

I therefore tried to approach this project with an open mind in order to take into account the population living around Brussels and to develop a better understanding of the different aspirations that exist between communities, both at the level of residents and at the highest levels of organisations. All while remaining aware of my own position and the impact it may have had on the project.

From initial ambition to final direction

At the beginning of the project, I positioned mobility, car dependency and the role of the border between Brussels and its periphery as the main points of interest. Although these issues remained present throughout the process, I was far from imagining how many different factors would eventually become part of the project.

Gradually, I came to understand that the scope of the research needed to broaden. Themes such as governance, cooperation, different identities (both community-based and municipal), and design as a form of mediation were therefore incorporated into the research in order to provide a more comprehensive approach. I do not see these changes as a failure, but rather as a logical evolution given the complexity of both the project and the territory being studied. I am pleased to say that I was able to maintain a consistent direction throughout the process thanks to the three core themes of the project (linked to the three research sub-questions), which allowed me to navigate between different themes and to explore the relationship between design on the one hand and governance and policy on the other, while testing different combinations in order to reveal the connections between them.

Working alone on a metropolitan issue

The Urbanism Master's programme is of a high standard, and the courses developed during the first year clearly demonstrate this through the variety of project types: neighbourhood scale, city scale, regional scale (and sometimes beyond), as well as the ability to connect these different scales. One common characteristic among these projects was teamwork, or at least a partially collaborative process. One element that I missed in a project of this scale was the opportunity to co-develop it with one or more other people, especially in a project involving different communities. What would this thesis have proposed if, alongside me (a French-speaking student from a municipality with language facilities) a Flemish student had also participated in the design process? Or more generally, if one or several additional students had been involved?

I naturally enjoy group dynamics, and working alone on this project was quite challenging. Of course, this should not take away from the support provided by my mentors, Marcin and Birgit, whose different areas of expertise, complementarity and valuable knowledge I was able to rely upon throughout the process. The cluster, together with other students working on projects similar to mine (to certain extent), also allowed me to share these concepts with fellow students and to hear different perspectives from the cluster's tutors. In my opinion, this collaborative aspect could have been developed even further, bringing student collaboration to a higher level, even within the framework of individual theses. Nevertheless, working independently allowed me to become my own metronome and to explore the themes that genuinely interest me the most. In that regard, I was able to thrive throughout this project.

The pattern-making process

The concept of a Pattern Language was something I had already introduced at the beginning of the project. Reading books such as *Dorpse Architectuur* (AR-TUR, 2021) greatly inspired me to develop a Pattern Language within a metropolitan, yet still multi-scalar, context.
I initially expected to arrive at the design and institutional transformation phase with a complete Pattern Language that was ready to be applied. However, the process ultimately unfolded differently. I began by developing pattern interventions that seemed obvious to me before moving on to institutional and spatial interventions. It was only after completing these interventions that I was able to formulate the remaining pattern interventions, almost as a synthesis of what had been proposed. In that sense, I believe I was able to apply some principles of Research-by-design. The report presents the cards in Chapter 10 as a library of interventions before moving on to their application through Chapters 11 and 12. Although the creation of these cards ultimately emerged from a combination of what came before and after the interventions, they function both as a structuring tool and as an outcome of the process itself.

Given the time available for the thesis, I believe I had to limit the number of interventions (20 in total), while attempting to select the most relevant ones, even though such a selection inevitably remains subjective.

Time, scope and unfinished ambitions

Throughout this project, I aimed to address a wide range of scales and themes. The research sub-questions helped provide direction, but I nevertheless sought to highlight the regional scale and the relationships between Brussels and Flanders (and, to a lesser extent, Wallonia). Through the municipal examples, I was able to observe the different dynamics present in the periphery, which also made me realise the extent to which regional interventions depend on local entities that differ significantly from one another. I also sought to address, on the one hand, design, spatial solutions and network improvements, and on the other hand, governance, participation, feasibility and financing. In my view, these two spectrums are inherently interdependent.

Looking back at the project, I realise how difficult it is, as a single researcher, to sufficiently develop all the dimensions that were addressed. At the same time, this challenge reinforced the argument that design interventions and policy interventions must be combined, particularly when dealing with regional issues. This remains one of the key challenges of this type of thesis: within a relatively short timeframe (three quarters in my case), analysing, developing and proposing a project that is as coherent as possible, while, in a way, opening up discussion on a specific topic, because the project itself does not end with the completion of the thesis.

Research-by-Design and intuition

This approach allowed me to explore ideas across different scales. On the one hand, I attempted to identify tools capable of activating regional collaboration between actors and therefore a more institutional way of addressing the problem. This was outside of my comfort zone and encouraged me to immerse myself in documents and case studies from elsewhere, allowing me to discover a wide range of possible solutions that could potentially be applied. On the other hand, from a design perspective, I was able to develop a process combining intuition and analytical reasoning: exploring, drawing, returning to theory and reformulating. It is a process that is far from linear and instead develops through constant back-and-forth movements.

I nevertheless believe that the potential of this type of project, and of the themes I addressed, extends far beyond what I was able to propose. This is also what fascinates me about working at this scale, where the range of possibilities is immense and where some form of narrowing-down process is still necessary in order to refine directions while maintaining a sufficient diversity of interventions. It was also interesting to test alternatives that remained compatible with the institutional strategies proposed. For example, Alternative B of Zoom-in 1, located next to Vilvoorde station, suggests the introduction of a new stadium, potentially a national stadium, in order to give this area an identity that extends beyond that of a local intervention.

Such a proposal could make sense for several reasons: the site is currently vacant and large enough to accommodate a stadium and its surroundings; a mobility hub is located directly adjacent to the site and could, with certain improvements, accommodate large numbers of visitors. It could also relieve pressure on Brussels and offer a response to the ongoing debate surrounding the national stadium while remaining in close proximity to both Brussels and the existing stadium.

However, although this was not explicitly discussed in the thesis, locating a national stadium in the Flanders rather than in the capital would likely raise institutional and symbolic questions. Nevertheless, the simple act of testing and proposing such an idea already helps identify its potential advantages and disadvantages.

I consider the Pattern Language to be an essential tool for combining different types of interventions and actors, and for initiating a process through which more specific strategies can be developed according to the type of place concerned or the actors involved. In my opinion, every urbanist and planner should at least be familiar with and understand the principles of it.

Learning as an urbanist

Although this thesis was developed individually, compared to the group projects completed during the first year of the Master's programme, I believe I learned the most from this project.

Throughout the process, I often questioned my role and significance among the different actors and communities discussed in the research. I particularly felt this at the beginning of the thesis, wondering whether the problem being addressed was sufficiently relevant and whether I could realistically have any impact on an issue that is not only regional but, in some ways, almost national due to the different identities involved. However, through reading, developing ideas, discussing with experts and designing, I gradually gained a deeper understanding of the role of the urbanist and planner, which is to act as a mediator on multiple levels: between different institutions, different territories, different scales and different actors.

This has reinforced the type of role I hope to have as an individual after completing my studies. I am aware that it is difficult to remain entirely neutral or impartial at all levels, but I believe it is important to strive towards that ideal while acknowledging that one's own background will inevitably influence their perspective.

My understanding of the Brussels periphery evolved considerably throughout the process. Although I believe that most of the questions raised could be explored in much greater depth given more time, and that the topic remains highly complex, I nevertheless attempted to provide a number of possible answers and perspectives.

BIBLIOGRAPHY

Abu Jeriban, S., Hilmacher, T., Macharis, C., Tackoen, X., Te Boveldt, G., & Van Raemdonck, K. (2016). *Rail 4 Brussels: Étude en vue de l'amélioration de la traversée et de la desserte ferroviaire de la Région de Bruxelles-Capitale dans un contexte multimodal*. https://www.researchgate.net/publication/345244702_Rail_4_Brussels_Etude_en_vue_de_la_traversee_et_de_la_desserte_ferroviaire_de_la_Region_de_Bruxelles-Capitale_dans_un_contexte_multimodal

AR-TUR. (2021). *Toolbox Dorpse Architectuur*. https://ar-tur.be/nieuws/boek-toolbox-dorpse-architectuur-koop-hier-jouw-exemplaar

Berns, H., Lenel, E., Schaut, C., & Van Hamme, G. (2022). Towards a paradigm shift in the residential appeal policy of the Brussels-Capital Region. *Brussels Studies*. https://doi.org/10.4000/brussels.6223

Brio - homepage | BRIO Brussel. (2025, January 9). https://www.briobrussel.be/

BURA. (n.d.). *One of the largest car-free city districts - BURA*. One of the Largest Car-free City Districts - BURA. https://www.bura.city/en/projects/merwede/

Cardoso, R. V., & Meijers, E. (2021). Metropolisation: the winding road toward the citification of the region. *Urban Geography*, 42(1), 1–20. https://doi.org/10.1080/02723638.2020.1828558

Dąbrowski, M., & Lurling, N. (2025). *Instrument fiche: NON-SUD ITI*. http://eprc-strath.org/wp-content/uploads/2025/12/Instrument-Fiche-Non-SUD-ITI.pdf

Dąbrowski, M., Lurling, N., Garrido Veron, G., & De Bruijn, M. (2025). *Country fiche: Belgium [BE]*. http://eprc-strath.org/wp-content/uploads/2025/12/Belgium-fiche.pdf

De Maesschalck, F., De Rijck, T., & Heylen, V. (2015). Crossing Borders: Social-spatial Relations between Brussels and Flemish Brabant. *Brussels Studies*. https://doi.org/10.4000/brussels.1260

De Maesschalck, F., & Van Cappel, G. (2023). *Bevolkingsdynamiek in de Vlaamse rand*. docu.vlaamserand.be. https://www.docu.vlaamserand.be/node/18724?language=fr

De Werkvennootschap. (2017, November 8). *Joining the Brussels Ring Road in the south would not help traffic*. https://www.werkenaandering.be/en/reading-material/news/joining-brussels-ring-road-south-would-not-help-traffic

Demuynck, W., Derudder, B., Meijers, E., & Van Meeteren, M. (2025). Between suburb and city: Conceptualising interplaces. *Urban Studies, 63*(6), 1113–1136. https://doi.org/10.1177/00420980251376979

Departement Omgeving - Vlaanderen. (n.d.-a). *Complexe projecten*. https://omgeving.vlaanderen.be/complexe-projecten

Departement Omgeving - Vlaanderen. (n.d.-b). *Ruimtelijk uitvoeringsplan (RUP)*. https://omgeving.vlaanderen.be/nl/decreten-en-uitvoeringsbesluiten/wetwijzer/ruimtelijk-uitvoeringsplan-rup-overzichtspagina

ESPON. (2021). *METRO – Brussels Metropolitan Area Case Study: The role and future Perspectives of cohesion Policy in the planning of metropolitan Areas and cities*. ESPON EGTC. https://archive.espon.eu/metro

European Trade Union Confederation. (2021). *ETUC Resolution on Fair Labour Mobility and Migration*. https://www.etuc.org/sites/default/files/document/file/2021-03/EN-ETUC%20Resolution%20on%20Fair%20Labour%20Mobility%20and%20Migration%20adopted_0.pdf

Ferry, M., Kah, S., Van Der Valk, O., Arena, V., Jabri, E., Dąbrowski, M., Balz, V., & Sahu, M. (2025a). *Territorial instruments of national policies as a tool for territorially sensitive policies: Annex – case studies*.

Ferry, M., Kah, S., Van Der Valk, O., Arena, V., Jabri, E., Dąbrowski, M., Balz, V., & Sahu, M. (2025b). *Territorial instruments of national policies as a tool for territorially sensitive policies: Final report*. ESPON.

Ferry, M., Makarevičienė, A., Kah, S., Dąbrowski, M., Georgieva, N., Bachtrögler-Unger, J., De Bruijn, M., & Nowotny, K. (2025). *Study of territorial instruments contributing to the ex post evaluation of Cohesion Policy Programmes 2014–2020 financed by the ERDF: Final report*. https://doi.org/10.2776/0151293

Free icones and stock photos. (n.d.). The Noun Project. https://thenounproject.com/

Google. (2026). *Google Earth* [Computer software]. https://earth.google.com

Heurkens, E., Adams, D., & Hobma, F. (2015). Planners as market actors: the role of local planning authorities in the UK's urban regeneration practice. *Town Planning Review, 86*(6), 625–650. https://doi.org/10.3828/tpr.2015.37

Hoppin. (n.d.). Vlaanderen.be. https://www.vlaanderen.be/mobiliteitsprofessionals/personenvervoer/basisbereikbaarheid/hoppin

Istaz, D. (2000). Belgium and the Belgian State. *BELGEO, 1-2-3–4, 5–8*. https://doi.org/10.4000/belgeo.13869

Jacovy, L., Boer, R., Huis in 't Veld, B., Letsios, V., & Monteiro Silva, R. (2025). *EmPowering Communities: Bridging policy and people*. https://resolver.tudelft.nl/uuid:b6217bd1-5e48-45bf-b674-495aa87aa576

Locaties hoppinpunten. (n.d.). Vlaanderen.be. https://www.vlaanderen.be/mobiliteitsprofessionals/personenvervoer/basisbereikbaarheid/combimobiliteit/hoppinpunten/locaties-hoppinpunten

Mobiliteit Vlaanderen. (n.d.). *Locaties hoppinpunten*. Vlaanderen.be. https://www.vlaanderen.be/mobiliteitsprofessionals/personenvervoer/basisbereikbaarheid/combimobiliteit/hoppinpunten/locaties-hoppinpunten

Mobiliteit Vlaanderen. (2025). *Hoppinpunten*. Hoppin. https://hoppin.be/nl/hoppinpunten/

MVRDV. (n.d.). *MVRDV - Super Stadium*. https://www.mvrdv.com/projects/995/super-stadium

Ney Partners. (2025). *Brabantnet Sneltram*. https://ney.partners/project/brabantnet-sneltram/

Perspective.brussels. (2024). *The Alpha Plan*. https://patrimoine.brussels/decouvrir/publications/carnets-dexpositions/le-plan-alpha

Provincie Vlaams-Brabant. (2022). *Beleidsplan Ruimte Vlaams-Brabant*. https://www.vlaamsbrabant.be/en/node/9315#toc-0--0

QGIS Development Team. (2026). *QGIS Geographic Information System* [Computer software]. QGIS Association. https://qgis.org

Regio Vlaanderen, Perspective.brussels, OVAM Vlaanderen, & Provincie Vlaams-Brabant. (n.d.). *T.OP Noordrand*. https://www.topnoordrand.be/

Regio Vlaanderen, Provincie Vlaams-Brabant, perspective.brussels, & OVAM Vlaanderen. (n.d.). *Top Noordrand*. https://www.topnoordrand.be/

Région de Bruxelles-Capitale. (2012). *Bruxelles - 2040: Trois visions pour une métropole*. https://perspective.brussels/fr/enjeux-urbains/metropolisation/projets-metropolitains

Région de Bruxelles-Capitale. (2018). *Plan régional de développement durable: Construisons ensemble la région bruxelloise de demain*. https://perspective.brussels/fr/outils-de-planification/plans-strategiques/plan-regional-de-developpement-prd/prdd

Roggema, R. (2017). Research by Design: Proposition for a Methodological approach. *Urban Science, 1*(1), 2. https://doi.org/10.3390/urbansci1010002

Rooij, R., & Van Dorst, M. (2020). A pattern language approach to learning in planning. *Urban Planning, 5*(1), 58–64. https://doi.org/10.17645/up.v5i1.2961

Ryckewaert, M. (2011). *Building the economic backbone of the Belgian welfare state: Infrastructure, Planning and Architecture 1945-1973*. Nai Uitgevers Pub.

Schwengler, D. (2018). Quand le système institutionnel belge fait dérailler le projet RER – Inter-Environnement Bruxelles. *Inter-Environnement Bruxelles*. https://www.ieb.be/Quand-le-systeme-institutionnel-belge-fait-derailler-le-projet-RER-Article-1

Stad Vilvoorde. (2017). *Globaal Ruimtelijk Strategisch Plan Vilvoorde: de gedeelde Stad*. https://www.grsp-vilvoorde-onepage.be/

Studiedag brengt unieke kenmerken van de Vlaamse Rand in kaart. (n.d.). Vrije Universiteit Brussel. https://www.vub.be/nl/nieuws/studiedag-brengt-unieke-kenmerken-van-de-vlaamse-rand-in-kaa

Third Language Barometer for the Flemish Periphery Highlights Growing Linguistic Diversity and Policy Challenges. (2024, December 13). Vrije Universiteit Brussel. https://www.vub.be/en/news/third-language-barometer-for-flemish-periphery-highlights-growing-linguistic-diversity-and-policy

Tori, S., Boveldt, G. T., Keseru, I., & Macharis, C. (2023). Brussels mobility in 2050: Participatory mixed-method scenario building to explore alternative futures. *Transportation Research Interdisciplinary Perspectives, 22*, 100919. https://doi.org/10.1016/j.trip.2023.100919

Unslpash. (n.d.). https://unsplash.com/

Van Hoof, T. (2025, June 10). "Les quartiers huppés gardent des prix très élevés" : Rhode-Saint-Genèse, un "petit marché" toujours très prisé. DHnet. https://www.dhnet.be/regions/bruxelles/2025/06/10/les-quartiers-huppes-gardent-des-prix-tres-eleves-rhode-saint-genese-un-petit-marche-toujours-tres-prise-7QLJMFUV3VBHJCRDL5KWWC4K5Y/

Van Innis, E., Lowette, K., VOKA, BECI, UWE, VBO, BAK Basel Economics, & Kate Thomas & Kleyn. (2018). *Business Route 2018 for Metropolitan Brussels*. https://www.briobrussel.be/sites/default/files/bmr_nl.pdf

Vanhamme, M., & Vierendeels. (2024). Lichaam van tiener gevonden naast de sporen, treinverkeer stilgelegd. Hbvl. https://www.hbvl.be/binnenland/lichaam-van-tiener-gevonden-naast-de-sporen-treinverkeer-stilgelegd/26279523.html

Vereniging Deltametropool. (2025). *Metropolitan governance and spatial planning: Towards a European typology*. https://deltametropool.nl/app/uploads/2025/09/gov-met-Metropolitan-Governance-and-spatial-Planning-Towards-a-European-typology-_Vereniging-Deltametropool-September-2025-v1-1.pdf

Vervoerregio Vlaamse Rand. (n.d.). *Vervoerregio Vlaamse Rand*. Vlaanderen.be. https://www.vlaanderen.be/basisbereikbaarheid/mobiliteitsuitdagingen-regionaal-aanpakken/vervoerregios/vervoerregio-vlaamse-rand

Ville de Bruxelles. (2024). BXL 2050: *Plan communal de développement durable de la Ville de Bruxelles*. https://www.bruxelles.be/bxl2050

Wikipedia contributors. (2026, May 5). *European Trade Union Confederation - Wikipedia*. https://en.wikipedia.org/wiki/European_Trade_Union_Confederation

Zimmermann, K., Galland, D., & Harrison, J. (2020). *Metropolitan Regions, Planning and Governance*. https://doi.org/10.1007/978-3-030-25632-6

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