Making space for the foundational economy: urban economic policy and planning perspectives from Brussels.

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Cover image: Sarah De Boeck

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Executive summary

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Despite a renewed attention for urban production in European and Anglo-Saxon post-industrial cities since the financial crisis of 2008, the displacement of productive activities and related employment opportunities in favour of residential and high-end service economies appears to be a common trend across European cities. The current Ph.D. project develops a foundational economy (FE) approach to urban economic development in the Brussels Capital Region (BCR) seeking to recalibrate urban economic policy and planning around those activities rooted in place, sheltered from interurban competition, and essential to the well-being of citizens. The empirical focus of the dissertation is on the history and geography of the Brussels construction sector (period 1965-2019), which is analysed through economic geography, urbanism, and spatial planning approaches. The dissertation thereby unearths alternative economic development strategies to anchor employment in the BCR in alignment with the spatial potential of places and the socio-economic profile of the population in former industrial neighbourhoods. More specifically, besides countering the privatization of land, and a push for public procurement, the strategic use of land ownership, and an integrated approach to urban development projects can help the local state to make space for the FE and combat processes of industrial gentrification. A foundational strategy, however, depends on in-depth sector-specific knowledge about current economic geographies and spatial needs of foundational sectors, as well as complementary strategies to improve zoning, real estate, management, and design in mixed urban areas, tailored to the different settlement patterns of production.

Ruimte maken voor de *foundational economy*: Stedelijk economische beleids- en planningsperspectieven uit Brussel

De hernieuwde aandacht voor stedelijke productie in Europese en Angelsaksische postindustriële steden sinds de financiële crisis van 2008, contrasteert met een trend van gentrificatie van productieve activiteiten, en de hieraan gerelateerde werkgelegenheidskansen, ten gunste van een residentiële en gespecialiseerde diensteneconomie. Het huidige doctoraatsproject ontwikkelt een *foundational economy* (FE) -benadering toegepast op de economische ontwikkeling in het Brussels Hoofdstedelijk Gewest (BHG). Dit houdt een herwaardering van stedelijk economisch beleid en planning in. Dit gebeurt door meer te focussen op activiteiten die lokaal verankerd zijn, die beschermd zijn tegen interstedelijke concurrentie en die essentieel zijn voor het welzijn van stadsbewoners. De empirische focus van het proefschrift ligt op de geschiedenis en geografie van de Brusselse bouwsector (periode 1965-2019), en wordt geanalyseerd aan de hand van economische geografie, stedenbouw en ruimtelijke planningsperspectieven. Het proefschrift komt zo tot alternatieve strategieën voor economische ontwikkeling. Hierbij wordt de werkgelegenheid in het Brussels Hoofdstedelijk Gewest beter afgestemd op het sociaaleconomische profiel van de bevolking en op het ruimtelijke potentieel van buurten. Naast het temperen van de privatisering van grond, en een pleidooi voor het her-evalueren van publieke overheidsopdrachten, kunnen een strategisch gebruik van grond, en een geïntegreerde aanpak van stedelijke ontwikkelingsprojecten, lokale overheden helpen om zowel ruimte te maken voor de FE als om industriële gentrificatie te bestrijden. Een diepgaande sectorspecifieke kennis over de huidige economische geografie en de ruimtelijke behoeften van *foundational* sectoren speelt daarbij een cruciale rol. Dit vraagt eveneens om complementaire strategieën rondom zoneringsregels, grond- en patrimoniumbeleid, beheer en ontwerp in gemengde stedelijke gebieden die zijn afgestemd op de verschillende vestigingspatronen van productie.

Foreword

I would like to start this dissertation by expressing my deep love for the place where I live, Sint-Jans-Molenbeek, one of the nineteen municipalities situated at the bottom of the valley that is called Brussels. I feel sad to see the powerlessness of local governance vis-à-vis some of the brutal effects of globalization that land on these tiny 6km^2, and the lack of strong solidarity mechanisms and the grouping of resources at the metropolitan level to answer to them. I wish to contribute to the empowerment of the local state, here and elsewhere, and to the understanding of this place that is often thought of as an anomaly.

My relationship with Molenbeek starts in 1979, the year when I was born, and my mother was working in the textile shop of my grandparents, right across the city hall of Molenbeek. This story is an illustration of how global transformations intertwine with individual families and land on parcels. My grandfather was a representative of a Brussels textile factory and had a network of Belgian factories and wholesalers to buy fabric. Next to a shop in the village where he lived, he opened a second shop at the Place Communal that only lasted a couple of years. Moroccan migrants were also opening textile shops around the Place Communal. They had networks of textile factories in Morocco who produced the merchandise a lot cheaper. Suddenly, the Brussels fabric of my grandfather of 1,000 Belgian francs (25 euros) per meter had to compete with Moroccan tissues of 100 Belgian francs (2,5 euros) per meter. My grandfather had neither the network nor the motivation or the skills to look for cheaper textiles elsewhere, and he closed the second shop. Although I was only a baby back then, the story accompanied me during my youth.

Since the terrorist attacks in Paris and Brussels, the negative image of my city reached far beyond the Belgian borders. The negative image of Molenbeek is much older than the attacks and is strongly related to the industrialization in the 19th century when it became a city of arrival. When the Brönte sisters came to Brussels in 1842 to learn French, they witnessed the rapid transformations of the industrialization. Charlotte Brönte's letters to her family recount the muddy streets, the smell, and the flooding's in this swampy part of the city.

The water of the River Senne and its many tributaries, laying at the origin of the Brussels settlement, was pushed underground with the rapid constructions of factories and housing facilities, thereby shutting down the water permeability of the soil. It might be that the negative image started even earlier in 1695 when Villeroy, the general of the army of Louis XIV, chose the strategic planes of Molenbeek to bomb the city centre of Brussels. Some call the reconstruction of the city centre, after the bombing, the first example of creative destruction or *Brusselisation*. In the meantime, we forgot that Molenbeek used to be a holy place of pilgrimage (see drawing of Hendrik Hondius, 1642; and painting of Pieter Breughel the Elder, 1592).

My relationship with Molenbeek renewed twenty-six years later when I joined my husband in his apartment at the Chaussée de Gand. Although I was in love with the city, I also felt frustration, impatience, anger, and sadness, when it came to urban renewal. It became impossible to talk or think about city development without my adrenaline shooting to unhealthy levels. I needed a new way of looking at the city. I had the opportunity to go back to school and study Urban Design and Planning, a Master related to *Cosmopolis - Center for Urban Research* at the *VUB* in Brussels, and to be surrounded by wonderful and inspiring teachers who became my colleagues. During the classes, I experienced the practice of urban economic development as very limited and was struck by the absence of policy attention for urban manufacturing. It triggered me into a Ph.D. because I wanted to understand how urban economic development works and what the policy margins are for local and regional governments to practice economic welfare in the context of today.

Acknowledgments

It's easy now to assume that one's perspectives on race, gender, orientation,
and the rest are signs of inherent virtue, but a lot of ideas currently in circulation
are gifts that arrived recently, through the labour of others.
Remembering that people made these ideas, as surely as people made the buildings we live in
and the roads we travel on, helps us remember that, first, change is possible, and second,
it's our good luck to live in the wake of this change rather than asserting our superiority
to those who came before the new structures, and maybe even to acknowledge
that we have not arrived at a state of perfect enlightenment,
because there is more change to come,
more that we do not yet recognize that will be revealed.
I have learned so much.
I have so much to learn.
Rebecca Solnit, 2019.

I would like to thank the many people who were, from far and close by, involved in the creation of this dissertation. For the past five years, many people crossed my path and inspired and supported me in various ways.

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LIST OF ABBREVIATIONS

AWB	Architecture Workroom Brussels
BCR	Brussels Capital Region
BISA	Brussels Instituut voor Statistiek en Analyse
BP	Building Permit
BRP	Brussels Regional Parliament
CLT	Community Land Trust
EAUD	Enterprise Area for Urban Development
EFRD	European Funding for Regional Development
EU	European Union
FE	Foundational Economy
FEC	Foundational Economy Collective
GDP	Gross Domestic Product
IABR	International Architecture Biennale Rotterdam
ISCO	International Standard Classification of Occupations
LMUC	Lille Metropolitan Urban Community
NIS	Nationaal Instituut voor de Statistiek
NUE	New Urban Economics
PFCD	Platforme de Formation Construction Durable
PID	Plan for International Development
PMD	Planned Manufacturing Districts
SME	Small and Medium Enterprises
UDP	Urban Development Project
UEZ	Urban Enterprise Zone
UNDP	United Nations Development Programme
USPP	Urban Settlement Patterns of Production
ZEE	Zone of Economic Expansion
ZFU	Zone Franche Urbaine

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CHAPTER I
INTRODUCTION

What is our economy for?
Too often we lose sight of this question,
focusing on growth and profit as an end in itself.
Instead, we need to remind ourselves always
that the overall purpose of the economy is to deliver human well-being,
within environmental limits.
Just Space Economy & Planning, 2015:3.

1. Urgency and the main objective of this research

European post-industrial cities with growing populations and fierce real estate dynamics are confronted with displacement effects that push out basic needs and services. The firms providing these services cater to a local market and local needs. They imperatively require the facilities and agglomeration effects offered by the city. The Foundational Economy Collective calls these basic needs and services 'the foundational economy' (Bentham et al., 2013a) which is the main subject of this research. Employing slight differences in meaning – that will be explained below – and approaching it as a segment of the economy, others call it the 'residential economy' and 'proximity services' (Vandermotten, 2014), the 'base economy' (Blumenfeld, 1955), 'l'économie présentielle' (Davezies, 2008), or the 'material civilisation' (Braudel, 1986[1979]). The foundational economy (FE) focuses on mundane, yet foundational goods and services that are necessary to everyday life, accessible to all citizens regardless of income, and distributed through various local branches and networks (Bentham et al., 2013a). As such, it refers to debates about (the provision of) basic needs (Amin, 2014; Hall & Schafran, 2017). The FE refers not only to an economic analytical concept such as the residential economy but is also a performative concept that aims at a larger role for policy in directing economic development. A promising scenario for this research, therefore, is the introduction of urban development strategies that focus on the FE (Bentham et al., 2013a). Beyond aiming for a mere shift in focus towards 'taken for granted' urban activities – utility provision, transport, retail banking, food retailing and processing, health care, and education – the FE perspective seeks to reframe the logics of urban development away from the competitive city that underpins much of the territorial agenda of post-industrial cities. The concept makes it possible for policymakers to focus on parts of the economy that do not participate in the (international) urban competition and follow the socio-economic potential of local populations more closely. Calculations via both Gross Domestic Product (GDP) (Vandermotten, 2014) and the number of jobs (Bentham et al., 2013; De Boeck et al., 2019) show that the FE represents 30 to 50 per cent of the urban economy in cities such as London and Brussels but is experiencing displacement through industrial gentrification. Vandermotten (2014) characterises these economic activities as an important segment of the labour market for short-schooled labourers in the Belgian capital, Brussels. The large number of short- and middle-schooled workers in the foundational economy is confirmed by education level data (see Table 1 below). If displacement dynamics continue to push out basic needs and services, we risk creating a structural scarcity of urban basic goods and services as well as reinforcing unemployment and strengthening social inequalities. My thesis, supported by five years of in-depth case study work in Brussels, is that attention for the FE in urban economic development can help maintain and grow the

provision of basic goods and services in European post-industrial cities where demographic growth puts extra pressure on the land available. More specifically, this research indicates that public real estate and management strategies have the potential to become new protagonists in the provision and affordability of production workspaces.

My ambition is to contribute to the debate(s) on alternative economic imaginaries and how they may provide a way out of the urban development cul-de-sac that is shared by both proponents of urban triumphalism and its political economy critics. The concept of the FE is used to analyse how this particular strand of thinking can be applied in the specific territorial context of post-industrial cities. Next to a critical analysis of Brussels's planning policy and its relation to and effects on the production of basic goods and services, the aim of this dissertation is to formulate a set of policy recommendations. In doing so, I wish to sketch some of the policy margins available to urban governments to act and create leverage to meet the challenges of social inequality by reducing industrial displacement processes and to create qualitative jobs to maintain and grow the FE. The main aim of my dissertation is to develop the argument that urban economic policy and planning urgently need to 'make space for the FE'. First, by understanding and delineating the potential field of FE. Until now, the FE focuses on the consumption of basic goods and services. However, production sectors such as construction also harbour foundational tendencies that are under pressure and in need of academic and policy attention. Second, through rethinking urban policy to guarantee production space, because part of current urban policy measures strengthens or even instigates industrial displacement dynamics. This industrial gentrification risks pushing out jobs for people with short- and middle-schooled profiles as well as their workspaces, both crucial parts of the production chains of basic urban goods and services. And third, by formulating spatial and non-spatial policy recommendations to literally safeguard and create physical workspaces to ensure the proper functioning of the city.

To theoretically approach the need to make space for the FE, I use three main fields of academic literature that will be presented in more detail below. The field of critical urban geography provides in a neo-Marxist political economy approach to understanding how global dynamics and intercity competition affect the economies of cities and generate processes of exclusion, such as displacement and inequality. Although this literature provides adequate tools to diagnose cities today, this dissertation makes clear that the neo-Marxist perspective skates over crucial development aspects in relation to the social reproduction of the city and does not provide a framework for action. A framework for action is sought in the field of alternative economic imaginaries; more specifically in the concept of the FE. As ethical and ideological research and a policy project, the FE aims to contribute to human well-being. It focusses on the creation of a more inclusive economic development policy and wishes to contribute to a more equal society. A small detour is taken to critique the influential field of New Urban Economics (NUE) in order to strengthen the FE argument as an alternative to neoliberal and competitive urban thinking. While the FE concept provides strong, grounded economic development arguments within an ethical framework, it lacks a fundamental spatial dimension. As a major contribution to the FE literature, I use the field of urban planning and design literature to spatialise the insights of the FE and translate them into an analytical approach to urban economic development with real-life relevance.

The main methodological approach involved in demonstrating the importance of making space for the FE is to start from the Brussels Capital Region (BCR) as an urban case. The BCR is presented here as an exemplary case of a post-industrial city. The BCR is one of the three Belgian regions, together with Flanders and Wallonia. It is a city region of 1.2 million inhabitants and comprises 19 municipalities, of which the city of Brussels is one. This might create confusion about the territory that is referred to when using the name

of Brussels: am I talking about the region or the city? Throughout this dissertation, therefore, I will always refer to the region when using 'BCR', 'Brussels', or 'the Brussels region'. To distinguish the city from the region, I will explicitly use 'Brussels city'. See also Figure 3 and Table 1 for the composition of the BCR and its 19 municipalities (with surface, number of inhabitants, and density).

To present the case of the BCR, I will zoom in on what is generic and what is particular in a number of relevant categories such as the role of the state, economic functions, and its polarised nature. This provides me with an argument about how, by studying the FE in Brussels, one can draw conclusions about grounded economic processes in post-industrial European cities more widely. By relating the political economy and spatial planning perspectives to each other, I sketch the contours of a FE approach that is also applicable to other cities. This dissertation is also a major exercise in 'translating' an initially UK-centred concept – that has its origins in Wales – for the urban context of the BCR. While the FE originally also considers more peripheral post-industrial cities and 'left-behind' regions, this dissertation focuses only on centrally located cities such as Brussels, which is considered a small world city. Insights from this study are for the largest part predicated on the continental European context, where urban development strategies and urbanistic approaches are still oriented more explicitly towards the provision of public goods, contrary to the UK. This implies that the research context is different from the Anglo-American neoliberal cities that are well covered in urban studies.

In searching for and delineating the potential field of the FE, the hypothesis arises that the FE can not only be found in sectors that are not necessarily restricted to the consumption of basic goods and services – such as housing – but can also be found in the production of these goods and services. The Brussels construction sector figures as a strategic sectorial case to verify this hypothesis. The choice of the construction sector is based on three aspects: first, its role in creative destruction or the continuous (re)building and renovating of the urban tissue of Brussels; second, with its large amount of European posting workers and its role in spectacular-speculative dynamics, the sector is a key domain where globalisation causes disruptive economic processes; and third, although the construction sector is not part of the original delineation of the FE, foundational tendencies (such as the hosting – still – of a large number of local construction workers) can nevertheless be identified. The sectorial analysis of this case through an FE lens not only challenges certain aspects of a neo-Marxist reading of the city – as will be explained in the theoretical section – but also challenges the fixed set of FE sectors of basic goods and services on the consumer side. Hence, the case presents itself as a historically contested area (cf. Brusselisation) at the contemporary crossroads of several 'glocal' tensions and challenges the current FE definition of basic goods and services based on a consumer perspective. The analysis of the construction sector helps to push the FE theory a step further by claiming that, next to the consumption of basic goods and services, other productive economic sectors can be made more foundational as well. The construction sector thereby reveals that supporting the FE especially benefits short- and middle-schooled workers. The construction sector also plays a fundamental role in spatialising FE insights. By mapping the geography and spatial needs of construction enterprises, the spatial research on construction small and medium enterprises (SMEs) rephrases current diagnoses related to local economic development practices and enables formerly invisible or neglected but very tangible policy areas to nurture the FE.

The introduction continues as follows: first, the theoretical approach is explained and motivated, together with the research gaps in the academic literature and the theories used and reworked as tools to go beyond these research gaps. Second, the research question and research aims are presented. Third, the methodological subsection explains how the research questions and aims are approached and what their

research context is. And fourth, this introductory chapter ends with an overview of the structure of this dissertation.

2. Theoretical approach

My theoretical approach is built on five strands of literature that I will present first. This section introduces the different fields of the literature, points to their strengths and research gaps in relation to the subject of this thesis and demonstrates how I involve other fields to arrive at a new and coherent theoretical narrative to address the problem of the displacement of basic goods and services.

2.1. Global cities literature and the post-industrial city

Since this research is about post-industrial cities, I start with the definition of a post-industrial city from the *Handbook of urban studies* (Shaw, 2001:285, *own italics*): 'The proto-typical post-industrial city is a city in which traditional industry maintains a significant but decreasing share of economic activity, replaced as *an engine of economic growth* by the production of various types of services, from producer services to medical, educational and governmental services, to consumer services.' During the 1990s, Hall (1997) observes that a new kind of city is emerging. He describes the post-industrial city as being 'globalized (connected to other cities in global networks) and tertiarized and even quaternarized (*dependent almost entirely for its economic existence on advanced services)*' (311, *own italics*). Both definitions of the post-industrial city immediately direct us to one of the crucial critiques of my dissertation, since in these definitions, economic activities other than basic goods and services are put to the fore as 'engines of economic growth' or as being indispensable for the survival of the city. Both definitions of the post-industrial city cited create a hierarchy of sectors and imply a value judgement entailing that one sector would be more important or more crucial than the other, with a clear preference for the advanced services. These readings completely overlook the importance of the foundational economy, a segment of our economy that counts for 30 to 50 per cent of all economic activities and refers to 'the infrastructure of everyday life' (FEC, 2018). I elaborate further on this critique in the section on the field of FE literature by referring to the base-non-base debate of the 1950s (cf. Alexander, 1955; Blumenfeld, 1955). Without creating a hierarchy or assessing sectors as more or less crucial, the term 'post-industrial city' can also be used to describe a changing world in a more neutral way and refer to changing economic dynamics and the socio-spatial impact of these changes on populations. For this, we turn to the global city literature. Within this literature, the transition of industrial to post-industrial cities goes along with the reshaping of urban networks on a global scale and the emergence of world cities as cities that hold strategic positions with command and control functions, knowledge clusters, and advanced services such as banking, law, and finance (Castells, 1996; Sassen, 1991). Post-industrial also refers to a shift from the decline of the number of jobs in industry – as one of the main origins of structural employment in cities today – to an increase in service jobs. Deindustrialisation especially impacts short-schooled people, who mostly cannot turn to the tertiary sector because it requires longer training profiles. One of the main problems of post-industrial cities is that these changing dynamics produce socio-spatial polarisation. This is also called dual cities, or cities 'in which rich and poor draw further away from each other spatially within the urban region, as well as in terms of differential access to economic resources' (Shaw, 2001:287). In order to understand how this socio-spatial polarisation develops, we turn to critical urban geography.

2.2. Critical urban geography, or a neo-Marxist political economy reading of the city

This research relies on the theoretical framework of critical urban geography as formulated by scholars such as Harvey (1973, 1982, 1989), Brenner (1999, 2004), Cox (2009), Jessop (2004), Peck & Tickell (1994), and Swyngedouw (1997), to name a few. These authors help understand social inequality in cities as an effect of global intercity competition centred around urban growth and development. Social inequality can be explained in various ways, for example with the sociological term stratification, which 'refers to a ranking of social positions according to the distribution of economic resources' (Nolte, 2001:14313). Before the 1970s, this stratification resulted in a society of conflicting groups, or classes, a view that has been criticized for its 'neglect of other dimensions of social differentiation and inequality such as gender, race, or ethnicity' (Nolte, 2001:14313). A neo-Marxist political economy reading intrinsically links social inequality with the spatial organisation of the city and is reframed here as socio-spatial polarisation (Kesteloot, 1995). The critical urban analysis literature points to territorial economic policies as one of the drivers of socio-spatial polarisation.

While cities experience the largest economic growth, they also encounter the polarising effects of that growth at their roughest. So-called trickle-down effects are minimal or absent altogether (Massey, 2007). The work of Harvey, together with Brenner's (1999) work on the rescaling of the nation-state and reterritorialisation because of globalisation, provides insight into why urban governments focus so strongly on being internationally attractive and gradually change into a somewhat boring uniformity. These contexts have witnessed the growing importance of planning instruments that wish to instil economic growth in targeted urban areas, such as deprived and restructuring inner-city neighbourhoods, through the implementation of territorial economic policies. The BCR, for example, has the much-contested Plan for International Development (PID) that was approved in 2007 and 'aimed at the development of significant portions of the regional territory for the purposes of private real estate development of a speculative character which are supposed to function as new levers in urban revitalization' (Decroly & Van Criekingen, 2009:introduction). Harvey (1989) describes this new way of planning and governance since the beginning of the 1980s as a transformation from managerialism to entrepreneurialism. While the nation-state is hollowed out, the local governance level must now control and negotiate multinational capital, a process coined 'glocalisation' (Swyngedouw, 1997). Therefore, local governments try to be as attractive as possible to lure international investments and are stuck in a kind of territorial development trap. Urban entrepreneurialism is part of a global dynamic of intercity competition for resources, jobs, and capital. Harvey (1989) describes four strategies used to participate in the international competitivity of cities: (1) the production or the creation and exploration of particular advantages for the production of goods and services (tax exemptions, public infrastructure for private enterprises, etc.); (2) improving the spatial division of consumption (attracting retirees, stimulating tourism, gentrification, starchitecture, spectacles, heritage, etc.); (3) assuming control in high finance, government, and information gathering and processing (office space, airports, universities, etc.); and (4) redistribution or the competition for (supra)nationally redistributed surpluses (e.g., competition for EU money). In the delineation of the BCR's political context below, I observe that Brussels excels in most of these strategies. I will also explain how such an economic system of global intercity competition determines and transforms the urban space in severe ways and reinforces the socio-spatial polarisation of Brussels (Corijn et al., 2009; Kesteloot, 1995, 2013). Reinforcing competition seems to be the common mechanism behind the four strategies described by Harvey.

The strength of a neo-Marxist political economy reading of urban development is that it provides an adequate framework for the analysis of territorial economic policies on a global and a local scale. It clearly

states the dangers and tensions for cities in a global context and reveals entrepreneurial governance strategies as drivers and reinforcers of socio-spatial inequalities. The crucial role of (changing) land uses in relation to socio-spatial inequality is of particular interest for this research, which addresses the displacement of jobs and of workspaces. Smith (1987) designed the 'closing the rent gap' theory as an economic explanation of residential gentrification. When there is a difference between the current rent of a property and its potential future rent, there is a strong tendency to increase the rent and the value of the property. Closing the rent gap as an entrepreneurial governance strategy indicates that not only private developers and investors seek to profit by using this mechanism, but that public bodies use this value-increasing strategy as well. This can also be called property-led development.

A neo-Marxist reading has three research gaps that should be addressed in order to discuss the displacement of jobs and workspaces. First, it focuses on residential gentrification. As we will see below, a dialogue between critical urban geography and the planning literature, and more specifically literature about the productive city (Curran, 2007; 2010; Ferm & Jones, 2017; Wolf-Powers, 2005), is needed to expand the focus towards industrial or commercial gentrification. Second, within the frame of global intercity competition, the construction sector plays an important role in spectacular-speculative mechanisms related to urban development. However, there is no attention for the fundamental role of sectors related to urban development in the social reproduction of the city. Third, when it comes to how our insights can contribute to transforming the current economic system into a more just system and find a way out of the territorial development trap, critical urban geography does not provide answers. There is no framework for action, and, in some cases, this even leads to a certain paralysis.

2.3. Advocates of competitive territorial economic policies: New Urban Economics

Some academics and policymakers embrace the territorial development approach and recognise it as having a positive impact on the city through the creation of high-profile jobs and the development of new economic apex sectors. Within the field of NUE, Florida (2004) and Glaeser (2011) have renewed urban economic development thinking by reframing the role of the urban government. These authors foresee urban governance that focusses on the supply-side of lifestyles and housing facilities that correspond to the profiles of the workers of the potential economic growth sectors that a city would like to develop. As advocates of higher urban density, their thesis is that if you put enough 'clever' people together, urban economic growth will flourish, the number of start-ups will rise, etc. Behind this reasoning lies a spatial-equilibrium framework (Glaeser and Gottlieb, 2009) as a foundation for formulating urban economic policy. The spatial-equilibrium framework is a highly competitive theory, stating that if a region offers better housing, schooling, and other consumption facilities, people would move there until all disparities between regions are gone. Consequently, urban governments are stimulated to compete with neighbouring cities and regions to become the most attractive. A body of literature presents recipes – situated within Harvey's above-mentioned range of four strategies of international competitiveness – for attracting high-skilled individuals, investments, etc. We can analyse NUE as a case of urban entrepreneurialism. Many of the policy measures proposed by Florida (2004) and Glaeser (2011) to attract the creative class and other high-profile employees are an integral part of many European urban policies today – such as in Brussels – and are actively spread by European policy documents and funding lines as 'best practices', such as URBACT (2015). The series of deregulation measures, tax exemptions for firms, and urban enterprise zones; the building of skyscrapers, the investments in cluster-building of new apex sectors, etc. that Glaeser recommends,

together with his former active involvement in the think tank The Manhattan Institute, are exposed by Peck (2016) as an ideologically neoliberal project that is well-hidden under Glaeser's popularity.

The main critique in relation to the topic in this dissertation is that first, NUE propagates a territorial development approach that does not correspond to the socio-economic profiles of large parts of the population of a certain territory (Smith, 2002, 2006) and that neglects the path dependencies of certain urban economic sectors (Moulaert et al., 2007). And, second, that these ideas overlook a vast amount of foundational jobs (30 to 50 per cent) that are necessary for the very functioning of cities and that are less or not prone to competition (Bentham et al., 2013; Bowman et al., 2014; FEC, 2018). By recommending increasing density, property-led development, the deregulation of land use, and the greatest possible freedom for developers and investors to construct high-rise buildings, NUE propagates policies that reinforce displacement.

2.4. The field of alternative economic analysis and praxis

Major work on rethinking the current economic system is done in the field of diverse economy perspectives, where a combination of worldwide empirical case studies, as well as discourse analyses, relate ethical questions to the way we look at our economies today and to how they are organised along with these views (Cruz et al., 2017; Gibson-Graham, 1996, 2006; Zanoni et al., 2017). In this perspective, advocating for a fair and inclusive economic system is not the same as advocating for inclusive growth. In academic debates about diverse economic perspectives, the term 'inclusive' is a problematic and contested imaginary, especially in relation to growth. Zanoni et al. (2017) state that strategies of inclusive growth 'do not fundamentally question the exploitative nature of capitalist accumulation nor the social relations on which it rests, running a real risk of legitimating this mode of surplus extraction and distribution' (Banerjee, 2008; Hanlon, 2008 [quoted in Zanoni et al.,2017:577]). In the search for strategies to counter social inequalities on a global scale, inclusive growth is often propagated as a solution, especially by international institutions such as the World Bank and the United Nations Development Programme (UNDP). Durán (2015:1) of the UNDP summarises for example how inclusive growth 'is not only about expanding national economies but also about ensuring that we reach the most vulnerable people of societies. The "equality of opportunity" and "participation in growth by all" with a special focus on the working poor and the unemployed are the very basis of inclusive growth'. On the other hand, we know since Kuznets (1955) that exclusion in the form of income inequalities increases with economic growth and that economic growth and certain forms of exclusion are intrinsically intertwined. As an example, to differentiate between advocating inclusiveness and inclusive growth, I refer to one of the arguments of inclusive growth that propagates the creation of many jobs for short-schooled profiles as a positive side effect of the strong presence of long-schooled jobs in the apex economy (Lee & Clarke, 2019; Suedekum, 2006). The argument of apex catering jobs as positive side-effects is used to promote the idea of inclusive growth and fits within the assumption of trickle-down effects of economic growth. There is an awareness that a city needs cleaners to clean offices, barmen, cooks, and waiters to prepare and serve food and drinks for business lunches, and it is in these sectors that we indeed observe significant job growth. Together with the activities that are part of an often overlooked FE, some of these jobs can be considered as essential for the functioning of the city. However, the low wages and bad working conditions of many of the foundational and above-mentioned apex catering jobs question the idea of inclusive growth as well as the recurring assumption of employment 'as a remedy to poverty' (cf. the work of Ehrenreich, 2001). These jobs are typically undervalued and do not guarantee income security (Loopmans & Kesteloot, 2009) and, as May et

al. (2007) observe for the case of London, this undervaluation is enrolled in a wider dynamic of global city development. Confirming the global city polarisation hypothesis, May et al.'s study shows that the expansion of the city's professional and managerial class has fuelled the demand for low-paid workers to cater to the high-income lifestyles, produce the goods and services used by low-income households themselves, and satisfy the demand for informal workers in manufacturing (Sassen, 1996). If Durán (2015) defines inclusive growth as 'participation in growth by all', then we can indeed confirm that many of the most vulnerable partake in the economic system but are not or not sufficiently rewarded for it. Durán does not consider the 'exploitative nature' and 'surplus extraction' involved – two fundamental words in the above-mentioned quotation of Zanoni et al. (2017), where growth is framed as a result of violence against people and the planet, is individualised instead of collectivised, and goes mostly to private actors. In critical urban geography as well as diverse economy theories such as the FE, there are several non-competitive alternatives available for dealing with a surplus. I elaborate on these non-competitive alternatives in Chapter 3 of this dissertation.

To describe the field of diverse economic perspectives, Zanoni et al. (2017:581) – relying on Gibson-Graham (2006) – write: 'A politics of language (Gibson-Graham, 2006) refers not only to alternative modes of representation and calculation but also to the possibility of producing alternatives by inserting itself in dislocation (Laclau, 1990), in 'a space of nonbeing' (Gibson-Graham, 2006:xxxiii). It is those spaces full of 'absences' that 'have become core elements in our political imaginary. Ontologically, a politics of language rests on a radically anti-essentialist stance that sees the economy as contingent relationships, dynamic, and negotiable rather than as deterministically shaped by an invariant logic'. The quotation describes economic thinking as the production of alternative imaginaries: new ways of thinking and of expressing what is absent and what is not told, yet. These visions contest certain aspects of the dominant neoliberal economic system, such as profit-making, individualism, consumerism, social inequalities, etc. (Muller, 2019; Raworth, 2017). Dislocation refers to not knowing which direction to go and allowing voices different from your own, or from those you know, to enter the stage. Such imaginaries are for example the commons that refer to the self-directing of vital resources (Ostrom, 1990) and degrowth (Fournier, 2008) to conceptualise and practise alternatives to consumer capitalism. Next to the big concepts, 'the absences' also refer to the descriptions of many of the invisible jobs that are necessary for the functioning and maintenance of the city and that are made visible through the empirical research of authors such as May et al. (2007).

From the politics of language, Gibson-Graham (2006) jumps to the politics of collective action or the building of community economies. Many of these imaginaries have links with empirical cases of community economies. Without providing an extensive overview (cf. Cruz et al., 2017) some examples are alternative monetary systems (North, 2005, 2007) and alternative business models to create housing such as the Community Land Trust (Arnouts & Ryckewaert, 2018). An under-researched domain within this field of alternative economic thinking is the role of the state. Cruz et al. (2017:327) point out that 'little attention has been given to how governments can create and implement development policies in ways that are likely to produce alternatives to the capitalist economy'. The attention for the state as a crucial factor is one of the reasons why this research focuses on the FE.

2.4.1.The field of the foundational economy

2.4.1.1. Delineating the FE

I previously defined the FE as a subsector of basic services and goods for residents, but the FE is at the same time an ideological or ethical research project to rethink economic development at a systemic level. The definition of FE – as an ethical project – resonates with the quotation at the beginning of this introductory chapter of the 'Just Space and Economy group' in London, where growth and profit are not ends in themselves but where the economy is understood as a means or a set of strategies to achieve human well-being within a planet-friendly context.

The FE seeks to recalibrate urban development around those activities that are rooted in place, that can be sheltered from interurban competition, and that are essential to the well-being of citizens. We can distinguish two fundamental dynamics: first, by focusing on the basic goods and services essential to well-being, the FE relates economic activities to the social reproduction of the city; and second, it reinstalls a strong link between economic activities and their territory – also called a grounded economy (Engelen et al., 2017). Both dynamics might provide some answers to direct part of our economy away from the territorial development trap of competition.

As a subsector, the FE delineates a specific part of the economy that caters to the daily needs of citizens. Following Braudel's notion of multiple economies, Bowman et al. (2014) plead to recognise this multiplicity instead of treating the economy as one abstract, single reality. I delineate the FE by describing several antecedent concepts of the FE that all show that the neoliberal assumption 'there is no alternative'[1] (TINA) is false.

In historical research, a clear distinction is made between city-nurturing sectors and export sectors. The multiple economies of Braudel (1986 [1979]), for example, describe the economy as having distinct fields, with each field having its specific products, actors, spaces, etc. Braudel distinguishes three layers: the market economy or 'the mechanisms of production and exchange linked to rural activities, to small shops and workshops, to banks, exchanges, fairs and (of course) markets' (23), the non-market or 'the world of self-sufficiency and barter of goods and services within a very small radius' (24), and the anti-market or 'active social hierarchies' that could 'manipulate exchange to their advantage and disturb the established order' (24). It is not easy to see where one would place the FE in Braudel's three layers because he links each layer to a particular mode of exchange (market, non-market, anti-market). It could be that in one geographical-historical context the FE is part of the non-market, while in other periods it can be drawn into the realm of market exchange, or even further into the anti-market presently run by financial capital. As I will demonstrate in the contemporary case of the construction sector, it is rather the case that a sector participates in the three modes of exchange at the same time. What the non-market of Braudel and the FE have in common is the relation of economic activities with the infrastructure of everyday life, and the observation that these activities form a constituent part of the economy (Braudel's estimates were that they represent 30 to 40 per cent of the GDP during the depression following the 1973–1974 crisis, see Braudel, 1986[1979]:25) that is mostly overlooked in economic development policy.

[1] The slogan 'There is no alternative' was often used by British Prime Minister Margaret Thatcher in order to refuse any dialogue on alternatives to the market economy (Berlinski, 2008).

There is a more recent lineage of breaking up the economy as one abstract, single reality. The FE resonates with concepts such as the residential economy. According to the definition of Vandermotten (2014), residential economic activities include the sectors of health and education, certain services to persons, and large parts of commerce. This definition functions as an analytical economic concept to delineate a set of economic sectors that are related to everyday life. Beyond discussing which sectors are in and which are out, one of my main theoretical contributions is that I look at foundational tendencies. This implies scanning a sector with the help of indicators such as the tensions between several modes of exchange within one sector, the degree of 'glocalisation', whether the activities are rooted in place, whether they can be sheltered from interurban competition, etc. This results in an analytical framework that can be applied to other cities to scan foundational tendencies in sectors of the base economy (see below). With the help of the analytical framework, we can get insight into whether these foundational tendencies are under pressure and we can evaluate their need for policy protection. The next step consists of looking at whether it is possible to pull certain non-foundational parts of a sector within the foundational realm.

Vandermotten (2014) provides an important indicator of the residential economy and observes that it hosts the largest part of short-schooled workers. Similar to Braudel and the Foundational Economy Collective, he observes that this part of the economy has been overlooked: 'The driving force of international and administrative functions should not lead to neglect the importance of the residential economy and proximity services for the Brussels economy, sectors that are too often forgotten in the economic strategies of public authorities' (2014:66). The FE refers even more to the concept of 'l'économie présentielle' of Davezies (2008), which is difficult to translate and might be translated into 'the presential economy'. It does not only refer to the basic needs and services in general but also implements 'presence' and mixes it with 'residential' to link the term to an economy that is based on the population that is actually present in a certain territory. Davezies maps the monetary flows related to the residential economy for the territory of France. Many of these flows invisibly leave a regional territory, for example through commuting. He distinguishes therefore between the economic activities that stay within a territory – the presential economy – and those that flow out of the territory. This is important in relation to the income of governments in rescaled territories where more and more tasks are transferred to smaller levels of government in a context of austerity (Brenner, 1999). The presential economy is perfectly interchangeable with the term 'grounded economy' used by Engelen et al. (2018) because of its strong link between the economy and its territory.

I also link the FE to the urban studies debate of the base and non-base economy (Alexander, 1955; Blumenfeld, 1955). As mentioned in the section on the definition of the post-industrial city and global city literature, this debate relates to one of the crucial critiques of my dissertation (on economic activities other than basic goods and services being put forward as 'engines of economic growth' or as being indispensable for the survival of the city). The base-non-base debate is part of the historical debate on urban development. Davezies (2008) traces the theory of the base economy back to Cantillon in 1725 and his *Essay on the nature of commerce in general*. This theory starts with the presumption that urban development depends on the inflow of external money (Alexander, 1955). One part of the economy, the base economy, is responsible for capturing the external revenues and is hierarchically valued higher than the second part of the economy, the non-base economy, that nurtures local demand. This hierarchy is still omnipresent in urban economic development practices today. In this dissertation, I use two arguments to counter that hierarchy and to plead for more policy attention for the FE. I start with the 'economic growth without social progress' argument (Davezies, 2008; Van Hamme et al., 2013). Paraphrasing Davezies

(2008:56), it states that a territory can be gifted with a magnificent and dynamic 'productive export base' without giving a return to that territory in the form of revenues, the creation of employment, or other benefits for the inhabitants. Davezies continues by empirically observing (for France and Ireland) that a lot of very productive regions are not able to keep or attract residents who pay taxes. This implies that financial or other efforts that a local or regional government makes to attract and stimulate export economies do not return to the population of that territory. This is not only a counter-argument to presumed trickle-down effects, but also the perfect empirical counter-argument to the space-equilibrium framework of NUE economists such as Florida (2004) and Glaeser (2011). The second argument to counter the value hierarchy of export economies is provided by Blumenfeld (1955) and is elaborated in Chapter 3. Blumenfeld turns the debate upside down by stating that, first, valuing export activities as crucial for urban development overlooks the issue of import substitution in the realm of 'non-basic' services that are important to maintaining a positive balance of payments. In other words, reducing imports by increasing autarky is an equally viable mercantilist strategy, and the larger the metropolitan area, the more dominant this effect becomes. Second, alluding to interurban zero-sum games, he observes that basic activities are most prone to competition and therefore the most volatile, while the non-basic (i.e., local consumption) activities are in fact constant and permanent. He suggests changing the terms and referring to the residential economy – or the FE – as the base economy and uses the non-base economy to point to the export sectors.

2.4.1.2. Chains of interdependencies

As a step towards the spatialisation of the FE, I foreground the link of FE to a relational perspective of chains of production as one of the main arguments to plead for the preservation of urban workspaces. Through an FE lens, neglected workspaces and workers are perceived as a crucial part of chains of interdependencies. These chains of interdependencies can be approached from two notions taken from the FE literature: supply chain value versus point value (Bowman et al., 2014) on the one hand, and urban foundational systems (Hall & Schafran, 2017) on the other. Bowman et al. (2017:124–125) write that in 'our form of financialized and globalized capitalism […] the tendency has increasingly been to privilege low costs or high profits in individual transactions at a node, whilst marginalizing economic or social consequences elsewhere in the chain of production and consumption'. 'Point value' is defined as the financial value of a certain good or service (a piece of land, an enterprise, etc.) at a certain time and place (~ a node), while 'chain value' covers the value of goods and services throughout the entire production process of an economic activity. Point value isolates the individual parts of the production process, while chain value perceives them as interdependent or as inseparable. In relation to foundational goods and services, Hall and Schafran (2017) see the necessity of the collective provisioning of these goods and services as one of the main reasons for reframing foundational activities as foundational urban systems, since individuals are not able to provide for themselves. Therefore, available space or land appears to be a crucial element in the provisioning of foundational urban systems and can no longer be valued as an isolated good. Approaching the FE from a labour perspective, also short- and middle-schooled workers are fundamental parts of the production chains of FE goods and services. This conceptual framework offers opportunities to introduce other logics of value in economic activities than competition, large profit margins, finance, and reduced forms of efficiency, such as necessity, or being essential to the proper functioning of the city.

2.4.1.3. Internal and external governors

Adopting Tilly's (1990) notion of internal and external governors, Engelen et al. (2017:413) observe that cities are governed externally by geopolitical developments on a supranational scale beyond their control: 'Individual cities are beneficiaries of, or suffer collateral damage from, state or supra national decisions and processes; such decisions are taken elsewhere for reasons of state and are often completely disconnected from city welfare'. Yet, cities always have their own internal accelerators and stabilisers, which act as internal governors. The concept of external and internal governors demarcates the local margins of action available to governments to reinforce the foundationalness of sectors. Engelen et al. (2017) point to local political actors and policy measures that can act as local internal governors in support of the FE, whereby taxing privatised land is presented as a viable strategy to capture a part of the rent of private property. In this dissertation, I consider apex economic sectors as volatile segments of urban economies. Although urban governments like to invest in innovative sectors, advanced services, finance, etc., there is no guaranteed return on investment. These apex sectors are subject to external governors such as foreign investors or multinationals and, in the case of the BCR, also long-schooled and commuting workers. The public investments therefore risk leaking out of the urban territory. Investing in the grounded economy immediately benefits the local population and can therefore be recognised as an internal stabiliser.

2.5. The field of urban planning and design

The next step in the theoretical approach is to spatialise the insights of the FE and find analytical ways to embed them into specific spatial contexts. Since the FE literature does not provide such a framework, I use the field of urban planning and design, and more specifically literature on urban manufacturing (and the relation between planning instruments, real estate dynamics, and industrial gentrification) and mixed-use development.

2.5.1. Urban manufacturing and industrial gentrification

In the United States, industrial gentrification has been a matter of concern as early as the 1990s. Unlike in European cities, new mono-industrial zones are being established in American cities, such as for example the Planned Manufacturing Districts (PMD) in Chicago. Academics theorise and make prognoses about the amount of industrial land needed to host growing cities and calculate whether there is enough industrial land available (Chapple et al., 2017; Needham et al., 2013). One of the exemplary and well-documented cases of industrial gentrification is the former industrial neighbourhood of Williamsburg, New York (Wolf-Powers, 2005; Curran, 2007, 2010). Wolf-Powers describes the history of manufacturers that were situated in Manhattan and were pushed out in the direction of Williamsburg when real estate dynamics and office towers started to grow fast. She described how a similar push mechanism was happening in Williamsburg and how it was related to the conversion of mono-industrial land into mixed-use development land. Because only a few people lived in this former mono-industrial area, there was little to no protest, and the first transitions took place quite unnoticed. For the case of London, Ferm (2016) followed several mixed-use development projects during a couple of years and observed how the planned productive activities were never successful. She describes how mono-industrial land is converted into mixed-use development land, legitimised by a housing crisis and by arguments of underuse and a lack of efficiency that she revealed as fundamentally wrong. Ferm concluded that industrial gentrification or the pushing out of manufacturing functions were the result of fiercening real estate dynamics, often instigated by planning instruments of the government (Ferm & Jones, 2016, 2017).

The literature about the cases of urban manufacturing of London and New York reveals a clear link between planning instruments, real estate dynamics, and industrial gentrification. This literature is not explicitly related to the critical urban geography literature on gentrification but looks at gentrification from an urban planning and design perspective. Following methodologies of reading plans, doing research-by-design, and analysing urban design, this literature comes to similar conclusions than critical urban geography readings about developments in cities such as Milan (Savini & Aalbers, 2016) and the transformation of the formerly industrial Poblenou district in Barcelona (Camerin, 2018), but the conclusions are framed differently. In the field of urban planning, this relation between planning instruments, real estate dynamics, and industrial gentrification is framed as an extra explanation of deindustrialisation, and arguments are made to re-industrialise the city (cf. Edwards & Taylor, 2017; Nawratek, 2017). In the field of critical urban geography, this relation is exposed as a manifestation of violent capitalism with the goal to attract foreign investors in a global intercity competition and without governmental concern for the original inhabitants and workers of these districts.

2.5.2. Mixed-use development

When we try to look for a way out of these industrial gentrification mechanisms, we have to look into urban land strategies and immediately encounter the issue of mixing working and living. Similar to cities such as London, the BCR is a growing region where different functions compete for scarce urban land and where the available options for land for productive uses are limited. Following Jacobs (1961), the initial hypothesis was that a mix and diversity of functions is always something positive and contributes to the liveability of the city, and that friction between functions could be solved by urban design solutions. Traditional views and indexes of functional mix tend to emphasise the compatibility of activities solely in terms of possible mutual hindrance (Allaert et al., 2007; Leinfelder et al., 2008). But a political economy reading reveals this zoning practice as a bad compromise between living and working, thereby reinforcing social inequalities by displacing productive activities and in some cases even reinforcing the conflicts between the functions. Therefore, this research focuses on how to organise a mix in a sensible and non-exclusionary way, where the competitive dynamics of real estate are weakened so as to make space for the FE.

3. Research question and aims

The main aims of my dissertation are twofold: to contribute to critical urban analysis in relation to alternative economic thinking and to demonstrate new opportunities for the local state to nurture the FE by formulating a series of policy recommendations that support the base economy and make it more foundational. From an ethical point of view, this research aims to contribute to the alignment of the urban economic development practices of post-industrial cities, such as the BCR, with their inhabitants' socio-economic profiles and the spatial context of their territory, thereby using the lens of the concept of the FE.

The overall question is how one can sustain decent lives for citizens of socio-spatially polarised cities that experience rising land values, industrial gentrification, and wider inequalities? The thesis is one of rethinking the direction of urban economic and spatial policy around the notion of the FE. Put in a tangible way, the main research question that springs from these aims and overall questions, and in relation to the theoretical literature review, is: What are the spatial and non-spatial tools to make space for the FE?

This overall research question of making space for the FE in a literal as well as a metaphorical way is approached through four objectives, translated into four subquestions:

1. First, the aim is to look at the spatial planning context of Brussels in relation to economic development and the interplay between these spatial planning instruments in the Brussels canal zone. The research question is: what are the (anticipated) effects of current spatial policy instruments with regard to economic activities in the BCR, and can they be interpreted as policy measures effectively reducing spatial inequalities?
2. Second, the aim is to contribute to the application of the alternative concept of the FE in urban economic development practices in the BCR that lead to new policy opportunities. This happens by testing our hypothesis that the FE can not only be found in sectors that are not necessarily restricted to the consumption of basic goods and services, such as housing, but also in the production of these goods and services. The research question here is: in which ways is the construction sector key to the social reproduction of the contemporary city? And, in relation to the outcome of this question, what are the labour and land opportunities for less competitive urban economic development practices in the context of the BCR?
3. Third, I aim to empirically contribute to spatial sector–specific knowledge about the construction sector and look for potential spatial policy margins. The research question is: what is the economic geography of Brussels's construction enterprises and what are their spatial needs?
4. Fourth, I aim to study urban manufacturing as part of the FE. The motivation to study urban manufacturing as part of the FE can be found in the productive city discourse that advocates for the preservation of industry in cities. In formulating the hypothesis that the preservation of urban manufacturing is a prerequisite to accommodate FE activities related to the production and preservation of basic goods and services, such as construction, two research questions come to the fore. One, from a geography and planning perspective, the research question is how to regulate the competition between functions of living and working in a land market governed by fiercening real estate dynamics and property-led development? Second, from an urban design perspective, the question is how to create a non-exclusionary (or inclusive) intertwining of working and living?

4. Methodology and research context

This methodological subsection starts with the main approach used to study the FE. Starting from the case of the BCR, we gain useful insights into territorial economic policies in other European post-industrial cities. It is followed by a focus on one specific sector, the construction sector, where disruptive economic processes are manifestly present.

4.1. The case of the Brussels Capital Region

The Brussels Capital Region offers an excellent case to address a broader problem of socio-spatial polarisation in post-industrial cities and, in particular, the problem of industrial displacement of jobs as well as of workspaces. The insights gained by this analysis will be applicable to other post-industrial cities. Subsequently, the case of Brussels will be qualified in relation to the wider population of cases and describes what is generic and particular about the following categories: the socio-spatial polarised nature of the city; the economic functions; governance, spatial, and non-spatial economic planning and policy. The Brussels case will also be related to the key literatures of urban political economy, diverse economies, and planning and urbanism identified above.

Kesteloot and Meert (2000) demonstrate how suburbanisation during the 1960s and 1970s had a major impact on the socio-spatial structure of Brussels and describe it as the spatial expression of Fordist

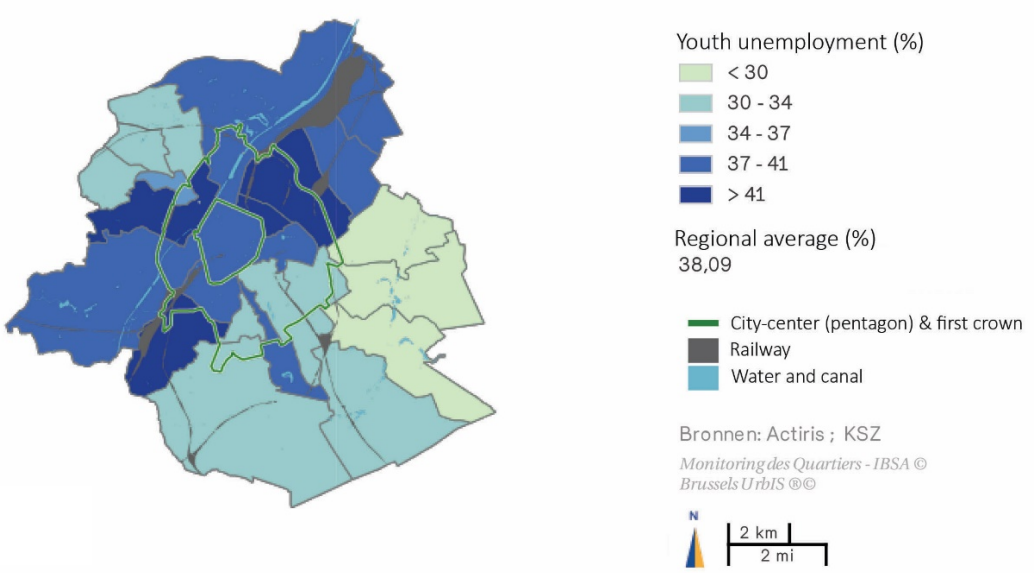
economic growth. The social mobility of labourers in industry could contribute to a growing mass consumption through increased wages. This social mobility took place in a structural way and at a large and collective scale. The ability of blue-collar workers to buy houses and cars initiated urban flight and suburbanisation. Foreign short-schooled migrants from Morocco and Turkey, who were brought in to fill the increased number of industrial vacancies, occupied the now cheap and available inner-city dwellings. These migrants could not benefit from upward social mobility at the same structural and collective scale as the labourers before them due to the economic crisis of the 1970s. The transformation of a cheap labour force into an unemployed labour force did not permit access to other housing segments and locked these migrants into the inner-city neighbourhoods. Until today, social mobility slowed down and broke the relationship between economic success and social progress (Davezies, 2008; Van Hamme et al., 2013).

Besides deindustrialisation, critical urban geography describes a parallel change of governance regime to manage the unevenness caused by the massive loss of blue-collar jobs in industry. Policies have shifted from steering 'new employment-creating investments into poorer areas, often ones of relatively high unemployment' (Cox, 2009:4) – known as spatial Keynesianism – towards a growth-oriented agenda and the enhancement of territorial competitiveness generally, drawing on the privatisation and financialisation of urban land (Harvey, 1982). This was supported by various mechanisms. For the case of the BCR, I discuss here the mechanisms of state rescaling and metropolitanisation.

First, processes of state rescaling (Brenner, 2004). In Belgium, the mitigation of spatial disparities was the domain of the national government until the 1980s. When the BCR was founded in 1989, more and more place- and scale-specific regulatory interventions were used to regulate urban economic development. Chapter 2 elaborates on a specific set of these interventions. A second mechanism towards a growth-oriented agenda is often accompanied by the development of a governance structure at the metropolitan level. This form of 'territorial cohesion' decreases competition within a territory on the one hand and makes territories stronger on a supranational scale on the other (Brenner, 2004). This never happened in the BCR. On the contrary, fringe municipalities to the north of Brussels tend to implement policy measures aimed at attracting economic activities in competition with the BCR, either through office park developments (for example Zaventem and Diegem) or retail activities (e.g., Machelen and Vilvoorde). While Brussels's metropolitan space is spilling over its existing administrative borders – in terms of demography, migration, suburbanisation, and commuting processes - the institutional borders of the BCR do not correspond to its socio-economic borders (Boussauw et al., 2013; Van Wynsberghe et al., 2009). In European cities such as Barcelona and Vienna, the metropolitanisation process was accompanied by a process whereby agglomerated municipalities were added to the political and juridical order of the metropolis. In the BCR, this never happened. The expansion of the historical city of Brussels (the pentagon in Figures 1 and 2) has been accompanied by a struggle for the autonomy of municipalities for over a hundred years already (De Beule et al., 2017) and still causes internal struggles, so that the region is only able to take over powers in stages and in accordance with the municipalities after years of negotiations. Public debates in the media give a lot of attention to the absence of one metropolitan governance system. To give an example, the BCR has, next to a regional minister for mobility, nineteen different aldermen responsible for mobility, sometimes for a surface of only 1.17km² like in Koekelberg. This has severe consequences for the internal governance of the region, because the division of tasks between the nineteen municipalities and the region makes governing extremely complicated. Outside the BCR, the geographical and economic borders of metropolitan Brussels or the Brussels agglomeration comprise 62 municipalities, including the 19 Brussels municipalities (Luyten & Van Hecke, 2007), that are part of the Flemish and the Walloon region. This poses

severe problems for the fiscal base of the Brussels region and its municipalities since more than 300,000 commuters literally drive their revenue out of the region every day (Kesteloot, 2013). In Belgium, people pay taxes in their town of residence. Kesteloot (2013:125–126) shows that between 1976 and 2005, some of the peripheral municipalities of the metropolitan region managed to double or even triple their fiscal revenues. Consequently, the gap between poor and rich municipalities within the metropolitan region is widening. As a scalar fix remains unlikely, municipalities in practice resort to gentrification strategies 'to combat the erosion of their fiscal base' (Kesteloot, 2013:121).

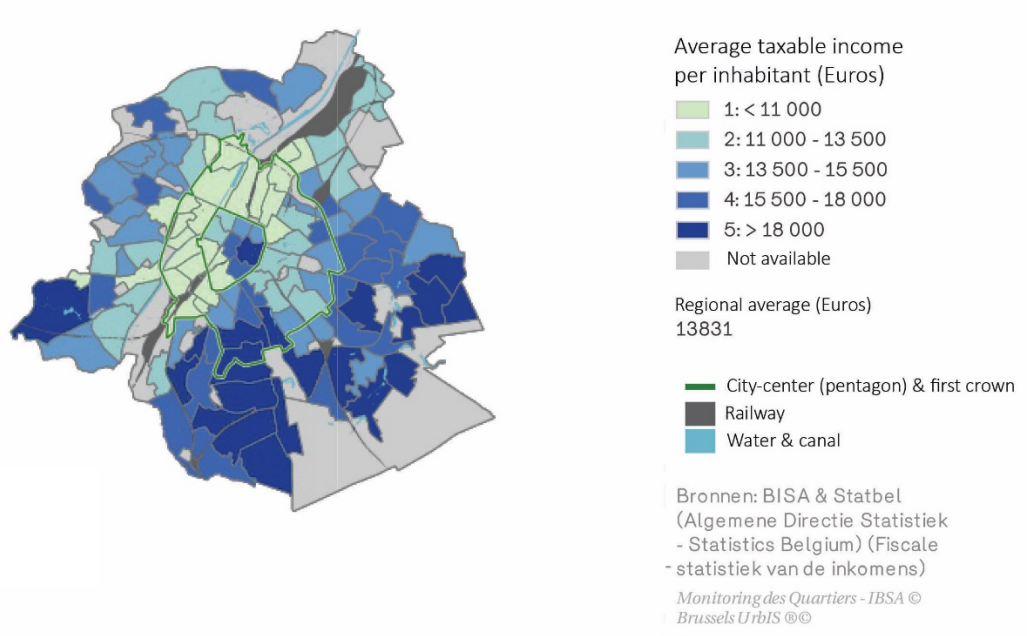
Contrary to other European cities, such as Paris, the more vulnerable socio-economic segments of the population are still present in the city centre. As we see in Figure 1 on youth unemployment and Figure 2 on the average taxable income per inhabitant, the socio-spatial divide is more or less organised along an East–West axis. Youth unemployment is significantly higher in the city centre (in the form of a pentagon on Figure 1), with percentages up to 41, and higher in municipalities such as Sint-Jans-Molenbeek in the west and Schaarbeek in the north (see the map of the BCR with its municipalities in Figure 3). These areas with higher (youth) unemployment are also situated along the canal Brussels–Charleroi, the former main axis of Brussels as an industrial city. The spatial divide also reflects a geographical foundation. The canal is situated in the former valley of the Senne river, which lay at the origin of the Brussels settlement and played an important role as an economic driver in water-related economic sectors that use mills, such as grains and beer, and wetlands, such as the textile industry in the Middle Ages. In cities such as Paris, and more recently through the selling of inner-city social housing to the private market in Amsterdam as well, the socio-spatial divide is organised into a wealthier city centre and poorer peripheral areas such as the banlieues or the Bijlmermeer. Again, when looking at average income, Figure 2 displays a similar dynamic on the East–West axis and within the canal zone, with average annual income per inhabitant below 12,000 euros. The same is true for health-related issues such as life expectancy, with a difference between the richest and poorest municipalities of more than three years (Wayens et al., 2006). We display the average income per inhabitant in 2015 at the scale of the neighbourhood (Figure 2) to show that the differences between neighbourhoods are even larger (average income decreases to below 11,000 instead of 12,000 euros).



Source : Statbel – Wijkmonitor Brussels (2020).

Figure 1: Youth unemployment in the Brussels Capital Region in 2012 (%).

The transition from an industrial to a post-industrial city went along with high unemployment numbers since the 1980s. These numbers started increasing severely since the year 2000 due to renewed and continuous demographic growth (see below). Remarkably, the rising unemployment operates hand in hand with an economic boom (Loopmans & Kesteloot, 2009) that is not translated into job growth. According to Vandermotten (2014:70), an increase of 1.2 added value in Brussels only generates 0.7 jobs (annual average between 2004 and 2010). Unemployment is especially high within the segment of short-schooled people. Along with the increase in jobs in the service sector, demand for employees with higher education levels increased (Vandermotten et al., 2009). These labour profiles are present in the suburban areas around Brussels and beyond, but less within the inner-city neighbourhoods. The many commuters driving into Brussels everyday point to the *spatial mismatch* between available jobs in the city and the local absence of profiles needed to supply these jobs (Dewulf et al., 2015). Forty-nine per cent of the 726,350 jobs in 2017 were filled by commuters. Due to continuous deindustrialisation and the increase in white-collar employees in production processes, jobs for shorter-educated people continue to disappear at a fast pace, which contributes to structural unemployment. This structural unemployment occurs in tandem with a structural housing crisis. According to Dessouroux et al. (2016), the contemporary housing crisis in the BCR has its roots in the successive economic crises since the 1950s. The authors describe how planned social housing projects were disposed of because of the economic crises caused by financial problems. While there was still a high demand, municipalities' budgetary deficits stopped further development of social housing. The historical shortage of affordable housing was reinforced by more recent demographic growth since the 1990s that was not considered, together with more aggressive real estate dynamics because the shortage of housing increased housing prices. Population growth started in the 1990s, with an average of approximately 11,000 people per year through the combination of migration and birth, leading to a population of 1.2 million inhabitants today (2019). The average population growth slowed down to approximately 3,400 people per year from 2011. The social profiles of migrants diverge but are overrepresented in the lowest income percentiles.



Source: Statbel – Wijkmonitor Brussels (2020).

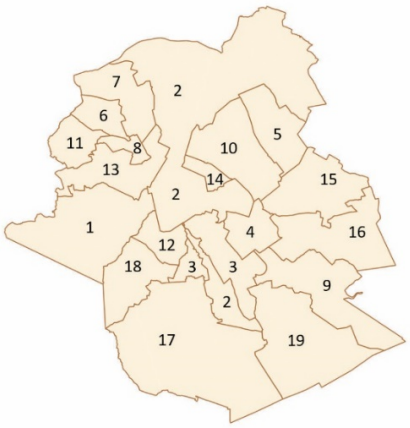
Figure 2: Average taxable income per inhabitant in the BCR in 2015 at the scale of the neighbourhood (euros).

Like other city regions, Brussels has strong urban flight or suburbanisation, with the Belgian middle class and migrants with upward social mobility tending to leave the city (Catney & Simpson, 2010, quoted in Dessouroux et al., 2016; De Maesschalck et al., 2015). As the capital of the European Union, Brussels is a globally connected city (Corijn et al., 2009). The EU-linked supranational organisations create almost 40,000 jobs, and 67 per cent of their employees live in Brussels (in 2017). The need for office space and housing to accommodate these workers in and around the European quarters on the east side of Brussels puts extra pressure on affordable housing and reinforces gentrification towards the canal zone or the former industrial area (Van Criekingen, 2006). This creates residential mobility that is not qualified as city flight and is not linked to upward social mobility. De Laet (2018) shows that 30 per cent of suburbanisation, or residential mobility toward peripheric villages and cities, consists of low-income populations. These populations are exposed to social pressure because of low incomes, a shortage of employment, and economic insecurity, and they are exposed to spatial pressure due to rising housing costs.

The observation of a structural unemployment crisis in combination with a structural housing crisis in Brussels lay at the basis of this dissertation. The proposal for this dissertation was written in 2014, when unemployment numbers were at their highest. During the past five years, however, unemployment numbers have been decreasing. Where the BCR had a regional average of youth unemployment – referring to people under 25 years – of 38 per cent (see Figure 1), it was reduced to 25 per cent in 2019. This enormous decrease is due to the positive economic conjuncture (for example in the construction sector) in combination with a series of policy measures, executed by the regional employment centre Actiris, to accompany young people towards the employment market. A recent study by the government (Dewatripont & López Novella, 2019) evaluates these accompanying measures as having a positive impact. Also, general unemployment decreased with 22.6 per cent in the past five years and is now 15.8 per cent. Especially people with short-schooled profiles found a job more easily. The interpretation of these data

needs to be nuanced, however, since the federal government erased a number of unemployed people from the statistics. These people are now referred to Public Welfare Centres[2] for a minimum of financial support.

Although unemployment numbers are decreasing, the observation of a double structural crisis in employment and housing is still relevant. The Brussels government has used the housing crisis as an argument to legitimate the conversion of mono-industrial land into mixed-use development land (cf. EAUDs), similar to London. This implies that in trying to solve the structural housing crisis, production land disappears at a fast pace and this will as a consequence probably reinforce the structural working crisis.



Sources: processed and mapped by Sarah De Boeck.

Figure 3: The nineteen municipalities of the Brussels Capital Region

Table 1: The nineteen municipalities of the Brussels Capital Region, with surfaces, number of inhabitants, and density. Source: Statbel – Wijkmonitor Brussel.

		Surface (km²)	Inhabitants	Density
1	Anderlecht	17.71	119,714	6,683.44
2	Brussel-city	32.61	181,726	5,494.24
3	Elsene	6.34	86,876	13,560.51
4	Etterbeek	3.15	48,367	15,232.04
5	Evere	5.02	41,763	8,143.16
6	Ganshoren	2.46	24,902	10,232.12
7	Jette	5.04	52,536	10,124.43
8	Koekelberg	1.17	21,990	18,514.79
9	Oudergem	9.03	34,013	3,791.01
10	Schaarbeek	8.14	133,309	16,878.80
11	Sint-Agatha-Berchem	2.95	25,179	8,541.74
12	Sint-Gillis	2.52	50,267	19,892.23

[2] In Dutch 'Openbaar Centrum voor Maatschappelijk Welzijn'.

13	Sint-Jans-Molenbeek	5.89	97,462	16,228.48
14	Sint-Joost-ten-Node	1.14	27,457	23,324.27
15	Sint-Lambrechts-Woluwe	7.22	56,660	7,764.84
16	Sint-Pieters-Woluwe	8.85	41,824	4,678.10
17	Ukkel	22.91	83,024	3,631.01
18	Vorst	6.25	56,289	8,929.08
19	Watermaal-Bosvoorde	12.93	25,184	1,940.67
	Brussels Capital Region	161.33	1,208,542	7,440.85

Source: Statbel – Wijkmonitor Brussels (2020); processed by Sarah De Boeck

4.2. The case of the construction sector

In searching for and delineating the potential scope of the FE, the hypothesis arises that the FE can not only be found in sectors that are restricted to the consumption of basic goods and services, such as housing, but also in the production of these goods and services. The Brussels construction sector, where disruptive economic processes are clearly present, is then used as a sectorial case to verify this hypothesis.

When applying the FE concept to the Brussels construction sector, the sector reveals itself as an ambiguous case: it is both central to contemporary growth-centred urban political economies and it exerts functions foundational to daily urban life. In a neo-Marxist reading, construction is mostly studied as being central to contemporary growth-centred urban political economies, as being part of urban growth coalitions and speculative investments in the built environment, and as key in the process of switching capital into the built environment. Large construction firms, property developers, investors, and local elites are considered the main actors in these speculative urban development processes. Construction SMEs and construction workers stay mostly invisible.

How is the construction sector key to the social reproduction of the contemporary city? I created an application of the FE concept and reworked it into an analytical tool. Using this tool, an FE analysis points to the tensions and contradictions present in economic sectors. I review the degree to which construction is embedded in the local labour market and to what extent the Europeanization of construction work through posting jobs is undercutting the grounded nature of the Brussels construction sector. A recent example of journalistic research of daily newspaper *De Standaard* (2019) related to the construction sector reveals how Eastern European construction workers with a posting contract are not being paid, nor insured, to construct the European Council Building in Brussels. Like other sectors, construction is governed by what Engelen et al. (2017), following Tilly (1990), refer to as external governors working at the supranational scale, thereby limiting local political agency. However, the spatial embeddedness of the Brussels construction sector also offers scope for internal stabilisers. Next, I look at the contours of that local state agency, showing how urban policies governing land and labour markets can support and nurture the FE character of the construction sector. As a result, formerly invisible labour and neglected spaces become visible, together with their crucial role in the social reproduction, construction, and maintenance of the city, as an important local employer and as having strong spatial local anchorage.

Table 2 details employment in the BCR according to residency and educational level and underlines the importance of the FE (= urbanization sector – see Chapter 2 for an elaboration of the concepts) in the Brussels economy. With almost 30,000 jobs the construction sector foresees in 4% of the official

employment in the BCR. The data on the educational level of the employees demonstrate that the jobs in economic sectors related to the production of goods (industry, construction, wholesale & retail, and transport & logistics) are filled in for 53% to 80% by short- and middle-schooled profiles. If we look at the foundational or the urbanization sector, the average share of long-schooled and short- and middle schooled profiles are at 50% each. In comparison, the average share of long-schooled and short- and middle schooled employees in the control sector is 65% and 35% respectively.

Table 2: Employment in the Brussels Capital Region according to residency and educational level (2017)

Sector of economic activity	Total		Residency (%)		Educational level (%)		
	Jobs	%	Brussels	Commuters	Low	Average	High
Agro/extractive sector							
Agricultural activities*	436	0	73.6	26.4	24.3	36.3	39.3
Subtotal	436	0	73.6	26.4	24.3	36.3	39.3
Manufacturing sector							
Industry	22,007	3	49.4	50.6	19.6	33.3	47
Information & communication	40,948	6	43	57	4.1	16	79.9
Liberal professions, academic & technological activities	49,295	7	60.9	39.1	3.4	12.4	84.2
Subtotal	112,250	16	43	57	9	20.6	70.4
Urbanization sector (= foundational economy)							
Construction	28,610	4	69.6	30.4	35.8	44.9	19.4
Wholesale & retail	66,876	9	56.2	43.8	18.8	40.7	40.5
Transport & logistics	34,866	5	39.7	60.3	16.5	40.8	42.7
Hotel & restaurant business	25,747	4	74.7	25.3	30.9	39.9	29.2
Real estate*	7,845	1	62	38	15.3	29.8	54.9
Education	58,500	8	54.5	45.5	5.7	12.7	81.6
Healthcare & social work	73,035	10	59	41	13.1	22.1	64.8
Art, entertainment & recreation	17,422	2	55.4	44.6	17.2	28.4	54.4
Domestic activities*	6,174	0.9	93	7	42.9	35.5	21.6
Water & waste management*	3,995	0.5	52	48.2	38.9	35.2	25.9
Electricity & gas*	6,392	0.9	34	66.3	4.5	20.8	74.8
Diverse activities*	4,261	0.6	65.9	34.1	7.7	15.3	77
Subtotal	333,723	45	61	39	20.6	30.5	48.9
Control sector							
Public services	105,441	15	31.8	68.2	11	34.3	54.7
Administrative & supportive services	54,775	8	60.9	39.1	27.2	37.3	35.5
Other services	22,879	3	50.8	49.2	7.2	26.6	66.2
Finance & insurance	59,442	8	25.2	74.8	1.5	18.1	80.4
Extraterritorial organizations*	37,404	5	67.2	32.8	2.7	14.6	82.6
Subtotal	279,941	39	67.2	32.8	9.9	26.1	64

Total	726,350	100	51	49	14.6	28.2	57.2

*Extrapolation of 2013 data. Actiris (2017) amalgamates *water & waste management, electricity & gas, domestic activities, agriculture, extraterritorial organizations, real estate* under the banner "diverse activities," while the 2013 data (Actiris et al., 2015) does differentiate between sectors. The 2017 data for these individual sectors are hence based on the employment shares of 2013.

Sources: Actiris (2017); Actiris et al. (2015), processed by Sarah De Boeck.

In an iterative way, the case of the construction sector is fundamental to elaborating on the theory of the FE. Based on the case of construction, I now understand every economic sector as potentially foundational. The instrument of sectorial analysis through an FE lens can be expanded to other sectors with the help of the FE analysis created, and all sectors can be part of the FE or can be made more foundational. This depends on how a sector is organised, how it deals with its workers and its customers, how it relates to its immediate surroundings in the city, how it treats the planet's resources, etc. This demands a logic other than point value according to which a sector is organised, and as such, other ways of looking at value.

4.2.1. The delineation of the construction sector

To delineate the construction sector, I mostly used NACE codes 41, 42, and 43, which are recognised in governmental data as the construction sector. Sector 41 comprises the construction of buildings and the development of building projects. Because this research focuses on SMEs and not on large construction firms, developers, or architects, only 41.20 – or actual construction work – is taken into consideration and comprises the general entrepreneurs who build and/or renovate residential as well as office buildings. Sector 42 delineates water and road infrastructural works. Sector 43 contains specialised construction works such as electricity, plumbing, woodwork, plastering, etc. The Brussels construction sector is very fragmented compared to other sectors: 71 per cent consists of micro-enterprises with fewer than five employees and the self-employed, while another 22 per cent consists of small enterprises with fewer than 20 employees. All these SME enterprises are situated in sector 43, which is also the main focus of this dissertation. In some cases, wholesalers and retailers of construction materials are added to NACE codes 43, 41.20, and/or 42.

4.3. Within-case-study methodology

After the main approach of the BCR case and the sectorial zoom-in on the ambiguous case of construction, a more particular description of the within-case methodology follows. In terms of how this research studies emergent phenomena and approaches the research questions, I used a combination of qualitative and quantitative research methods: desktop research, anticipatory research, ex-ante research inherent to spatial planning, existing governmental datasets, but also more traditional forms of economic geography and urban design analysis, the creation of a new dataset, etc.

4.3.1. Funding and interdisciplinary research

This research was funded by two separate funding agencies. This has consequences for the methodology. The first two years (2015–2016) were funded by Innoviris.brussels, via a project with the title *Living and working in the Brussels Metropolitan Area: Searching for pathways to liveable urbanisation*, while the last three years (2017–2020) were funded by the Interdisciplinary Research Project *Building Brussels. Brussels city builders and the production of space, 1794-2015* by the Vrije Universiteit Brussel, conducted with my

colleagues Matthijs Degraeve and Frederik Vandyck under the supervision of a research committee. My colleagues contributed to the understanding of the Brussels construction sector from a business-historical and an architectural angle. My contribution is situated in socio-economic geography and planning, is policy-oriented, and studies the current local anchoring of construction enterprises from the perspectives of employment and land use. Although this is not always tangible, thanks to this interdisciplinary collaboration, we are able to sketch a multifaceted story that places the construction sector in both a historical and a contemporary perspective that is better substantiated and more nuanced than any discipline could produce. Some of our discussions had consequences whose traces are not always visible anymore.

Next to substantive research results, the interdisciplinarity also generates insights into research collaboration. According to Thompson (2017), a form of 'hybridisation' and integration of research methods and theoretical frameworks is required to be able to talk about interdisciplinary cooperation. Matching theoretical concepts and methodologies from different disciplines were not straightforward. I illustrate this with the example of our ambition to create a common definition of the construction sector. We never succeeded in delineating a common definition and had to find other research strategies to collaborate. It is a broad sector and ranges from carcass work to interior finishing and furnishing, from private homes to public transportation infrastructure. In addition, it overlaps with many other industries. The activity of construction enterprises has undergone numerous transformations over the past two centuries through technological innovation. Our common article in the journal *Stadsgeschiedenis* sketches an overview of diverse definitions and classification systems and the benefits and shortcomings of each (Degraeve, De Boeck & Vandyck, 2018:46–47). We had to let go of our ambition to create a common definition because it started to become counter-productive. Therefore, we chose to approach the construction sector as a field whose limits may shift slightly depending on the approach. The sector delineation is always a selection of NACE codes 41, 42, and 43, and is in some cases extended with wholesalers and retailers of construction materials (for more detail, see above).

The interdisciplinarity of this research also had consequences for the ownership of the research material. The research material is common and part of the collaboration of the Building Brussels research project. The methods to gather and create qualitative and quantitative data are part of coproduction processes. Therefore, research material that is used in this dissertation may be used in the dissertations of my colleagues and approached from a different perspective. I also made use of some of the research material gathered by my colleagues Matthijs Degraeve and Frederik Vandyck, especially concerning the photographs of workspaces in the Intermezzo.

4.3.2. Desktop research, interviews, and data

A substantial part of the research was carried out based on literature research. The different fields of literature mentioned above allowed me to explore academic books and journal articles and position my research in existing debates (see references at the end of this dissertation for an extensive list). Concerning the productive city literature, I checked reports from think tanks such as the Architecture Workroom Brussels, Manhattan Institute, Pratt Centre for Community Development; publications from the Brussels Regional Government: the Brussels Bouwmeester Kristiaan Borret, Citydev (Brussels regional public developer), and Perspective (Brussels regional planning department). In addition to the planning literature, official juridical policy documents were checked from the Belgisch Staatsblad (the official gazette), Brussels Capital Region, Brussels Parliament, République Française, City of Vienna, Greater London Authority, City

of Amsterdam, City of Barcelona, and Ruimte Vlaanderen, and plans from project development competition proposals for the Biestebroeck area, Anderlecht. Next to academic literature, a thorough analysis of more than fifty policy, sectorial, and research reports, were screened. For the Brussels Regional Government, reports were used from Actiris (employment agency), Leefmilieu Brussel (environmental department), and Perspective (planning department); for the Flemish Regional Government, reports were used from Ruimte Vlaanderen (planning department), Sociale en Economische Raad Vlaanderen (social and economic council), Stichting Innovatie & Arbeid (innovation and employment foundation); the sectorial and lobby organisations from the construction sector were ADEB-VBA, Bouwunie, Construction Confederation, and Constructiv. Historical data sources were the Almanakken and Inventaire Visuel. Macro- and micro-data were used from the BISA (Brussels Institute for Statistics and Analysis), Observatory for Employment (Brussels), Federal Department of Economy (Belgium), Federal Department of Social Security (Belgium), INSEE (France), Nationaal Instituut voor de Statistiek (Belgium), Observatory for Health and Well-being (Brussels), City of Sint-Jans-Molenbeek (Brussels), and Statbel (Belgium). Documents from citizen groups were consulted as well, including from Bral (Brussels) and Just Space Economy & Planning (London). Press articles in the Belgian and Brussels media (*Bruzz*, *De Standaard*, *La Capital*, *La Libre Belgique*, *Le Soir*) were consulted too.

A set of explorative interviews with people who are connected to the construction sector in several ways helped to get acquainted with the construction sector and to detect criteria and locations for the selection of the cases of construction enterprises.

In order to get a full understanding of the planning instruments, desktop research was complemented by interviews with administrators to find out what they thought were the benefits, limits, and challenges of the policy instruments concerned. In addition, I organised a small series of workshops with administrators to confront my findings with their everyday practices in the field. The purpose of these workshops was to detect the resistances vis-à-vis my research findings and to work on improving my understanding of how these instruments are executed. This allowed me to elaborate on certain arguments that encountered a lot of resistance and continue looking for potential solutions. The vivid discussions that sprang from these interviews and workshops are an important contribution to this research. The relationships that I have built through these collaborations and the attendance of events in order to network also contributed to relationships of trust and helped me in certain cases to get access to information about policy in the making.

This resulted in the following list of interviews:

- Teachers of urban design studios working on productive activities in Brussels: 2
- Civil society organisation renovating its building: 1
- Social enterprises in construction: 3
- Unions: 1
- ADT-ATO (former Perspective.brussels): 2
- Perspective.brussels: 2
- Société d'Aménagement Urbaine: 1
- Citydev.brussels: 3
- RSVZ: 1
- Municipality of Evere: 1
- Municipality of Sint-Jans-Molenbeek: 2
- Construction Confederation: 1

- Production enterprises: 2
- Workshops with administrators: 3
- Workshops with Multiple (architectural firm): 4
- Forum Abattoir: 1
- Bral: 1
- Inter-Environment Bruxelles: 2

The quantitative data of this dissertation are used to analyse the Brussels urban land and labour markets related to the construction sector, indicate the presence of the foundational economy in the BCR, and map the decreasing workspace for productive activities in the BCR.

A set of cases was selected to conduct semi-structured interviews with construction entrepreneurs. Although most of this research material is specifically used to approach the research question of Chapter 5, the insights that sprang from the case selection played an important role in the overall research approach of this dissertation. That is why I chose to describe them under the heading 'general methodologies'. They are put under the subheading of 'quantitative data' because most criteria are fuelled by quantitative datasets.

To select the cases of construction companies for the interviews with construction entrepreneurs, we made use of four general criteria and one specific criterion: (1) reinforcing interdisciplinarity by mixing actual and historical sources, (2) located in the Brussels canal zone, (3) geographical distribution, (4) a focus on renovation, and (5) enterprises in growing construction professions.

First, the method to introduce interdisciplinarity consists of combining the actual source of the Crossroads Bank for Enterprises[3] (2016) – containing all Brussels companies with employees – with the historical source of the Inventaire Visuel de l'Architecture Industrielle (AAM-Inventory, 1980) of the industrial patrimony of the BCR. The latter is only indicative of the period before 1940 but gives valid indications. Via ArcGIS, Frederik Vandyck ran density analyses of both sources and observed overlapping areas between the two time periods, as well as new areas and disappearing areas. The result was four maps, which were combined.[4] The characteristics of the areas show that some areas have historical traces of construction enterprises that are still present today (except for Flagey, Jourdan, the area of the university, and around the Chaussée de Wavre) such as in the canal zone and one area in the historical city centre (Marché). The selected areas are situated in mixed and highly mixed residential neighbourhoods in the Brussels land-use plan (PRAS/GBP). We select cases in areas (a) where construction enterprises were present in the 1960s and today, (b) where construction enterprises were present in the 1960s but no longer today, and (c) that had little or no construction enterprises in the 1960s and have many of them today.

Second, located in the Brussels canal zone: we chose to select most cases in the Brussels canal zone based on a set of historical and policy-related arguments. Next to these cases, we also selected two cases not situated in the canal zone to test differences and similarities. The historical arguments are to map the historical evolution and movements of construction enterprises and to obtain more insights into the

[3] In Dutch this is 'Kruispuntenbank voor Ondernemingen'. To access the data, follow https://economie.fgov.be/en/themes/enterprises/crossroads-bank-enterprises/services-everyone/cbe-public-search

[4] All research material and datasets of the Building Brussels research is accessible on request instead of being made public, since two of the three PhD-projects run until the end of 2021.

reasons for these movements through the interviews. Exemplary for this argument is the case of the wood wholesale Lochten[5] at Rogier that is displaced by residential development and the woodworker VanderVelde[6] at Flagey, who cannot find someone to take over for his enterprise. Both companies deliver tailor-made services to construction sites in the surrounding areas. From a policy-related perspective, the cases need to complement the fragmented quantitative data on for example large parcel surfaces that exist today to map the construction sector, to map the positions and opinions of the construction entrepreneurs vis-à-vis the industrial gentrification processes that surround their companies, and to situate the research in neighbourhoods with high unemployment numbers.

Third, for the criterion of geographical distribution, cases are selected on the west and east banks of the canal and in the northern and the southern periphery of the canal. This gives us insight into the spatial organisation of the production process in construction.

Fourth, the focus on renovation is based on a pragmatic reason and has the ambition to start providing insights into current non-existing information on the geographies and spatial needs of renovation enterprises. The pragmatic reason is that none of the project developers that we have contacted – Besix, Ghelamco, and Revive – wanted to collaborate with this research. In all three cases, the argument was a lack of time. Next to governments, sector organisations such as the Construction Federation also have little data on renovation, while the renovation professions account for the largest part of self-employment, with 7,000 hits (RSVZ, 2016).

Table 3: Overview of the top 15 growing jobs in the construction sector
based on the aggregation of two datasets
(Crossroads Bank for Enterprises, 2017 and Data on the Social Security Service of Self-Employed, 2016).

	Codes	Description	Crossroads Bank	Social Security Self-Employed	Total
1	310111	Restauration of buildings	0	6967	6967
2	43.996	Screed works	5	6451	6456
3	310000	Building industry	0	3842	3842
4	43.994	Masonry & jointing	38	1661	1669
5	43.21	Electrical installation (indoor)	274	543	817
6	43.32	Carpentry	270	522	792
7	43.31	Plastering	34	721	755
8	43.221	Plumbing & heating installation	286	333	619
9	43.999	Other specialised construction work	485	77	562
10	43.34	Painting & glass setting	123	217	340

[5] The reference to identity was authorized by the owner of the enterprise.
[6] The reference to identity was authorized by the owner of the enterprise.

11	43.291	Insulation work	67	145	212
12	43.91	Roof work	120	63	183
13	43.33	Finishing floors & wallpapering	83	85	168
14	43.12	Soil and land preparation work, clearance works	160	0	160
15	43.992	Façade cleaning	4	87	91

Source: Crossroads Bank for Enterprises (2017), Data on the Social Security Service of Self-Employed (2016); processed by Sarah De Boeck (the aggregation of the two datasets).

Fifth, the criterion of selecting enterprises in growing construction professions is based on the research of De Wispelaere and Pacolet (2017). The authors demonstrate that EU posting jobs can displace domestic jobs as well as complement them. We looked at the growing construction professions in the BCR to detect those professions where urban policy might make a difference. It is not simple to delineate the growing construction professions, so we used a specific trajectory to do so. The EU posting workers that work in Belgium are recorded in the Limosa database through two digits of the NACE-code, so we cannot trace the subprofession they perform in Belgium. We have tried to look at the potential growing professions via the evolution of growing construction professions in the self-employment data of the Social Security Service of Self-Employed[7] between 2009 and 2016. This provides clear indications of growing professions, as you can see in Table 3 above. This is combined with the growth of enterprises with employees in the Crossroads Bank of Enterprises (2017). We selected the top 15.

5. Structure of the dissertation and particular methodologies

The dissertation is structured as follows:

Chapter 2 *Easing spatial inequalities*

Planning policy and anticipative analysis

The approach to answering the question, 'what are the effects of current spatial policy instruments in the BCR?' is a qualitative ex-ante policy evaluation (Patton, Sawicki & Clark, 2015). The aim of this prospective analysis is to demonstrate the expected impact of the Zone of Economic Expansion (ZEE)[8] on inner-city neighbourhoods of the Brussels canal zone. It identifies the anticipated effects by scrutinising the impact of a similar and already implemented Urban Enterprise Zone – the Zone Franche Urbaine (ZFU) – in the city centre of Roubaix in the metropolitan area of Lille in France. The key question is whether the ZEE can be interpreted as a policy measure to effectively reduce spatial inequalities, or if it rather is a measure that will stimulate private land-rent valorisation strategies with (industrial) gentrification effects. The comparative focus is on the ZFU because it has sought to counter the economic decline in an inner-city area with similar socio-geographical characteristics. The aim is not to perform a full-fledged comparative analysis of both metropolitan areas but rather to detect the necessary conditions for economic inner-city neighbourhood policies to work according to the goals set by their creators.

[7] In Dutch this is the 'Rijksinstituut voor de Sociale Verzekeringen der Zelfstandigen' (RSVZ). These data are not publicly accessible on a website, but they are available on personal request.
[8] In Dutch this is the 'Zone van Economische Uitbouw in de Stad' (ZEUS).

The ex-ante analysis suggests that synchronously implemented territorial policies that seek to enhance functional mixing will undercut the ability to boost local job creation and will displace economic activity and reinforce uneven development within the metropolitan area. Observing this conundrum, the chapter reviews the potential of policies that centre on foundational and/or ethnic economic activities that are more in tune with already existing local economic activities and labour markets and maybe more fruitful in achieving social mobility of the current residents.

Chapter 3 *Making space for the foundational economy*

The construction sector and sectorial analysis

To address the question, 'in what ways is the construction sector key to the social reproduction of the city'? the case of the construction sector (see above) is presented as a strategic and sectorial case. First, I review construction in relation to its foundational properties: To what extent is construction implied in the production of the infrastructure of everyday life? To what extent does it cater to the local market? And, relatedly, to what degree is construction sheltered from competitive market forces? Second, I map the spatial footprint of the construction sector in Brussels, identifying its dependence on fine-grained, inner-city geography of workspaces for SMEs and the provision of affordable housing for construction workers – both experiencing displacement threats because of ground rent dynamics. In a similar vein, I review the degree to which construction is embedded in the local labour market and to what extent the Europeanisation of construction work through postings is undercutting the grounded nature of the Brussels construction sector. Then, I show how urban policies governing land and labour markets can support and nurture the foundational character of the construction sector.

Chapter 3 demonstrates that, although it is often embroiled in speculative urban development processes, the construction sector is in many ways fundamental to the social reproduction of the city and the functions it hosts. Moreover, in many contexts, a large and increasingly international labour force underpins the sector. Despite its ambiguity, the construction sector has received little attention from policymakers and academics alike, thereby rendering its mundane, yet fundamental role in the reproduction of the city invisible. Meanwhile, there is much more policy and academic interest in propelling industries, innovative sectors, finance, and knowledge-intensive business services. Work on global cities has made clear that such strategies often reinforce competition and that the expected trickle-down effects are left wanting. This chapter claims that the 'overlooking' of certain economic sectors by academics as well as by policymakers is a consequence of a rather narrow definition of what constitutes the economy and results in a restricted way of practising urban economic development. By reframing the definition of the economy, using the inspiring strand of thinking of the Foundational Economy Collective and connecting this to the older urban-base-and-non-base-economy debate, this chapter aims to explore opportunities for broadening the practice of urban economic development. It takes the construction sector in the BCR as a case study, arguing that scholarship should make discursive and physical space for more mundane urban sectors and suggesting a set of policy strategies to support the grounded character of the Brussels construction sector.

Chapter 4 *Challenges for small-scale workspaces*

Industrial gentrification, economic geography analysis, and mapping spatial needs of the construction sector via a mixed-method analysis of quantitative macro-data and interviews

Chapter 4 contributes to spatial sector–specific knowledge about the Brussels construction sector and aims to look for potential spatial policy margins in relation to workspaces and the spatial organisation of construction enterprises. The main question is, 'what is the economic geography of Brussels construction

enterprises and what are their spatial needs?' This is approached by a relational value-chain perspective, where physical workspace is studied as being an indispensable part of a production chain. The aim to contribute to sector-specific knowledge about the Brussels construction sector and, as such, to look for potential policy spaces is reformulated into the question: what is the economic geography of construction enterprises and what are their spatial needs? This question is approached using a combination of quantitative macro-data about construction enterprises in Brussels and a series of eight semi-structured interviews. Part of this project had the ambition to investigate the re-integration of SMEs into residential neighbourhoods in order to re-evaluate artisanal knowledge, create employment within urban neighbourhoods, and embed businesses in the local market. The hypothesis was that internal deindustrialisation dynamics such as changing demand in construction (e.g., the increasing demand for large-scale buildings), technological innovations, and external dynamics such as the transport revolution and zoning practices that separated production activities from residential areas for reasons of nuisance made the Brussels SMEs disappear from the 1960s onward. The spatial analysis of the Brussels construction sector, whose enterprises consist for 93 per cent of SMEs, confirms this hypothesis partially. The number of construction enterprises declined sharply between 1965 and 2016. But, contrary to what we initially thought, the macro-data demonstrate that construction enterprises are still well represented in the residential tissue of the inner-city of the Brussels's municipalities, except for the area inside the Brussels Pentagon, or the inner ring road.

Together with my colleagues from the Interdisciplinary Research Project Building Brussels, I designed a methodology for an interdisciplinary approach to conduct fieldwork together from the perspectives of architecture, urbanism, economic geography, and history, where we would be able to track the trajectories of several construction enterprises and their adaptation strategies and spatial behaviour in the Brussels region. We conducted eight semi-structured interviews of two to three hours each. These eight interviews were the result of contacting more than fifty enterprises that corresponded to the selection criteria for potential cases (see above) and two bike trips to a series of enterprises to contact the entrepreneurs directly. Reaching construction entrepreneurs was more difficult than we thought. We did several biking tours along Brussels, following a list of selected enterprises, we e-mailed, phoned, and worked with intermediaries to find entrepreneurs willing to be interviewed. Most of them declined, but in the end we were able to collect very useful qualitative data. We conducted the following interviews:

Table 4: Overview of the interviews with construction entrepreneurs.

9 July 2018	Social enterprise	General entrepreneur	Anderlecht
12 October 2018	Private enterprise	Woodworkers	Jette
25 October 2018	Private enterprise	General entrepreneur	Sint-Jans-Molenbeek
7 November 2018	Private enterprise	Wholesaler of wood	Schaarbeek
14 November 2018	Private enterprise	General entrepreneur	Jette
6 February 2019	Private enterprise	Woodworker	Elsene
11 March 2019	Social enterprise	Woodworkers	Sint-Jans-Molenbeek

16 October 2019	Private enterprise	Woodworkers	Sint-Pieters-Leeuw[9]

Source: Qualitative data obtained by semi-structured interviews with 9 construction enterprises, and conducted by Sarah De Boeck, Matthijs Degraeve, and Frederik Vandyck © Building Brussels.

The list of questions of these semi-structured interviews can be found as an annex.

Chapter 5 *Planning for the productive city*

Industrial gentrification, urban planning and design analysis

Chapter 5 is about preserving urban manufacturing. To answer the question 'how to preserve urban manufacturing?' a combination of methodologies is used: a quantitative macro-dataset, a newly created micro-dataset, an existing framework to analyse mixed-use development reworked into a framework to analyse urban settlement patterns of production (USPP), and an analysis of mixed-use design plans.

Urban activities such as housing, productive space, accessible green space, offices, etc. compete for scarce urban land. Moreover, productive uses such as manufacturing and construction have a more vulnerable position in an urban land market governed by property-led development and real estate dynamics than offices and residential development. While local governments of post-industrial cities become more and more susceptible to reviving their relationship with (small-scale) productive activities, they risk losing their productive space due to industrial gentrification. Based on a comparative literature review of cases in Barcelona, New York, Chicago, London, and Brussels, this chapter examines how local governments try to safeguard and plan new production spaces. Although Brussels implemented industrial retention policy measures and still witnesses a strong presence of productive activities due to its sea harbour, an elaborate network of SMEs, and a large labour pool of short-schooled residents, it is empirically observed that production spaces continue to disappear at a fast pace. With a focus on the Brussels case, this chapter scrutinises the benefits and shortcomings of planning measures such as non-cumulative zoning and rezoning for mixed-use, public real estate strategies, building and block typologies for mixed-use, and management strategies for the various settlement patterns of production. This chapter aims to provide insights that can improve industrial retention policies for post-industrial cities such as Brussels, with a focus on public real estate strategies.

Based on the case of production activities in the BCR and findings of the recent European research project Cities of Making (2018, 2020), I created a framework to analyse USPPs, where each USPP displays a different set of actors, an urban morphology type, spatial dynamics, and planning approaches. It became a tool that provides insight into industrial gentrification dynamics and helps contextualise industrial land and conversion dynamics, together with related actors and types of productive activities. Construction activities, like other urban production activities, occur within cities and are therefore always confronted with a degree of mixed uses. Therefore, the new framework focuses on the mix of residential and productive functions. The categorisation of the different contexts of production spaces in the framework demonstrates that the disappearance of industrial land happens differently in each of the settlement

[9] This woodworker's enterprise left Brussels and moved to an adjacent municipality on the west side of Brussels. When the owner of their workshop wanted to sell the building to build apartments instead, they could not find an affordable workshop on the west side of Brussels (to stay close to their customers).

patterns. Consequently, production spaces in each of the settlement patterns require a different set of strategies in order to be maintained and to grow.

In 2018, I participated in a regional competition for the public development of a mix of production spaces, housing, and two schools in the much-contested Enterprise Area for Urban Development (EAUD)[10] in the Biestebroeck neighbourhood in Anderlecht, a former mono-industrial zone converted into a mixed-use development zone. With an international consortium[11] led by the Brussels architectural firm Multiple, we looked for design solutions to minimalise conflicts and stimulate interactions between functions. This experience has contributed to some insights in the design solutions of Chapter 5 and partly nuanced a former critical urban geography reading of certain typologies of mixed-use development.

I used a national dataset on the evolution of the industrial patrimony and its uses between 1995 and 2015, created by the Economic Department of the Federal Government and accessible at the Crossroads Bank for Enterprises. This dataset was used to map the decreasing working space for production activities at the scale of the 19 Brussels municipalities.

I created a new micro-dataset with the goal of mapping the evolution of twenty years of conversions and gaining insight into industrial gentrification on a micro-level. While mapping the conversions at the level of the BCR and at the level of the municipalities, I also wanted to gain more insights into the actors of conversion and the new use after a former industrial building was converted. This became the dataset: 'The evolution of reconversions of production space in five neighbourhoods in Sint-Jans-Molenbeek between 1995 and 2019', based on building permits (BPs). It complements the macro-dataset on 'the evolution of the patrimony and its uses between 1995 and 2015'. Five formerly industrial neighbourhoods[12] were chosen that still harbour many production units: (1) Hertogin, (2) Weststation, (3) Historisch Molenbeek, (4) Industrie Birmingham, and (5) Havenwijk. To access the database of the BPs, the clerk asked for a list of all street names and house numbers within these five neighbourhoods. Starting from the street names, the administrator searched for all BPs using the following search terms in French and their Dutch equivalents in the field of the subject of the permit: 'atelier', 'activité productive', 'productivité', 'bâtiment mixte', 'dépôt', 'entrepôt', 'bâtiment industriel', 'site industriel', 'bâtiment arrière', 'bâtiment en fond de parcelle', 'immeuble en intérieur d'îlot', 'site'.[13] The result of the search consisted of 511 authorised BPs, organised according to seven columns: (1) reference number of the municipality, (2) the applicant, (3) the address with street name and number, (4) postal code, (5) name of the municipality, (6) subject of the permit, and (7) the date of authorisation of the BP. This rough dataset is bilingual (Dutch and French). I could not find coherence in the choice between French or Dutch and suspect that the language choice was influenced by the administrator's language and by the language of the applicant. After cleaning the dataset (deleting duplicates, unifying the addresses, checking for unique addresses, etc.) I found 378 unique addresses for 447 building permits, dated from 1 January 1995 until 30 June 2019.

[10] In Dutch this is the OndernemingsGebied voor Stedelijke Ontwikkeling' (OGSO).
[11] More info about the competition project and the consortium of Multiple, see: https://www.youtube.com/watch?v=9wgnP21rsKY&feature=youtu.be .
[12] I follow the division of the Brussels Capital Region into 118 neighborhoods that the web tool of Neighborhood Monitoring of Brussels employs. See: https://wijkmonitoring.brussels/
[13] Reference mail from Rcielen@molenbeek.irisnet.be on Friday 27 September 2019, where the clerk clarifies the methodology of the search through the Ups that was conducted.

The roof of a formerly industrial building (2004)

The roof of an apartment (2018)

Source: Google Earth Pro; processed by Sarah De Boeck

Figure 4: The difference between the roofs of apartments and (former) industrial buildings. Source: Google Earth Pro, using the timeline of 2004 and of 2018 on the same address.

To analyse these data, I used a methodology to process the rough data of BPs by encoding them (Ryckewaert, 2009:46–48). The methodology consisted of subdividing the municipality register of urbanistic permits into types of BPs. This BP register copies the subject of the permit directly from the application form. The applicant is free to describe the subject of the permit in a text field on the form. This absence of systematising the nature of the works makes it difficult to analyse the data. In some cases, the use of the parcel/building before the BP is not clear. In those cases, I made use of *Google Earth Pro* and the 'timeline' option to trace the original use. The timeline for Sint-Jans-Molenbeek is available from 2001 until 2018. Depending on the dates of the permits and the quality of the satellite images, I could track the original use in some of the cases. As Figure 4 displays, roofs of hangars and warehouses are sometimes easy to distinguish from the roofs of houses or apartments, as Figure 4 illustrates.

I also received a dataset on the reconversion of workshops and storage spaces in the BCR between June 2006 and January 2008 (Demeuter, 2008) from Citydev. To compare this regional dataset with the local dataset, I also categorised the local dataset according to this extended typology of four categories:

- A-: A workshop use changing into another use or a partial or total decrease of the surface of the workshop space.
- A: A change in the productive nature of the property, a redevelopment, modifications of the characteristics of the place, or modifications of the potential professions that are related to the place, without an increase or decrease in the surface of workshop space.
- A+: The creation of a new property (workshop or storage space) that did not exist before, accompanied by an increase in workshop and/or storage surface.
- AE: The extension of a property (workshop or storage space) that did exist before, accompanied by an increase in workshop and/or storage surface.

This typology is very useful because it gives information about the decrease and increase in the surface of workshops and warehouses. The BP applicants are anonymised according to the nature of the applicant

into (1) a private person, referring to an individual person or household, (2) an enterprise, or (3) a public body. If the rough data contain more information, the categories ‘enterprise’ and ‘public body’ are refined into subcategories (for example, sectors).

Chapter 6 *Conclusion*

Conclusions, discussions, policy recommendations, etc. are discussed in the concluding Chapter 6.

CHAPTER II
EASING SPATIAL INEQUALITIES? AN ANALYSIS OF THE ANTICIPATED EFFECTS OF URBAN ENTERPRISE ZONES IN BRUSSELS

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1. Introduction

At least since the 1970s local governments in late Fordist-Keynesian states (Jessop, 2004) have sought new ways to manage the consequences of spatially uneven development within their jurisdictions. These strategies developed usually under growingly adverse fiscal circumstances, at the very time local states were increasingly confronted with growing responsibilities, which were reasserted under state rescaling (Brenner, 2004). These contexts have witnessed the growing importance of planning instruments that wish to instil economic growth in targeted urban areas, such as deprived and restructuring inner-city neighbourhoods, through the implementation of territorial economic policies (Eisenschitz & Gough, 1993; Swyngedouw, 1997).

Urban Enterprise Zones (UEZs) are since long a preferred planning instrument to rekindle growth in deindustrialized parts of cities throughout Europe and North America (Ham, Swenson & Imrohoroglu, 2011; Mayer, Py & Mayneris, 2015). Also, in Brussels (Belgium), a city marked by persistent patterns of socio-spatial polarization, UEZs have entered policy circles as a best practice through a local variant, the Zone of Economic Expansion (ZEE) that applies to the Canal Area, a former industrial part of the city. Today it is recognized as a sequence of 25 deprived neighbourhoods (Vermeulen, 2015), marked by high unemployment levels, a large concentration of recent immigrants of second and third generation non-ethnic Belgians, and lower levels of education. Local politicians with a seat in the Brussels parliament are optimistic about the impact of the ZEE on their municipal territories, pressuring the Minister of Economic Affairs with regular requests to implement this policy tool as soon as possible (BRP, 2015; 2016). Thereby, the territorial focus of the ZEE would partially overlap with the planned initiative to install more functional mixing in the area through the Enterprise Area for Urban Development (EAUD) and the use of European Funding for Regional Development (EFRD) already in place.

Given these imminent plans for implementation, we question whether the ZEE can be interpreted as a policy measure effectively reducing spatial inequalities through local job creation. Notorious cases such as the one of Williamsburg, New York, reveal that renewal often entails displacement, not only of people but also of industrial activities pushing jobs even further away from the city (Curran, 2007, 2010; Wolf-Powers, 2005). There is a risk that the ZEE, with its focus on attracting enterprises to the Brussels Canal Zone, will reinforce socio-spatial inequality within the Brussels region (Kesteloot, 2013). To broach this question, this paper offers a qualitative ex-ante policy evaluation (Patton, Sawicki & Clark, 2015) of the expected impact of the ZEE in Brussels by reviewing the mixed effects of a comparable initiative in Roubaix in the metropolitan area of Lille (France). More specifically, our comparative focus is on the Zone Franche Urbaine (ZFU), which has sought to counter the economic decline in an inner-city area with similar social-geographical characteristics. Our aim is therefore not to perform a full-fledged comparative analysis of both

metropolitan areas, but rather to detect the necessary conditions for economic inner-city neighbourhood policies to work according to the goals set by their inceptors.

Based on the insights of the ex-ante policy analysis, a further aim of the paper is to review the core assumptions that underpin economic development policy in the Brussels Capital Region (BCR) and point to potential alternatives that are more in tune with the social geographies of the targeted areas. We argue that the lack of a metropolitan governance scale, which could tackle the structural roots of economic polarization of the region, produces a dire fiscal situation where economic policy quite logically revolves around territorial competitiveness strategies to counter that situation. One such alternative scenario involves the development of a more far-reaching ethnic economy (Kesteloot, 1999) as it would work on the social mobility *in situ* of inhabitants of deprived areas to counter (unintended) gentrification processes. A promising scenario is to infuse the above line of thinking with strategies that focus on the 'foundational economy' (Bentham et al., 2013). Beyond a mere shift in focus towards 'taken for granted' urban activities – utility provision, transport, retail banking, food retailing and processing, health care, and education – the foundational economy perspective seeks to reframe the logics of urban development away from the competitive city that underpins much of the territorial agenda of the BCR. In this way, the concept opens the possibility for policymakers to focus on parts of the urban economy that are not partaking in the (international) urban competition (Decroly & Van Criekingen, 2009; Kesteloot, 2013) and more closely follow the economic potential of local populations.

The paper is structured as follows: section two further contextualizes UEZs and the Brussels ZEE in particular against the background of political economy debates on territorial development and their more recent interlocutors who have proposed the alternative view of a foundational economy. Sections three and four provide the ex-ante analysis of the Brussels ZEE by comparing it to the effects of ZFU in Roubaix, which has been well documented by Colomb (2007) and distils the necessary conditions to achieve the intended outcomes when confronted with the reality of Brussels planning framework and the social geographies of the Brussels Canal Area. Section five identifies key risks in the current set-up of the future Brussels ZEE. By incorporating insights from *in situ* development scenarios based on ethnic economies and foundational activities, we outline possible amended approaches to overcome these. Section six concludes the paper with a plea for a better alignment of economic policy and urban planning structures with the metropolitan scale of activities it seeks to manage.

2. Territorial competition and its alternatives

Since the 1970s, a new economic order has emerged, marked by globalization, deindustrialization, and a general demise of the Fordist-Keynesian state (Jessop, 1994) in its former heartlands, leading to new types of state intervention (Brenner, 2004; Jessop, 1994; Peck & Tickell, 1994; Swyngedouw, 1997). What generally binds these strategies is a spatial reversal – 'something of an eclipse' (Cox, 2009, p. 4) – of the state's ability and/or desire to manage uneven development. Due to a fiscal crisis of the state, softening inequality within national borders became less feasible (Harvey, 1989). Instead, strategies have emerged that wish to enhance the supranational competitiveness of cities and city regions. Policies have shifted from steering 'new employment-creating investments into poorer areas, often ones of relatively high unemployment' (Cox, 2009, p. 4), known as spatial Keynesianism, towards a growth-oriented agenda and the enhancement of territorial competitiveness generally drawing on the privatization and financialization of urban land (Harvey, 1982). Various mechanisms have supported such a shift.

First, processes of state rescaling (Brenner, 2004) have had an impact on how states' employment-creating investments are steered into deprived areas. In Belgium, although regional governance approaches in economic development planning were established from the 1950s onward (Oosterlynck, 2010; Ryckewaert, 2011), the mitigation of spatial disparities was a competence of the national government until roughly the 1980s. Relevant to our case, the BCR was founded in 1989, harnessing economic development competences since then. Here, the planned ZEE can be recognized as a 'local economic initiative' (Eisenschitz & Gough, 1993) or as part of 'urban locational policies' (Brenner, 2004). These involve a collection of place- and scale-specific regulatory interventions used to regulate urban or regional economic development. Brenner (2004) divides the locational policies in 'state spatial strategies' and 'state spatial projects'. The former is used by governments to direct money to growth zones with the goal of enhancing the city's competitiveness, such as state-financed mega-projects and advanced infrastructural investments (Swyngedouw, Moulaert & Rodriguez, 2002). The latter, of which UEZs are an example, are characterized by an 'increasing customization of state administrative arrangements according to place- and jurisdiction-specific conditions and priorities' (Brenner 2004, p. 214). Eisenschitz & Gough (1993) describe a change in regional development policy where instead of relying on redistribution, 'regions would take control over their own economy' (p. 6). A general corollary of a spatially selective policy focus –i.e. which neglects certain areas while privileging others– is a growing spatial inequality (Graham, 2000). Inequality rises because cities and regions compete to attract investment capital, companies and funds more than before. Leitner and Sheppard (1998) also identify 'interlocal competition' taking place on smaller scales, discussing zoning practices within one region or even within one city. While the ZEE is planned to mitigate disparities on a regional scale, the question remains whether its implementation will reinforce competition between the municipalities and whether or not this might improve job opportunities for local residents without a diploma of higher education.

Second, rescaling has often implied the development of governance structure at the metropolitan level. From the 1990s on, many metropolitan regions seek to keep competition within the region at bay both to cement 'territorial cohesion', but also to ensure competitiveness on the supranational scale (Brenner, 2004). For instance, Colomb (2007) documents how the UEZ of Roubaix works within a metropolitan spatial planning framework, based on a *metropolitan consensus* within the Lille Metropolitan Urban Community (LMUC) to mitigate internal competition between 85 municipalities. As of today, the BCR is not operating within a metropolitan policy framework. On the contrary, fringe municipalities to the North of Brussels tend to implement policy measures aimed at attracting economic activities in competition with the BCR, either through office park developments (e.g. Zaventem and Diegem) or retail activities (e.g. Machelen and Vilvoorde). While Brussels' metropolitan space is spilling over its existing administrative borders – in terms of demography, migration, suburbanization, and commuting processes (Boussauw, Allaert & Witlox, 2013) – a 'scalar fix' (Brenner, 1998) has not emerged. Metropolitan governance and fiscal structure, which could mitigate uneven development between the urban core and its peripheries, has not materialized because of communitarian fault lines. Given that a large part of the Brussels labour market is made up of commuters from Flanders and Wallonia, this has severe consequences for the fiscal base of the Brussels region and its municipalities, which see taxable income leaking from their territories. Kesteloot (2013:125–126) shows that between 1976 and 2005 some of the peripheral municipalities of the metropolitan region[14] managed

[14] There is a broad consensus that the administrative borders of the BCR do not correspond with its socio-economic borders. Vandermotten (2008) describes how there are big differences in the morphology of the Brussels

to double or even triple their fiscal revenues. Thereby, the gap between poor and rich municipalities within the metropolitan region is widening. As a scalar fix remains unlikely, municipalities in practice resort to gentrification strategies 'to combat the erosion of their fiscal base' (Kesteloot 2013, p. 121).

Reviewing this 'classic' urban political economy literature, we argue that such accounts may fall in the territorial zero-sum game trap of economic development (cf. Agnew, 1994) they criticize in the first place. For, as much as political economy approaches are powerful to analyse the structures that generate competition, they do not easily allow developing alternative strategies. A notable exception for Brussels is Kesteloot (1999), who offers alternative territorial strategies for *in situ* job creation, based on the potential for an ethnic economy that draws ethnic entrepreneurship, exploiting the presence of transnational trading networks, marketing ethnic luxury goods, or enhancing the potential to outsource of domestic activities. Cheap labour in combination with the already present ethnic competencies is considered here as place-specific features turned into benefits for the local job market. The disadvantages are that the jobs created in these branches mostly provide vulnerable and flexible contracts. The implication is that ethnic strategies for Brussels may be a way to reduce unemployment, but most likely not readily reduce uneven development in the region.

Next to ethnic economy strategies, we argue that the concept of the *foundational economy* could offer a way out of the territorial development trap. The concept allows thinking through *in situ* strategies tapping into existing economic structures yet placing them beyond the sphere of territorial competition. Finding recourse with the notion of a heterogeneous economy (Braudel, 1986), Engelen et al. (2014) propose to 'explore present-day economic life in ways that recognize its multiplicity and its organization into zones and spheres which have different internal logics and variable salience for material welfare'. The foundational economy consists of mundane, yet foundational goods and services that are necessary to everyday life, accessible to all citizens regardless of income, and distributed through various local branches and networks. As such, the concept has historical antecedents in several urban economic theories. Foundational activities can be considered to follow the geographies of a lower order, more spatially fine-grained functions in central place theory that target 'social reproduction'. Considering the provision of food, health care, education, infrastructure, etc., these activities are arguably less prone to agglomeration effects, but more closely follow a Christallerian spatial distribution.

At the same time, the foundational economy resonates with key distinctions between basic and non-basic sectors in urban export base theory (Blumenfeld, 1955; Jacobs, 1972). Also, more recent work of Davezies (2009), who returns with concepts such as 'économie résidentielle' and 'économie présentielle' to the origins of the base economy, precede the idea of a foundational economy. While policymakers often choose to increase their export base by focusing on the export of non-basic goods that require (technological) innovation, equally viable strategies may revolve around import replacement or the 'home-made' production of basic goods (Van Meeteren, 2016). Yet, although 'foundational' activities regularly cover 30 to 40% of the urban economy (Bowman et al., 2014), they are often rendered invisible in policy accounts and are resultantly mismanaged by a lack of expertise. Also, in Brussels, policymakers rather focus

metropolitan area, where the urban tissue is penetrated with semi-rural morphological tissue. Although these clear morphological borders, the whole area follows a more or less coherent sociological and an economic metropolitan logic. Depending on the criteria used, the number of municipalities counted within the Brussels metropolitan space vary from 31 to 62 municipalities (Dujardin et al., 2007; Luyten & Van Hecke, 2007; quoted in Van Wynsberghe et al., 2007).

on technological innovation, enhancing the creation of new clusters in ICT, creative industries, or advanced servicing (BHG, 2014a). Still, the concept of foundational allows assessing which economic activities are beneficial to address the socio-economic problems of the Canal Area by looking at the local and regional consumption and the (potential) production of daily life goods. The foundational economy is moreover not at odds with innovation. On the contrary, as Bowman et al. (2014) explain, everyday consumption activities that are in place require social and technological innovation to remain viable in the long term. As we argue below, the planned UEZ in Brussels may benefit greatly by connecting its policies to the elements of the foundational economy present in the urban space it wishes to overwrite.

3. The Brussels Canal Area and Roubaix in their metropolitan context

Before we turn to the actual ex-ante analysis of the effects of the Brussels ZEE through a comparison with the implemented ZFU in Roubaix, it is paramount to understand the social-geographical, planning, and governance-related similarities and differences between these two contexts. Most importantly, what binds both initiatives is that they seek to act on inner-city neighbourhoods in decline, i.e. marked by similar conditions in terms of high unemployment, poor housing conditions, low socio-economic status, and ethnic segregation. Roubaix and the Brussels Canal Area share a comparable history of deindustrialization, labour migration, and labour market restructuring, which has produced a comparable urban fabric characterized by large brownfields, an important waterway, large amounts of vacant land, located in or near the city centre. Table 1 indicates that both areas stand out as scoring high on a range of inequality indicators, illustrative of the fact that both the Brussels and Lille metropolitan area are facing economic deprivation concentrated in a number of inner-city neighbourhoods.

The nature of the Brussels job market explains this paradox (Kesteloot & Loopmans, 2009; Van Hamme, Wertz & Biot, 2011; Vandermotten, Cassiers, Leclercq & Wayens, 2009). More than half of the employees of the BCR live outside the region. Although there is a growth of the regional economy, Brussels continues to lose jobs for people without a diploma of higher education. With 158,000 jobs in the industry in 1970 of which were only 21,700 left in 2014, Brussels lost more than 85% of its jobs in the industry in a little more than 40 years (Bisa, 2016). Vandermotten (2014) shows that the loss is even higher because in 1970 most of these jobs were blue-collar workers, but today more than half of the remaining 21,700 jobs in the industry are actually white collar. The region of Lille lost almost 85% of its jobs in textile manufacturing over the same period, going from 54,000 jobs in 1973 to only 8,000 jobs in 2000 (Colomb, 2007). As shown in Table 1, the average unemployment rate of 20% in Brussels is twice as high as in the rest of the country. In the Brussels Canal Area, the rates vary from 28% to more than 40%. Brussels youth is the most vulnerable group on the job market with unemployment rates varying from 30% to almost 50% in certain neighbourhoods. In Roubaix, almost 70% of the youth is unemployed. Other groups of unemployed people are mainly located amongst those without higher education and without EU27 nationality. In sum, both metropolitan areas are marked by a similar paradox of being a region where a lot of value is generated, whilst accommodating strong economic deprivation often reinforced by ethnic segregation processes (Colomb, 2007:12–13) – a condition described as one of 'economic growth without social progress' by Van Hamme, Wertz and Biot (2011).

Table 1: Overview of socio-economic demographic numbers on the regional and the local scale of the BCR and Lille.

	ZEE Brussels	BCR	Roubaix	LMCU
Population	89,939	1,138,854	94,536	1,119,877
Density (people/km²)	9,237[15]	7,057	7,146	1,832
Unemployment rate (%)	37.31	22.69	30	16.3
Youth[16] unemployment rate (%)	49.68	38.09	68.8	66.6
Youth <29 years				
0-14 years (%)	26.86	21.53	26.3	20.2
15-29 years (%)	23.03	20.65	23.1	23.5
Median income per tax return (euros)	14,353	18,526	13,050	18,713
Average income per inhabitant (euros)[17]	7,432	13,312	9,257	20,150

Sources: BHG, 2012, INSEE 2007, 2015a, 2015b, 2015c; processed by Sarah De Boeck.

However, important elements set Roubaix and the Brussels Canal Area apart. First, whereas France has a centralized planning authority, Belgian planning operates at the regional and local levels. Whereas the region of Lille has an official institution to collaborate on a metropolitan scale (i.e. the LMUC), the BCR and its surrounding regions have a conflicting policy and planning views. In France, UEZs are implemented centrally, while in Belgium this is decided at the regional level. Further, urban planning, public transport, waste collection, and road infrastructure are organized at the LMUC and BCR level, but the key domain of housing is devolved to the municipal level in Brussels, while it is a regional competence in the LMUC (Van Wynsberghe, Poirier, Sinardet & Tulkens 2009:3). Second, while a key planning challenge is the rising demographic pressure in Brussels, the population of Roubaix is shrinking and requires countering strategies. Third, unlike the LMUC, the BCR functions as a second-tier world city and harbours supranational administrative, business and governmental functions, with a concentration of European headquarters, financial activities, and advanced business services, international governmental and non-governmental organizations that drive polarization in labour and housing markets (Brenner, 2004). Fourth and finally,

[15] The average density of the ZEE hides a strong variation in density of formerly industrial areas (183 people/km², neighbourhood Industrie-Zuid) to inhabited areas (27,013 people/km², neighbourhood Historisch Molenbeek).
[16] In the Brussels case, youth is defined as 'between 18 & 25 years' whereas in Lille 'between 15 & 25 years', explaining the even higher unemployment rates in the LMCU and in Roubaix.
[17] 2008 data for Roubaix and LMCU data.

again diverging from Roubaix, parts of the Brussels Canal Area know high residential mobility. These areas, according to Saunders (2011), function as arrival or transit neighbourhoods, and work as a spatial concentration of individual trajectories of social mobility, while the neighbourhood as a whole does not necessarily improve in socio-economic terms, due to the residential mobility of 'social climbers' (Saunders, 2011). Yet, evidence from Brussels also suggests that 'lock-in' in the absence of social mobility is occurring as well (Kesteloot, 2000). In that case, high residential mobility rates are indicative of gentrification rather than social mobility, as inhabitants are pushed out of the BCR to places where housing is more affordable. High residential mobility rates can also be explained by the dynamic of new immigrants replacing the older ones, who leave the city for the Western second belt of Brussels or to former industrial cities outside Brussels, like Vilvoorde (De Maesschalck, De Rijck & Heylen, 2015).

Despite these differences, the similarities of zones in terms of the socio-economic issues they seek to address, as well as the nature of the instruments themselves, warrant an ex-ante evaluation based in part on a comparison between the Brussels ZEE and the Roubaix ZFU.

4. An ex-ante comparison of the Brussels ZEE and the ZFU Roubaix

In this section, we review the case of ZFU Roubaix as a way to understand the anticipated effects of the planned ZEE in Brussels. Importantly, while, the Brussels ZEE was approved by Ordonnance (BHG, 2014b) in January 2014, the policy is not implemented yet, awaiting approval by the European Commission (BHP, 2016). Table 2 gives an overview of the characteristics of the ZFU Roubaix and the planned Brussels ZEE. In addition, Figures 1 and 2 situate both instruments in their respective national and regional contexts. Although the similarities between both policy instruments are striking, Table 2 shows an important difference in company size. Whereas the BCR allows companies of all sizes to participate in the ZEE, in France the size is limited to a maximum of five employees. It is questionable whether small companies are able to solve structural unemployment in these areas. Still, installing a limit can prevent abuse of tax incentives by larger firms. In the Brussels ZEE, there is no such limit and all enterprises, with a minimum of three employees, can make use of the benefits.

The extant literature has attributed both positive and negative socio-spatial effects to UEZs in general, and ZFUs in particular (Givord, Rathelot & Sillard, 2013; Green, Trache & Blanchard, 2001; Ham, Swenson, Imrohoroglu & Song, 2011; Mayer, Mayneris & Py, 2015; Mayneris, 2014). On the positive side, the ZFU Roubaix is generally considered as a rather successful territorial policy tool to address unemployment (Colomb, 2007; Green, Trache & Blanchard, 2001). A key figure to illustrate this success is the increase of 5.000 jobs in the ZFU (60% business transfers and 40% new businesses or births), primarily in the service sector and in construction, during the period 1997-2001. A little more than 20% of these 5.000 jobs – i.e. approximately 400 – went to local inhabitants.

Table 2: Overview of the important characteristics of the ZFU Roubaix and the ZEE Brussels

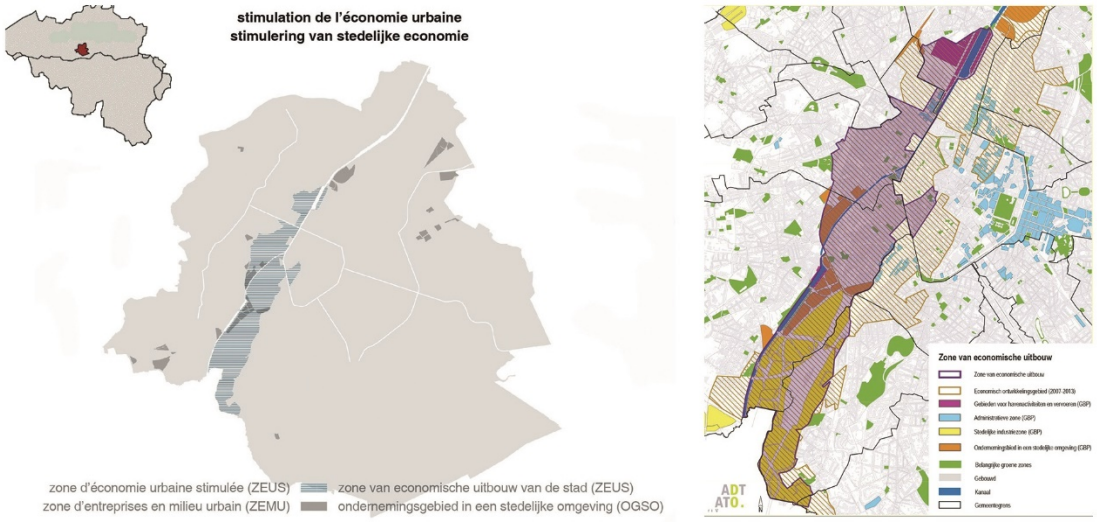
	ZFU Roubaix	ZEE Brussels
Objective	Job creation for residents of the zone. Attracting economic activity as leverage of city renewal.	Job creation for residents of the zone. Attracting economic activity as leverage of city renewal.
Actors	Central government allots zones based on the criteria of 'deprivation' and a system of auction.	Brussels regional government allots zones based on criteria of 'deprivation'. Authority of the regional administration Brussels Economy & Employment.
Zoning allocation criteria	5 criteria: • > 10.000 residents. • Unemployment of 25% (= the national average). • Share of youngsters <25 years higher than 36%. • Share of youngsters >15 years without qualifications higher than 29% (= national average). • Local tax potential lower than 580 euros/resident.	3 criteria, of which the average has to be lower than the average of the BCR: • Unemployment. • Share of unemployed people with a profile of workers. • The income per tax return per household.
Location	1 of 44 'Quartiers en difficultés' spread over France, and part of the Euralille region. Roubaix is the only ZFU located in the city centre.	1 Zone of 'deprivation', located on both banks of the canal Brussels-Charleroi, from Vorst to just past the site of Tour & Taxi.
Neighborhoods	Alma, Cul-de-Four, Epeule, Epidème, Fosse aux Chênes, La Bourgogne, Roubaix centre, Sainte-Elisabeth.	Anneesens, Havenwijk, Hertogin, Historisch Molenbeek, Industrie Birmingham, Industrie Zuid, Kuregem Bara, Kuregem Dauw, Kuregem Veeartsenij.
Size	525ha.[18]	+/-600ha.
Eligibility	Small companies of max. 5 employees.	Micro, small, medium and large companies with a seat in the zone.

[18] The average surface of French ZFUs is 189ha. Only 4 ZFUs are bigger than 300ha, among which the ZFU Roubaix (Green et al., 2001, p.58). This shows that the Brussels ZEE covers a large area in comparison with the average French ZFU.

	No account is taken of the number of jobs per m².	A minimum of 3 employees. No account is taken of the number of jobs per m².
Company benefits	Most important benefits: • Exemption of municipality tax for 5 years. • Exemptions of surface tax for 5 years. • Partial exemption of employee tax (social security, work accident insurance) for 5 years.	Benefits: • The partial takeover by the government of annual salary and social contribution of staff who live in the zone: 30% in year 1, 15% in year 2. • Partial exemption of surface tax: unlimited in time as long as criteria and constraints are respected.
Conditions	20% of local recruitment.	30% of local recruitment of residents living at least 6 in the zone at the moment of recruitment.

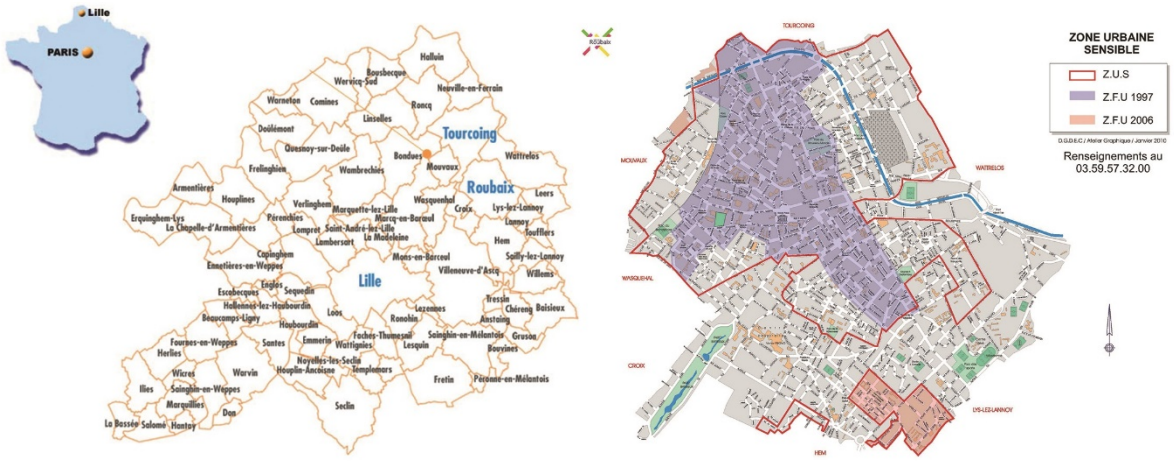
Sources: BHG, 2014b; Briant, Lafourcade & Schmutz., 2012 ; Colomb, 2007 ; Green, Trache & Blanchard, 2001; IWEPS, 2014 ; Mayneris, 2014 ; République Française, 2015a, 2015b ; processed by Sarah De Boeck

Yet, the literature suggests that UEZs can also have a range of negative impacts. First, UEZs can prevent the attraction or development of jobs as it conflicts with property-led development (Rousseau, 2010; Wolf-Powers, 2005), engendering industrial gentrification instead (Curran, 2007; Ferm, 2016). Green et al. (2001) warn about the increase in the price of buildings and available land within the ZFU Roubaix, stressing that this can have a negative effect on the attraction of new enterprises. Moreover, also the existing companies tend to be priced away through mixed-use developments (Ferm, 2016; Wolf-Powers, 2005). As a result, land speculation by real estate agents in formerly industrial areas raises the risk of relocation or even disappearance of firms and jobs (Smith, 1987; Swyngedouw, Moulaert & Rodriguez, 2002). Second, the attraction of companies and the resulting local job increase can result in the displacement of firms (Mayneris, 2014). These business transfers can be qualified as competition on a local scale whereby the periphery of the zone is forced to compete with the zone itself. During the first three years of the ZFU Roubaix, between 1997 and 1999, 40% of the companies in the zone were transfers from other parts of the LMUC (Green et al., 2001). Colomb (2007) mentions that only two years later, in 2001, already 60% of the companies in the zone were transfers.



Sources: Observatorium voor Gezondheid en Welzijn Brussel-Hoofdstad (CIBG-CIRB/CRISP, 2002); BHG, 2014d.

Figure 1: ZEE Brussels situated in Belgium and the Brussels Capital Region



Sources: Français langue étrangère/FLE, 2015; Picavet Assainissement, 2015; Ville Roubaix, 2015.

Figure 2: ZFU Roubaix situated in France and Lille Metropolitan Area.

Where Mayneris (2014) describes business transfers as a negative effect, Colomb and Green et al. consider such transfers in the ZFU Roubaix as part of a deliberate strategy to attract decentralized enterprises to the Roubaix city centre. While the attraction of new firms could set in motion agglomeration effects, it hence appears that it may not be the prime motivation to move to the area. Moreover, insights from evolutionary economic geography (e.g. Lambooy & Boschma, 1998) propose that it is hard to durably attract new enterprises when not connected to spatially well-embedded enterprises. Third, UEZs may bring few or no benefits for local residents. For instance, Green et al. (2001) register a significant increase of 544 companies between 1997 and 1999 but do not identify any positive long-term effects across all French ZFUs. Mayneris

(2014) questions the long-term effects on job creation, concluding for all French ZFUs that residents of the enterprise zone might come out of unemployment slightly faster than non-residents of the zone, but only to a small degree and only for a short time. Finally, it appears that mainly small and/or mobile companies are attracted by the fiscal benefits of UEZs (Givord, Rathelot & Sillard, 2012; IWEPS, 2014; Mayneris, 2014). This is also the case with the ZFU Roubaix (Green et. al., 2001). Although the ZEE instrument does not prescribe company size requirements, especially small and medium-sized enterprises (SMEs) will make use of the benefits of the ZEE. As an administrator of Impulse.brussels states, supporting large firms is avoided because the competition regulations of the European Commission (2016) prevent large industries or companies to receive public money, as it would give them an unfair advantage over similar sectors in other EU countries. Another reason is that the degree of participation of enterprises in other types of existing economic support in the BCR - such as financial support for participation at international fairs, relocation of businesses within the region, investments etc. – is the highest with micro-enterprises (companies with less than ten employees). Their degree of participation balances between 57% and 74% depending on the type of subsidies to be granted, for the year 2013 (BHG, 2014c). This suggests that the planned ZEE tax measures will mostly benefit small enterprises. It is likely that some companies might leave the area when measures end, but locally emerging SMEs may be better rooted in the social and economic fabric of the area, reducing this risk.

Critical reviews of the ZFU Roubaix (Green et al., 2001; Colomb, 2007), however, point to various (pre)conditions that allowed important goals to be achieved. First, Briant, Lafourcade and Schmutz (2012) attribute the success of French ZFUs on their degree of physical connectivity to public transport, the centrality of the zone (i.e. proximity to services for example), and the absence of urban barriers that make it impossible for commuters to reach their workplace. If the local residents lack the necessary skills, managers need to be sure that they can attract commuters with the requested skills. Green et al. (2001) and Mayneris (2014) confirm this analysis but add an extra dimension, namely the availability of vacant land. The ZFU Roubaix is the only French UEZ of the first round (1996) that covers a city centre. Green et al. (2001) see this central position of the zone as an explanatory factor of its success. Second, the ZFU Roubaix is part of a comprehensive approach to the renewal of the city centre of Roubaix, combining spatial interventions with an encompassing package of measures to improve the social-economic circumstances of the local inhabitants (Colomb, 2007; Green et al. 2001). Economic development and investments are linked to training and educational programs, and to public integration and insertion programs for the unemployed obliging local recruitment. Third, the municipality of Roubaix was aware of the fact that entrepreneurs had cultural prejudices (Colomb, 2007). A special team of the municipality negotiated with companies to recruit local residents in exchange for public investment (Colomb, 2007). Next to training and educational programs, the municipality made extra investments to convince enterprises to recruit locally such as the provision of vacant land, management agreements, surveillance, cleaning services, etc. Discriminatory labour market practices vis-à-vis 'foreign' workers and residents of parts of the Brussels Canal Area (Roessems, De Spiegelaere & Wayens, 2006), suggest that overcoming cultural barriers will play a substantial role when aiming to convince "autochthonous" company managers to relocate their business. Fourth, research on UEZs in Wallonia (IWEPS, 2014) shows no significant results of improvement of the unemployment rates between 2006 and 2011. The IWEPS report (2014) registers differences between new companies using the benefits of UEZs and companies using EFRD funds, the latter giving slightly better results. The use of EFRD support was significantly higher with clear positive effects, whereas the report did not register any positive impact of UEZ measures. As the Brussels ZEE overlaps with the Brussels EFRD Zone 2014-2019, it can be expected that European subsidies, when used in concordance, may enhance the

functioning of the ZEE (see section 5). The EFRD aims to diminish the economic, social and territorial differences within the 28 member states of the European Union as part of the European cohesion policy with five specific goals by 2020: job creation, innovation, education, social inclusion, and the prevention of climate change. The funds should act as a lever for economic growth. While the department of economic affairs of the BCR is responsible for the ZEE, the research and innovation institute Innoviris coordinates the EFRD projects, without any real transversal coordination between them. Although Innoviris' goal is to stimulate the dialogue between research and entrepreneurship, few enterprises apply for EFRD support. Finally, the relative success of the ZFU Roubaix in the creation of local jobs depended on a broad consensus on the metropolitan scale (Colomb, 2007). Under the impulse of Pierre Mauroy – president of the LMUC from 1989 until 2008 and mayor of Lille from 1973 until 2001 – that consensus was reached between the four municipalities of the Greater Lille region: Lille, Roubaix, Tourcoing, and Villeneuve d'Asq. These municipalities developed a strategic plan that outlined the spatial interventions for various zones of the region with the objective of transforming the deindustrialized economy. This consensus made it possible to implement the ZFU Roubaix successfully, even if it took 25 years to build that shared vision.

5. Making space for the foundational economy through the Brussels ZEE

In its present form, and given the effects outlined above, there is a considerable risk that the Brussels UEZ will not reach its goals. Nevertheless, condemning the ZEE entirely as a measure to sustainably counter the urban (economic) decline in the Brussels Canal Area, would ignore some of the positive effects registered in the Roubaix case. By reviewing key international examples and emerging policies and concepts with regard to the Brussels Canal Area, this section investigates how the ZEE could be revised to meet its main goal of creating local jobs. We propose linkages between the ZEE, the present planning instruments in the Brussels Canal Area and the territorial strategies *in situ* of an ethnic and a foundational economy (Kesteloot, 1999; Bentham et al., 2013). The hypothesis is that mutually reinforcing instruments will more likely achieve the goal of local job creation.

A first recommendation is to reframe the ZEE as a tool to accommodate economic activities in neighbourhoods with arrival city dynamics, i.e. areas with high levels of residential mobility. Policymakers often question the effectiveness of UEZs, as unemployment rates, incomes, and other indicators do not improve. However, this view neglects the typical arrival neighbourhood dynamic of outward migration of local residents climbing the social ladder (Mayneris, 2014; Oosterlynck & Schillebeekckx, 2012; Saunders, 2011). UEZ policies in Brussels could benefit from a closer understanding of the possibilities of the economics of the arrival city, here understood as a primordial aspect of the foundational economy (Bowman et al., 2014; Engelen et al., 2014). Combined with Kesteloot' (1999) territorial strategies *in situ* focused on ethnic entrepreneurship, a shift of policy can be thought by changing (unintended) gentrification strategies into collective strategies of social mobility. The Brussels Canal Area hosts key arrival infrastructures, including informal work opportunities, possibilities for ethnic entrepreneurship, and affordable (slum) housing as part of survival strategies where the government is less present (Kesteloot, 1999; Kesteloot & Loopmans, 2009). This form of subsistence economy is likely to be pushed away by rising land prices as a result of the ZEE, together with the cheap labour forces needed for a grounded ethnic economy.

Second, taking further inspiration from the foundational economy perspective, another recommendation is to be more specific in the types of economic activity the ZEE seeks to attract to the Brussels Canal Area. The planning literature is increasingly sensitive to the enduring importance of industry for urban

economies. For instance, Ferm & Jones (2015) underline that the industry still accounts for 11% of all economic activities in London. Also, in Brussels, awareness about the importance of industry and productive activities is rising (Ryckewaert & Moritz, 2013). The Brussels Government Architect[19] Kristiaan Borret defines three kinds of urban productive economic activities that need to be revalorized in the city: (1) the already present enterprises, (2) new forms of hipster activities such fab labs, craft breweries, etc., and (3) craftsmen like plumbers and locksmiths (Borret, 2016). Starting with the already present enterprises Borret is mentioning, the Brussels Canal Area hosts an extremely diverse collection of enterprises such as storage and wholesale of building materials, waste collection, car export, meat and textile industry etc. Municipalities in the Brussels Canal Area (e.g. Anderlecht) see these enterprises as barriers for middle and high-end residential development and the attraction of taxable incomes. This view is often translated in a policy of (planned) displacement of some of these activities. An example to illustrate this dynamic is the tremendous efforts the BCR makes to displace the second-hand car businesses in Heyvaert Street and replace them mainly by residential and retail development. While the activities listed under (2) could trigger gentrification (cf. Peck, 2005), Borret's (2016) view dovetails with planning visions in other metropolitan areas. The *Structural Visioning Plan 2040 of Amsterdam* (Gemeente Amsterdam, 2011) identifies *nurturing enterprises*, which are ideally located in inner-city business areas, but which require dedicated ways of mitigating traffic or noise nuisances generated by specific activities (e.g. construction, plumbing). Borret (2016) projects a similar role for the Brussels Canal Area and proposes micro-zoning and juxtaposition to deal with the conflicts between residences and industrial activities. This also introduces an alternative imaginary of the area, not necessarily revolving around a renewed form of residential or consumption centrality (ATO, 2013), but as a vibrant place for manufacturing and production (Moritz, De Clerck & Vanhaelen, 2013). Integrating these concepts, the ZEE could be conceived as an opportunity to maintain and enhance the area for foundational and productive activities, in a way bypassing zero-sum games related to activities embroiled in inter-city competition.

Third, securing the area for a foundational economy will require policies that keep rising land prices in check, preferably via land value control mechanisms (Aernouts & Ryckewaert, 2015; Wolf-Powers, 2005). Projecting from the most similar case of ZFU, sharp land and housing price rises are to be expected, as the currently proposed parallel instruments in Brussels are not aimed at mitigating real estate price increases. The most critical one is the EAUD, which serves to 'upzone' former mono-functional industrial areas to multifunctional zones that allow residential and office space development. As in other contexts (e.g. London, see Ferm & Jones, 2015) the Brussels EAUD policy is legitimized by pointing to demographic pressure and the resulting need for extra housing (BHG, 2011). The conversion of industrial land into mixed-use development land is not at all a safeguard of affordable housing. On the contrary, key development projects in the Brussels Canal Zone such as the Biestebroeck project include 400.000m² of housing space, yet, entirely devoid of social units. Dessouroux et al. (2016) project a population increase of 12,5% or 146,000 people in the BCR by 2030.[20] Following this prognosis, the authors calculate a total need for 40,000

[19] The first Brussels Government Architect was appointed in November 2009 for a period of 5 years to assist public authorities in the BCR to guarantee the architectural and landscape quality of their projects. Kristiaan Borret is the second Brussels Government Architect. See www.bmabru.be.

[20] This article was published in European Planning Studies in 2017 and needs an update on the population projections. The estimated population growth declined with more than half since 2011. The latest projections predict a population

housing units equalling 2,800 units a year until 2030. This need only reflects the growth prognosis in a strict sense and not the already existing shortage of housing. Rising land prices greatly reduce the accessible housing stock for financially vulnerable people: 'If maximum 25% of the income can be used for housing, only 1% of the housing stock is affordable for 40% of the families with the lowest income. In 2004 still, 10% of the housing stock was affordable for that part of the population, and in 1997 it was still 28%' (De Keersmaecker, 2014 quoted in Dessouroux et al., 2016:11). The implication is those up-zoning strategies are likely to reinforce land value speculation in the areas where EAUDs and the ZEE will overlap, even before the ZEE has been implemented. This means that the amount of affordable land for industrial development is already shrinking and that land prices in some parts of the future ZEE risk becoming too expensive for industrial activities. It is therefore recommended to further explore the potential of already existing micro-zoning strategies, which consist of changing land use plans on a smaller scale by gradually converting selected plots of mono-functional industrial land into mixed-use areas to safeguard the co-existence of housing in productive areas.

Fourth, the ex-ante analysis strongly suggests that a comprehensive approach is needed in which spatial policy instruments are aligned and mobilized for the same goals and combined with other policy instruments. One of the main reasons for the success of local job creation in Roubaix has been the provision of training, education, non-discrimination campaigns, and management contracts of public-private space (Colomb 2007). The alignment of spatial policy instruments in Roubaix was mobilized by the political tandem of Pierre Mauroy, and René Vandierendonck, mayor of Roubaix until 2012 (Colomb 2007, Heyns 2006). A process of metropolitanisation emblemized by the Euralille project was combined with the policy of the renewed city (in French: 'ville renouvelée'). The renewed city policy focused on the reevaluation of former industrial areas (Heyns, 2006) through strategies that are similar to the Brussels' neighbourhood contracts (Romanczyk, 2015). This includes the renewal of the housing stock, a revalorization of the urban infrastructures, a revalorization of public space and built heritage, and the development of social and participatory actions to support city renewal.

6. Conclusion

This paper has sought to identify the anticipated effects of the implementation of a particular UEZ in Brussels. This exercise was supported by a comparative case study of the already implemented ZFU in Roubaix (Lille). Reviewing international cases like Roubaix, our main conclusion is that the eradication of uneven development within the metropolitan area through UEZs is unlikely, even though in particular conditions a more or less durable redistribution of growth can be achieved. A key concern emerging from our analysis is that Brussels remains hampered by a combination of fragmented and conflicting policies of its various government agencies. As is the case with the current neighbourhood contracts important questions remain about 'how current economic practices in neighbourhoods can be combined with the social and environmental quality of life in Brussels' Romanczyk (2015, p. 6). Part of the answer may be found in three elements.

increase of 5,6% or 68.063 people between 2020 and 2040. This equals an increase of 16,745 households in the same period or an average of about 840 extra households a year. Although we note a slowing pace of the population growth, the argument of Dessouroux et al. (2016) is still valid. To illustrate, the Observatory for Housing Patrimony (2019) counts a growth of 5,000 housing units a year between 2015-2017. Only 250 of the 10,000 new housing units are used for social housing.

First, there is a need to further develop more transversal policy coalitions across government agencies. The Team Canal for example, which is a team composed of different government agencies concerned with planning, is unique for Brussels in their transversal collaboration to supervise the recent developments in the Canal Area. Second, we argue, a shift is needed in how we conceptualize the economic underpinnings of the city. While we are supportive of the recent discourse on the productive city in planning circles, collaboration with economic agencies is often completely missing. To create and keep industrial jobs in the city, we need another kind of reflection than the one we see for example in the Brussels Plan for International Development (PID), where the focus is on the attraction of international investors (Decroly & Van Criekingen, 2009). The concept of foundational economy opens the possibility to make space for different layers of urban economies present in the city. Starting from this concept, regions could assign certain spaces for foreign investors (cf. PID) and other spaces for more foundational activities in the Canal Area. Ultimately, this also requires a clear vision and political will to protect urban space against far-reaching gentrification dynamics. Third, learning from the Roubaix case, a metropolitan consensus is an important condition for a sustainable economic development plan in Brussels, especially given that the ZEE is expected to increase, not decrease territorial competition through the relocation of enterprises within and across the borders of the BCR. Yet, as far as interregional competition between the BCR and the Flemish Region is concerned, little effective collaboration exists to balance spatial inequalities that might arise from the implementation of recent productive city concepts proposed in research-by-design exercises (cf. Ruimte Vlaanderen, 2015). A salient scenario for reaching the primordial goal of local job creation, even in the absence of a metropolitan consensus, this paper has argued, is to acknowledge the enduring role of the foundational economy – a set of economic activities less prone to territorial competition, yet susceptible to ethnic entrepreneurship and associated social mobility effects, and elementary in the social reproduction of numerous neighbourhoods within and across the border of the region. One of the large challenges for future research is to explore how space can be planned and (re)designed to mix and accommodate elements of the foundational economy within the existing and newly developed urban fabric of the Brussels metropolis.

CHAPTER III
MAKING SPACE FOR A MORE FOUNDATIONAL ECONOMY: THE CASE OF THE CONSTRUCTION SECTOR IN BRUSSELS

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1. The ambiguous case of construction

Amid the ongoing post-crisis conjuncture, urban development scenarios that centre on financial and business services, high tech, and real estate are increasingly exposed as being erratic and extractive. Frustrations with the polarized outcomes of urban competitiveness policies and the growing mobilization of the city as a financial asset (Ward and Swyngedouw, 2018) have sparked important counternarratives. One of these, namely the idea of a *foundational economy* (FE), seeks to recalibrate urban development around those activities that are rooted in place, that can be sheltered from interurban competition, and that is essential to decent lives of citizens (FEC, 2018). The foundational economy is "that part of the economy that creates and distributes goods and services consumed by all (regardless of income and status) because they support everyday life" (Bentham et al., 2013a:7). Thus far, scholars have focused empirically on utilities, retail banking, food processing, and retailing, transport and distribution, health, education, and care. In this paper, we argue that the construction sector, as the producer of the built environment, has foundational properties that exceed its embroilment in speculative urbanism.

Construction is an ambiguous case, however, as it is central to contemporary growth-centred urban political economies *and* exerts functions foundational to daily urban life and the social reproduction in and of the city. Brussels, where our research is set, is emblematic of this contradiction. As elsewhere, close ties between large construction firms, property developers, investors, and local elites in urban growth coalitions often enable speculative investment in the built environment (Papadopoulos, 1996; Swyngedouw and Baeten, 2001; Timmermans, 1992). Construction also plays a key role in the process of switching capital into the built environment through its ability to enact creative destruction: the clearing of the urban fabric to make space for new rounds of investment (Harvey, 2006 [1982]). The emic term "Brusselisation" captures the incessant clearing of the built environment that accelerated during the postwar era in Brussels. At the same time, the Brussels construction sector is an important employer in the context of rampant (youth) unemployment in a polarized labour market structured by the intersections of ethnicity, education, and area of residence. Over 70% of construction jobs are taken up locally, especially by the more precarious segments: young people, often without higher education, with a migration background.

Drawing on FE debates and cognate moves to rethink urban economies as foundational urban systems (Hall and Schafran, 2017), this paper seeks to explain the ways in which construction is key to the social reproduction of the contemporary city. Set in Brussels, the paper has three interrelated aims. First, it reviews construction, considering its foundational properties: To what extent is construction implied in the production of the infrastructure of everyday life? To what extent does it cater to the local market? And, relatedly, to what degree is construction sheltered from competitive market forces? Second, the paper maps the spatial footprint of the construction sector in Brussels, identifying its dependence on fine-grained,

inner-city geography of workspaces for small and medium enterprises (SMEs) and the provision of affordable housing for construction workers – both experiencing displacement threats because of ground rent dynamics. In a similar vein, we review the degree to which construction is embedded in the local labour market and to what extent the Europeanization of construction work through postings is undercutting the grounded nature of the Brussels construction sector. Like other sectors, construction is governed by what Engelen et al. (2017), following Tilly (1990), refer to as *external governors* working at the supranational scale, thereby limiting local political agency. However, the spatial embeddedness of the Brussels construction sector also offers scope for internal stabilizers. The third aim of the paper is then to sketch the contours of that local state agency, showing how urban policies governing land and labour markets can support and nurture the foundational character of construction – hence addressing our call to rethink the tools of urban governance to make space for the foundational economy (cf. Edwards and Taylor, 2017; Ferm and Jones, 2016).

The paper continues as follows. Section 2 reviews the concept of the FE and positions it in wider critiques of contemporary urban development. Section 3 probes the foundational dimension of the Brussels construction sector. In an anticipatory move, section 4 discusses how the local state can govern urban land and labour in support of the FE. Section 5 concludes with a discussion of how the Brussels case can inform wider debates on foundational urban policy (in construction and beyond) and revisits the central claim that an active government of urban space will be essential to the flourishing of any foundational sector.

2. Reframing the urban economy: From the apex to the foundational

2.1 Antecedents to the foundational economy

Faced with the fiscal consequences of deindustrialization and the Fordist crisis, "entrepreneurial" urban policymakers have sought to lure in exogenous sources of growth. Such strategies have included the nurturing of innovative forms of production, the hosting of command functions, the development of amenities for the visiting class, and the setting up of programs to attract subsidies redistributed from the national and supranational level (Harvey, 1989). More recently, they have centred on enclosing public and private infrastructure in financial circuits of value (Pike et al., 2019). Ironically, such strategies to develop the *apex* of the economy focus on external mechanisms that are particularly hard to govern (Tilly, 1990) and, in the end, reinforce a zero-sum game of the territorial competition. Furthermore, research shows that the supposed trickle-down effects of the added value of these apex activities are limited or even absent, given the income/wealth polarization in many urban contexts (Massey, 2007). An FE perspective suggests that contemporary industrial policies fail to deliver decent lives for citizens (Bentham et al., 2013b; Bowman et al., 2014). Without falling into the local trap (Born and Purcell, 2006), the argument then pushes for the reorientation of urban policy toward those economic activities that keep metropolitan areas working and that feed into the daily lives of citizens.

While we concur with these observations, we argue that there are also theoretical reasons that make such a shift perfectly "rational" for urban policymakers. The base–non-base debate in urban theory – and specifically Blumenfeld's (1955) interpretation of this debate – constitutes a theoretical basis for such a reorientation. The debate centred on events in the immediate postwar era, when the classic model was to build an export-oriented basic economy of primary activities, such as the automotive industry, which supported secondary service activities related to local consumption (ibid.). While the "basic function" depends on non-local demands, the "non-basic function" caters to the needs of local inhabitants

(Alexander, 1955). This early, post–World War II debate in urban studies, centred on the relationship between the two functions, resulted in two radically opposed appraisals. The dominant view was captured by Alexander (ibid.:246), explaining the primacy of the basic function: "The difference between these two economic efforts is of fundamental importance because the former constitutes the city's economic foundation.[T]he city's life depends upon it. It brings money into the city and is termed 'basic.' By contrast, the second category (serving local demands) is termed 'non-basic' and simply involves an exchange of money which basic efforts have already brought in."

Blumenfeld (1955) radically opposed this view, bringing in two arguments. First, the above reading overlooks the issue of import substitution in the realm of "non-basic" services that are important to maintaining a positive balance of payments. In other words, reducing imports by increasing autarky is an equally viable mercantilist strategy, and the larger the metropolitan area, the more dominant this effect becomes. Second, alluding to interurban zero-sum games, he observes that basic activities are the most prone to competition and therefore the most volatile, while the non-basic (i.e., local consumption) activities are in fact constant and permanent. While basic export-oriented activities can be substituted, non-basic activities cannot, or, as Blumenfeld (1955:130) puts it somewhat laconically: "If the Philadelphia subway system goes out of business, it cannot be replaced by the New York subways." He argues that we should simply invert the relation between basic and non-basic functions (ibid.:132): "In any common-sense use of the term, it is the 'service' industries of the metropolis that are 'basic' and 'primary,' while the 'export' industries are 'secondary' and 'ancillary.' The economic base of the metropolis consists of the activities by which its inhabitants supply each other."

Engelen et al. (2017:417) strongly echo Blumenfeld's position: "City growth is a precarious bricolage around default hinterland access to possibilities that arise from decisions taken outside." Adopting Tilly's notion of *internal* and *external governors*, Engelen et al. (ibid.:413) observe that cities are governed externally by geopolitical developments beyond their control: "Individual cities are beneficiaries of, or suffer collateral damage from, state or supranational decisions and processes; such decisions are taken elsewhere for reasons of state and are often completely disconnected from city welfare." Yet, cities always have their own internal accelerators and stabilizers, which act as internal governors. Taking issue with the generic story of urban competitiveness they see as prominent in the work of Glaeser (2011), Engelen et al. (2017) paint a more grounded picture of individual cities with stabilizers at work since even global cities have bounded hinterlands delimiting competition. In their view, urban economies can be stabilized by taxing land, which should accelerate urban growth. Profits made from land are socially produced yet typically privately appropriated. Finally, any city has a sizable share of its economy directed at the everyday needs of households. This economy of "taking in each other's washing" that FE wants us to focus on, is what Schafran et al. (2018:2) identify as the *urbanization* sector, in a recent effort to rethink the agriculture-industry-services classification. In their reading, a substantial share of economic activity revolves around "industries that fix or move materials, both tangible and intangible, to form human settlements of any size or scale": construction, real estate, retailing, entertainment and recreation, accommodation and food services, health, education, social services, transportation, and wholesale. Hall and Schafran (2017) see the necessity of the collective provisioning of these goods and services as one of the main reasons for reframing foundational activities as *foundational urban systems* since individuals are not able to provide themselves. In sum, foundational activities are integral to the contemporary economic structure, as they create agglomeration advantages for collective activities related to the social reproduction of citizens.

2.2 Disentangling dimensions of the foundational economy

How do the urbanization sector or foundational activities assume a grounded character? In this section, we review three dimensions highlighted by the FE scholarship (Bentham et al., 2013a; FEC, 2018) that function as necessary but not sufficient conditions. Given that a large part of the urbanization sector has been enrolled in logics that are at odds with the social reproduction of citizens per se, these dimensions can also feed into an analysis of the foundational character of the contemporary urban economy or any of its sectors. As such, this section serves to identify three analytical lenses through which the ambiguous case of construction will be reviewed.

First, to what extent are FE activities related to the everyday life of citizens? Bentham et al. (2013a) urge us to consider the degree to which a sector harbours a large part of the workforce, which would imply that the sector creates wealth through the provision of jobs and whether it constitutes a large part of household expenditure. However, the recurring assumption of employment "as a remedy to poverty" has been empirically shown as being false in many ways. Indicators of economic growth such as Gross Domestic Product (GDP) are no longer indicators of social progress or wealth (FEC, 2018; Stiglitz et al., 2018; Van Hamme et al., 2011). To illustrate this, Engelen et al. (2017:421) statistically demonstrate how very little of the economic success in the UK is felt at the bottom quintile of households: "Almost half of the income gains between the mid-1990s and 2010 ended up in the wallets of the top 20% of households, with the bottom 20% gaining a mere 4,2%." In an effort to reconnect economic success and social wealth, we emphasize the quality of employment – both in terms of working conditions and wages. The quality of work is paramount, as this will shape the purchasing power of citizens and hence affordable access to foundational goods such as housing.

Second, to what extent does a sector cater to the local market? Foundational activities, as Bentham et al. (2013a:7) show, are "distributed according to population," whereby "care-homes or supermarkets are always local, even if they are organized and owned elsewhere." While the role of local consumption is identified, the FE debate has paid less attention to how these geographies materialize in space. Ferm and Jones (2016) and Edwards and Taylor (2017) show that even in a global city such as London, industrial and productive activities play an essential role in making the urban economy work. However, these essential functions are rapidly losing foothold. Mono-industrial land is being transformed into far more profitable mixed-use development land at a fast pace, displacing foundational activities. Scholars thinking through the conditions for an FE should, in our view, pay more attention to the actual geographies of production, distribution, and consumption. Furthermore, if nurturing an FE depends on increasing autarky (Blumenfeld, 1955), we need to understand how foundational activities are embedded in local supply networks, trust relations, and urbanism and planning traditions that hinge on tacit knowledge.

Third, to what extent does a sector consist of sheltered activities, i.e., when "[i]nternational competition is limited and offshoring is difficult whenever goods and services have to be delivered locally" (Bentham et al., 2013a:7–8)? Put differently, as they are essential to the urbanization sector, they cannot be easily offshored as such, as the metro example by Blumenfeld already indicated. This means that foundational activities would be better embedded in urban labour markets. As Bentham et al. (2013a:8) observe, "[t]he import of labour is technically possible but often politically contentious," enhancing the sheltered nature of the FE. Still, studies on global cities and labour migration are adamant that the import of labour is far from an exception, especially when job profiles do not match the local labour force (May et al., 2007). Quite often, migrant workers are deskilled and generally undervalued, even though their activities keep cities

working. Wall et al.'s (2012) account of the construction of grand projects in London in the 1950s is also telling. Ethnographic research showed that migrant construction workers played a crucial yet easily overlooked role in on-site technological innovation. Although urbanization jobs – including care, catering, cleaning, construction, transport, etc. – are essential for the very functioning of the city, they are typically undervalued in terms of wage and social status.

2.3 Actors of the foundational economy

Where the Foundational Economy Collective (FEC) authors (2018) focus on the local and regional scale as a starting point for FE experimentation, Hall and Schafran (2017) state that foundational urban systems have neither an ideal size or scale nor an ideal institutional formation. In order to collectively provide FE activities, the authors of the FEC book (2018:147) emphasize "hybrid foundational alliances," consisting of "[s]tate actors of different scales, for-profit actors of different sizes, non-profit and informal institutions" (Hall and Schafran, 2017:10). Although the ideal institutional formation for provisioning collective basic goods and services does not exist, the FE literature argues that a part of the created surplus created by actors providing FE activities needs to flow back into society through what is called "social licensing" (Bentham et al., 2013a; Bowman et al., 2014; FEC, 2018). Private companies can, for example, receive state-provided monopolies for providing basic goods and services in sheltered economic sectors. As a consequence, a stable profit is guaranteed for these companies without the risk of losing their investments, which legitimates returning a part of the profits to society, a process mediated by governance actors. Engelen et al. (2017) shift the attention to the agency of local political actors and to policy measures that can act as local internal governors in support of FE, whereby taxing privatized land is presented as a viable strategy to capture a part of the rent. Next to taxing privatized land as an internal stabilizer, this paper states that local policy strategies are not only necessary to redirect a bigger part of the created surplus toward the collective provisioning of basic goods and services, but also to guarantee the space in which these basic goods and services are consumed (and produced). In our view, a key issue that has thus far received little attention is how the local state – as a landowner and as a developer of public infrastructure – can set the terms of public procurement in a relatively independent way.

3. Charting the foundational dimensions of the Brussels construction sector

3.1 Research context and methodology

As elsewhere, construction is very much a contested terrain in Brussels. Witnessing the history of creative destruction dubbed 'Brusselisation', citizen organizations typically place construction on the speculative-spectacular side of urban development (Bral, 2019). Indeed, construction by means of big developers has been embroiled in forms of redevelopment that have overwritten pre-existing architectural, social, or historical values. Many of the 1950–1980s redevelopments were linked to the anticipated attraction of European command functions, legitimizing the replacement of inner-city neighbourhoods with urban highways, office towers, tunnels, and administrative buildings (Loeckx, 1989; Ryckewaert, 2011). More recently, mixed-use developments have taken over, seeking to combine leisure, consumption, and residential functions to attract the middle classes (Van Criekingen, 2010).

The dominance of criticism on the role of construction in Brusselisation, however, has meant that foundational functions of the sector have remained under the radar. In the most basic sense, construction erects the very housing, transport, production, and consumption infrastructure that sustain the urban

everyday life. As such, construction has foundational dimensions, because it produces urban infrastructure (waste disposal, sewage systems, cables, pipes, etc.) as well as the infrastructures of social reproduction (housing, public administration offices, schools, health care, etc.). Furthermore, the Brussels construction sector has historically served as a conduit for the economic integration of migrant labour, for instance through the construction of the "Moroccan metro" in Brussels (Laporte, 2014; Martiniello, 2013). Today, key stakeholders such as the Brussels Employment Centre (Actiris et al., 2015) identify construction as a promising sector of job growth in response to the structural unemployment among citizens with low education levels.

Despite this role of construction in urban development, the foundational geographies of the sector itself have received almost no attention. This section narrates our excavation of the foundational dimensions of the Brussels construction sector. Based on reports containing macroeconomic data, we show how the Brussels construction sector adds to the production of the infrastructures of everyday life, the extent to which it caters to the local market, and the extent to which it is sheltered from competitive market forces. Our methodology consisted of a screening of about fifty government and sector organization reports that collectively offer a sectoral overview for the 2011–2018 period. Furthermore, employment data were analysed to chart the share of the construction sector and other foundational activities in total employment in the BCR. An analysis of the Central Enterprise Bank of Belgium allowed us to map the spatial footprint of construction enterprises in the BCR, thereby identifying its dependence on fine-grained, inner-city geography of workspaces for SMEs and the provision of affordable housing for construction workers.

3.2 Placing construction in industry classifications

We start our analysis by sketching an overview of the Brussels economy, seeking to place construction and other FE activities in the four-sector model of Schafran et al. (2018) outlined in Table 1. These authors have sought to transform the three-sector model – centred on agriculture-industry-services – into a four-sector classification that more directly mirrors material economic life and makes it possible "to see the core, foundational … and social reproductive activities as a major part of our economy" (ibid.:1709). Following FE conceptualizations (Bentham et al., 2013; Bowman et al., 2014; FEC, 2018), and hence deviating from Schafran et al. (2018), we read utilities such as water, telecommunication, electricity, etc. as being part of the urbanization sector and not the agro/extractive sector. The size of the agro/extractive sector is marginal since the BCR, in fact, covers the core area of the wider metropolitan area, which means that agricultural produce is mostly shipped in from local and global hinterlands. Thus defined, we find that manufacturing, urbanization, and control respectively account for 16%, 45%, and 39% of the economy of the BCR.

The first and most telling observation is that the urbanization sector, in fact, dominates employment in the Brussels economy – similar to what has been found elsewhere (e.g., Bentham et al., 2013a, in London). Moreover, the urbanization sector hosts 50% of short-schooled and middle-schooled persons, in comparison to the control (40%) and manufacturing (30%) sectors and is the biggest sector to respond to the structural unemployment in Brussels. All policy and sector reports discuss the profiles of workers in terms of "low-skilled" versus "high-skilled." In official data from the Brussels Employment Agency (Actiris, 2015), a person is "low-skilled" if she does not have a secondary education diploma or if she has a part-time vocational training diploma. A person is "average-skilled" if she has a certificate of higher secondary education. Terminology such as "low-skilled" is highly judgmental about the persons doing the job. A potential way out is to utilize the International Standard Classification of Occupations (ISCO), a tool for organizing jobs into a clearly defined set of groups according to the tasks and duties undertaken in the job.

Table 1: Employment in the Brussels Capital Region according to residency and educational level (2017)

Sector of economic activity	Total		Residency (%)		Educational level (%)		
	Jobs	%	Brussels	Commuters	Low	Average	High
Agro/extractive sector							
Agricultural activities*	436	0	73.6	26.4	24.3	36.3	39.3
Subtotal	436	0	73.6	26.4	24.3	36.3	39.3
Manufacturing sector							
Industry	22,007	3	49.4	50.6	19.6	33.3	47
Information & communication	40,948	6	43	57	4.1	16	79.9
Liberal professions, academic & technological activities	49,295	7	60.9	39.1	3.4	12.4	84.2
Subtotal	112,250	16	43	57	9	20.6	70.4
Urbanization sector							
Construction	28,610	4	69.6	30.4	35.8	44.9	19.4
Wholesale & retail	66,876	9	56.2	43.8	18.8	40.7	40.5
Transport & logistics	34,866	5	39.7	60.3	16.5	40.8	42.7
Hotel & restaurant business	25,747	4	74.7	25.3	30.9	39.9	29.2
Real estate*	7,845	1	62	38	15.3	29.8	54.9
Education	58,500	8	54.5	45.5	5.7	12.7	81.6
Healthcare & social work	73,035	10	59	41	13.1	22.1	64.8
Art, entertainment & recreation	17,422	2	55.4	44.6	17.2	28.4	54.4
Domestic activities*	6,174	0.9	93	7	42.9	35.5	21.6
Water & waste management*	3,995	0.5	52	48.2	38.9	35.2	25.9
Electricity & gas*	6,392	0.9	34	66.3	4.5	20.8	74.8
Diverse activities*	4,261	0.6	65.9	34.1	7.7	15.3	77
Subtotal	333,723	45	61	39	20.6	30.5	48.9
Control sector							
Public services	105,441	15	31.8	68.2	11	34.3	54.7
Administrative & supportive services	54,775	8	60.9	39.1	27.2	37.3	35.5
Other services	22,879	3	50.8	49.2	7.2	26.6	66.2
Finance & insurance	59,442	8	25.2	74.8	1.5	18.1	80.4
Extraterritorial organizations*	37,404	5	67.2	32.8	2.7	14.6	82.6
Subtotal	279,941	39	67.2	32.8	9.9	26.1	64
Total	**726,350**	**100**	**51**	**49**	**14.6**	**28.2**	**57.2**

*Extrapolation of 2013 data. Actiris (2017) amalgamates *water & waste management, electricity & gas, domestic activities, agriculture, extraterritorial organizations, real estate* under the banner "diverse activities," while the 2013 data (Actiris et al., 2015) does differentiate between sectors. The 2017 data for these individual sectors are hence based on the employment shares of 2013.

Sources: Actiris (2017); Actiris et al. (2015), processed by Sarah De Boeck.

Jobs in construction such as the demolition of buildings are not described as "low-skilled" but are described as "elementary occupations." Shifting from the workers to the jobs in this way is a little more neutral but can also imply that other jobs in construction are less important. In this paper, we choose to use terms related to the formal duration of education – short-schooled, middle-schooled – although these terms are not uncontested, since "craftsmen" refine their competencies and skills during their lifetime (Sennett, 2009). The conclusion is that this polarizing terminology is still dominant in academic and policy discourse when urban economies are discussed.

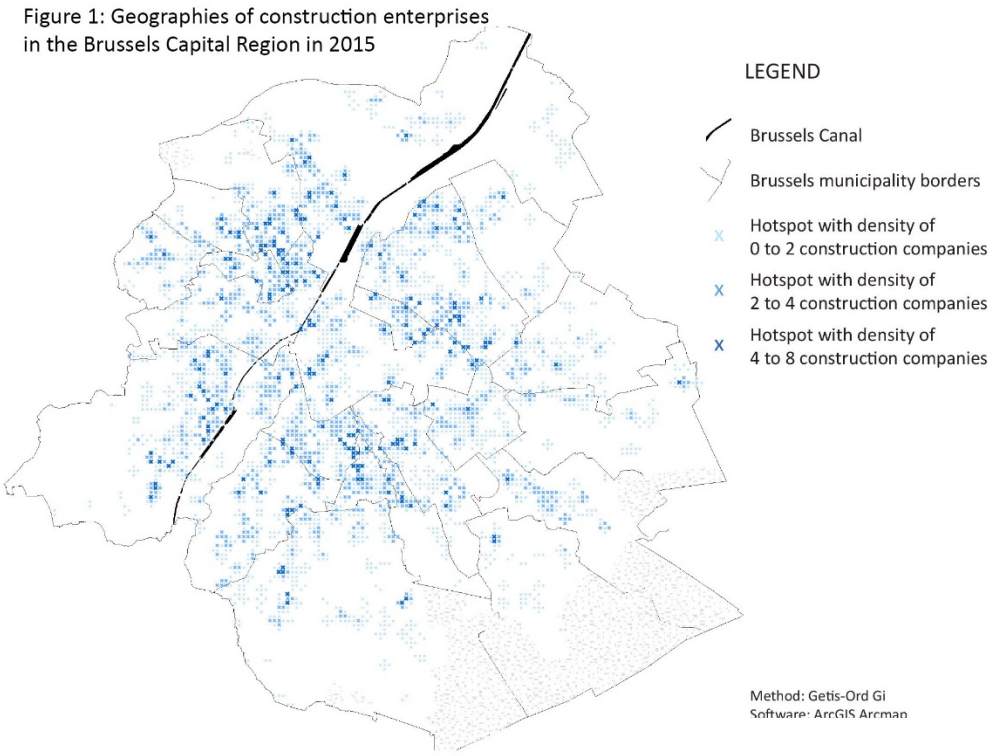
Second, the Brussels control sector is sizable. One would expect this from the city's role as the European capital, yet much of it is in fact anchored in public services (i.e., 15%), while extraterritorial organizations – the ones we can connect to the much-desired apex functions – only account for 5% of employment. Through a local employment rate of more than 60%, the urbanization sector also generates fiscal income for local (and regional) governments through personal income tax, which, in Belgium, is paid to the employee's municipality of residence. As such, the urbanization sector generates income through the multiplier effects of the salaries spent by the workers living in Brussels. This is not the case for the employees of the extraterritorial organizations, nor for most of the workers in European public services. Although Table 1 shows a high local employment rate of 67% in the control sector, "ex-pats" living in Brussels are actually considered "non-Belgian residents" and are exempted from paying taxes (Vanschoubroek, 2014).

Third, the four-fold classification also shows that manufacturing is in fact not marginal in Brussels economy. A classic three-sector model would land on a 3% share (i.e., the size of industry strictly defined). However, when expanding the definition to include *immaterial* productive activities (Lazzarato, 1996) enshrined in ICT, technology, academia, etc., the sector is far from marginal. From a planning perspective, however, potential risks are associated with this classification, as "immaterial" jobs may set in motion gentrification in mixed-use areas that had previously been dedicated to foundational activities needing ample space in inner-city areas (e.g., food processing, concrete production, etc.).

Turning to construction proper, we classify that sector as part of urbanization activities, since it is the quintessential industry that produces "the nests where humans live" (Schafran et al., 2018:1712). In 2014, there were approximately 12,000 construction enterprises, including self-employment businesses, in the BCR (Actiris et al., 2015). Taken together, construction offers about 30,000 jobs or 4% of all jobs. Table 1 also shows that construction jobs are very accessible to people living in Brussels. Depending on the year, construction hosts between 62% (2012) and 70% (2018) of Brussels' workers, and 78% (2012) of jobs are accessible to people without higher education (see column "educational level"). With almost 20,000 of the 32,500 workers in construction living in the BCR, the construction sector has a prominent place in the top-five sectors providing local jobs and jobs accessible to people without higher education. Despite its local recruitment, the import of labour is no exception in construction, even though the very internationalization of its labour markets though intra-EU postings is an often-neglected phenomenon (De Wispelaere and Pacolet, 2017). Intra-EU posting jobs are typically seen as a threat by sector organizations and governments. As a result, and somewhat ironically, intra-EU posting jobs are not accounted for in official employment data. This leads to serious underestimations: apart from the 265,000 Belgian construction jobs (in 2015), the Belgian construction sector, in fact, accounts for an extra 30% of jobs through postings. This means that we must add 130,600 posting jobs (De Wispelaere and Pacolet, 2017) to the 265,000 "domestic" jobs. For the BCR, one of the three Belgian regions, the discrepancies are even higher. Posting jobs are estimated to amount to 75% (!) of the total number of construction jobs. There are about 11,250 posting jobs to be

added to the official 15,000 domestically registered construction jobs (FD Social Security, 2017), plus the self-employment positions. The total employment figure is, therefore, closer to 41,250 jobs, instead of the officially communicated figure of 30,000 jobs.

In terms of activities, the sector spans the entire building process and caters to both private and public clients. The classification includes demolition activities, the construction of public infrastructures such as roads, tunnels, and public spaces, and the construction of buildings with a residential, industrial, office, or retail function. The Brussels construction sector is, moreover, very fragmented compared to other sectors: 71% consists of (self-employed) micro-enterprises with fewer than 5 employees, while another 22% consists of small enterprises with fewer than 20 employees. Fragmentation, however, is quite common, as insights from construction history show as well, since it allows for the flexible specialization of SMEs in housing construction (Harris and Buzzelli, 2006) as "a historical alternative to mass production" (Sabel & Zeitlin, 1985).



Source: Crossroad Bank of Enterprises (2018); processed by Sarah De Boeck & Frederik Vandyck; mapped by Frederik Vandyck.

Figure 1: Geographies of construction enterprises in the Brussels Capital Region in 2015

As Figure 1 shows, this sectoral fragmentation is mirrored in fine-grained and dispersed geography of construction enterprises in Brussels. The Brussels region is severely socio-spatial polarized into a poorer western part (lower median income, more "low-skilled" people, etc.) and a richer eastern part (high median income, more "high-skilled" people, etc.). The canal, related to former industrialization, more or less functions as a border (Vermeulen, 2015). The neighbourhoods on the west bank of the canal are also the places where migrants settled. This socio-spatial polarization is still reproduced today in the location of certain economic activities such as, for example, the command functions in the east or tourism in the city

centre. Although construction is typically considered "low-skilled," construction enterprises are not concentrated in the poorer parts of Brussels but are rather distributed throughout the region in the same way as food stores and supermarkets. This implies local embeddedness and the need for the proximity of construction enterprises, construction materials and construction sites in terms of the production process. An example is the presence of several plants producing concrete in inner-city locations in the Brussels Canal Zone, as well as several sand suppliers in their proximity – sand being one of the main ingredients of concrete – to provide "just-in-time" concrete for construction works in the city. The enduring presence of concrete-production geographies in the city hinges on the firm land ownership of the Port of Brussels, which offers shelter from the ground rent–maximization mechanisms and property-led development that characterize much of the rest of the BCR (Strale, 2017). Besides the concrete-production infrastructure, smaller construction firms in Brussels are remarkably well embedded in the urban fabric, using physical infrastructures such as depot space, parking space, offices, and ateliers in inner-city areas (see Figure 1). This spatial embeddedness of construction firms within residential urban typologies, in combination with the dominance of very small and dynamic enterprises, suggests that "smallness" is elementary in undergirding the foundational properties of the Brussels construction sector.

3.3 Construction's foundational dimensions

Having placed construction in the wider Brussels economy, we now scrutinize to what extent its current set-up enables its role as a foundational activity. The relation to everyday life constitutes a first foundational lens. What matters here is the degree to which construction manages to offer a sizable amount of good-quality jobs: to what extent does the construction sector offer job security? What is the purchasing power of construction workers? Do they earn decent wages? Approached from the consumption side of citizens we may ask what share of household expenditure goes to housing and whether housing is accessible in the first place.

A review of industry and policy reports problematizes the grounded character of the Brussels construction sector, despite its sizable employment share. In fact, construction is undergoing a deepening process of flexibilization and precarisation. The Brussels Employment Centre (Actiris et al., 2015) considers the construction sector a successful and growing sector because of the yearly net growth of 900 new construction enterprises (approximately 2,000 new firms and 1,100 bankruptcies). However, this dynamism marks a general tendency toward more self-employment (+50%) and hence a decrease in regular payroll jobs (-14%) in the period 2008–2012. While the government considers self-employment a positive trend, the rapid increase in new firms seems to camouflage the general erosion of wages and labour conditions, the growth of labour market flexibility, and a decrease in the social protection of workers (Maloney, 2003). The growth of intra-EU posting jobs and the inroads of foreign firms into the Brussels construction market (De Wispelaere and Pacolet, 2017; FD Social Security, 2017) has been sharpening competition, in turn driving the firm establishment/bankruptcy dynamism. Meanwhile, part of the Polish and Romanian workforce has now settled in Belgium (7.5% of all self-employed people in the Belgian construction sector have the Polish nationality, 6% have the Romanian nationality) and are hence no longer involved in intra-EU territorial arbitrage (Actiris et al., 2015; De Wispelaere and Pacolet, 2017). As such, construction does appear to take on its classic role as a conduit for the economic integration of migrant labour. Unfortunately, this type of labour market integration does not guarantee decent lives; official data can be misleading in that regard. Construction wages are considered "average" compared to wage levels in the BCR, with 64% of daily gross wages ranging from €100 to €149 (Actiris et al., 2015). As a point of comparison: the gross

daily wages in hotel and restaurant and domestic work, which are the lowest-paid formal jobs in Brussels, never exceed 100 euros (Actiris et al., 2015; Statbel, 2017a). Moreover, despite their "average" character, these wages do not guarantee access to affordable housing in Brussels. Housing (and housing costs such as water and electricity) consumes on average of 39% of household income in the BCR (Statbel, 2017b), varying from 46% of household expenditure for the lowest incomes to 27% for the highest incomes. Dessouroux et al. (2016:11) calculated that if "25% of income is dedicated to rent, only 1% of the housing stock is accessible to 40% of households with the lowest income (lower four income deciles)."[21] Since more than 70% of employed construction workers live in Brussels, low wages push most of them to live in overcrowded conditions, with several families sharing one floor, and generally to bad housing conditions.

A second foundational lens focuses on the degree to which the Brussels construction sector caters to the local market. A first and perhaps common-sensical observation is that the market for construction is primarily local because of the fixed nature of the built environment, hence structuring construction along the lines of population density – an observation in line with the urbanization activity definition of Schafran et al. (2018). However, the way in which construction is embedded in local supply networks, trust relations, and urbanism and planning traditions also adds to urban autarky in this domain. Trust between construction partners and suppliers plays an important role in the construction business (Benko et al., 1996; Granovetter, 1985). Trust matters at the level of collaboration with clients in the building and renovating of private housing as an emotional process. In large construction projects in the office or residential sector, risk avoidance and trust in local designers and construction companies play a role as well, as professional real estate clients value these agents' "capacity to get the job done" in dealing with Brussels' regional and local governments when obtaining permits (Vermeersch and Van Garsse, 2015). The decentralized and devolved set-up of urban planning and spatial policy at the local level drives the need for local expertise, much of which draws in uncodified, tacit knowledge on obtaining building permits. The result is a myriad of smaller construction sites that are typically serviced by local enterprises and their suppliers, making international competition – apart from posting practices – unlikely.

Third, and relatedly, a foundational perspective should inquire into the extent to which the Brussels construction sector is being sheltered from international competition. At first sight, the relevance of local employment and local enterprises in construction projects suggests a sheltered part of the economy. However, current labour market dynamics are undercutting the grounded nature of construction. Despite structural unemployment in much of the neighbourhoods where construction firms are located and operating, there is an imbalance between the demand for and supply of construction workers. The Brussels construction sector needs at least 1,200 new workers per year (Construction Confederation, personal communication, 10 July 2015), but the full-time schooling system trains less than 100 construction workers per year (Constructiv, 2010). The lack of esteem for construction work prevents parents from sending their children to construction schools, limiting the supply of schooled construction workers (Stichting Innovatie & Arbeid, 2015; Xhauflair et al., 2006). This situation is exacerbated by the increasingly precarious labour conditions we touched on earlier. The result is a situation where construction workers are characterized as "low-skilled" citizens, despite evidence pointing to the contrary (cf. May et al., 2007; Wall et al., 2012), legitimizing their "low-paid" labour market status. An additional lowering of wages due to fierce international competition between construction workers further threatens to endanger the livelihoods of

[21] Dessouroux et al. (2016) continue the exercise by stating that in 1997, 28% of the housing stock was still accessible to these people and in 2004, it had already declined to 10%, which illustrates the rapidly changing real estate dynamics in Brussels.

construction workers. The closure or underfinancing of schools that focus on vocational training has made them unable to keep up with the latest construction techniques and materials. Adult re-education programs are faring better, but they are too small in scale.

A key aspect involved in the sheltering of the construction sector that has received little attention thus far is how the local state functions as a landlord and developer of public infrastructure. This is difficult to capture in clear and transparent data because of the diverse nature of this patrimony and infrastructure – from streets to schools –the absence of spatial data and fragmented ownership that is scattered over diverse governmental institutions. Enterprises specialized in roadworks and utility construction can be isolated from general entrepreneurs and specialized construction enterprises such as plumbing and electricity. Unlike specialized construction enterprises, none of the enterprises that do roadworks and utility construction are SMEs; they are big firms with more than 500 employees. Although they constitute only 1% of all construction companies, they host 12.5% of all construction workers (PFCD, 2014).

4. Making space for a more foundational construction sector

Having analysed the tensions around the grounded character of the Brussels construction sector, this section seeks to "find space" to reclaim public governance to allow for a more foundational construction sector to materialize. In an anticipatory move, it offers a theoretical argument showing how the local government can try to install internal stabilizers in labour and land markets to achieve this end.

4.1 Governing urban labour markets?

The previous section has demonstrated that the Europeanization of construction work through postings is undercutting the grounded nature of the Brussels construction sector. Paradoxically, through rescaling processes (Brenner, 2004), local governments are held politically responsible for structural unemployment in their territories, while international dynamics are preventing local agency from solving it. While European posting laws have been key in disrupting labour markets, acting as external governors, and given that the Belgian government and sector organizations are concerned about postings and their effects on Belgian companies, postings' omission from official reports is striking (Construction Confederation, 2015, 2016; Constructiv, 2015; De Wispelaere and Pacolet, 2017). This omission appears to help in presenting postings as an ungovernable, external threat to be remedied, preferably by lowering the salaries of "domestic" construction workers. Sector organizations have been lobbying to reduce social security contributions and wage levels to remain competitive with such levels in other EU countries (Bouwunie, 2019; Construction Confederation, 2017). Such a framing ultimately legitimizes "solutions" that enable a continued race to the bottom, in which construction work is radically devalued and further pushed into speculative-spectacular dynamics. Pitched as a question of domestic competitiveness, however, no questions are raised in relation to social reproduction, nor about the quality of employment, such as the labour conditions (wages, safety, housing, family relations, prospects for permanent migration, etc.) of workers in these schemes, skating over their detrimental effects.

The lack of representation of the posting phenomenon is even more striking when we look at standard recipes for urban economic development that focus on making the city more attractive for "high-skilled" mobile workers. Paradoxically, underpaid construction workers are building high-speed train stations and high-end housing that further increase land rent and gentrify them out of the city they have built. Apart from detrimental humanitarian consequences, the lack of a policy for intra-EU postings represents a missed

opportunity as well, because some of the mobile migrant workers will eventually settle in Brussels, start their own businesses, and contribute to local multiplier effects through their income and to the Belgian social security system through taxes (cf. Polish and Romanian construction workers). Policies could move beyond a social dumping framing and start appreciating how mobile workers support key construction-related activities that are simply absent or undersupplied domestically. De Wispelaere and Pacolet (2017) see two different dynamics at work in postings: on the one hand, there is a pushing-out of Belgian workers in certain construction jobs, and on the other hand, there is complementation in undersupplied jobs. Since both dynamics are put under the heading of social dumping in the discourses today, the authors suggest separating them in order to be able to design specific policies to protect subsectors of construction. This strategy only focuses on the protection of domestic workers, but in the case of complementation of undersupplied jobs, strategies like embracing immigration can work. Unfortunately, almost no political party will want to take the electoral risk of directly encouraging migrant workers to permanently settle in Brussels or in any European city today, not even if this implied capturing a part of the locally created surplus. Furthermore, the widespread use of postings implies a structural demand for cheap construction workers, a demand that is reinforced by governments through public procurement in construction, where enterprises win tenders by being the cheapest. Lobby and sector organizations somewhat ironically state in their annual reports "to be sad not to be able to engage Belgian construction workers" for the construction of public buildings because Belgian construction workers are too expensive (ADEB-VBA, 2016; Construction Confederation, 2016). Instead of making construction workers cheaper, governments could also change the weighting of certain criteria of public procurement.

Although the disruptive impact of European posting law on the local construction market can only be undone at a European governance level, a local government can enhance its local political capacity to support the grounded nature of the construction sector. Based on the FE analysis, this can address the pressing need for the revalorization of skilled construction professions, the need to structurally increase the volume of schooled workers by building and reinvesting in construction schools, and especially the need to break the low-skilled/low-paid connection for jobs that play an important role in the social reproduction of the city. Furthermore, procurement assignments, especially those related to construction, are directly related to the sheltered dimension of FE and to the spatial dimensions of economic activities that are related to social reproduction. Governments are by law obliged to work with procurement procedures for every building, every street, and every park or school, etc. By writing certain social (*and ecological*) criteria into their tenders, governments can impact the wages and working conditions of construction workers and intervene in the local labour market. Today, public tenders typically focus solely on price competition, overlooking social, environmental, and architectural or heritage concerns.

4.2 Governing urban land markets?

Real estate dynamics impose a strong normative land value dynamic, where farmland and manufacturing land are considered low in value, although they are essential to the functioning of metropolitan areas. However, the value can be judged in many ways. The FE literature elaborates on the notions of "point value" and "supply chain value" (Bowman et al., 2014). Where "point value" is defined as the financial value of a certain good or service (a piece of land, an enterprise, etc.) at a certain time and place, "chain value" covers the value of goods or services throughout the entire production process of economic activity. Where point value isolates the individual parts of the production process, chain value is a way of seeing them rather as inseparable. When looking at "chain value" in "foundational urban systems" (Hall and Schafran,

2017), we look at the value in relation to the total production process of FE activities. In this way, available space or land appears to be a crucial element in the provisioning of foundational urban systems and can no longer be valued as an isolated good.

Property development follows a point value logic and favours office land and residential land in closing the rent gap and maximizing profit. Since we cannot live without the buildings and infrastructure where the goods and services related to social reproduction are consumed (and/or produced), one of the conclusions of the case study is that taxing land as an internal stabilizer is not sufficient to guarantee certain basic functions in metropolitan areas. Taxing land is a viable strategy to redistribute the created surplus, but to preserve FE activities in the city we need to look for strategies that intervene in real estate dynamics. This can be done by looking at the land from a chain value perspective, where freezing land rents seem necessary to provide workspace for economic activities that are related to urban social reproduction.

Centrally located workspace for construction enterprises – such as depots or ateliers – in proximity to clients and suppliers is indispensable to organizing the production process of construction. It seems that keeping construction enterprises and materials in proximity to construction sites is an important cost-reducing factor. All over the world, spatial policy instruments have been used to turn mono-industrial land into mixed-use development areas, thereby instigating industrial gentrification and pulling the land of productive and industrial economic activities into the spectacular-speculative realm (De Boeck et al., 2017). This happens in a context of financial austerity and confronts us once more with the challenge of scale in relation to governance: property-led development, densification, and the initiation of gentrification processes through rezoning policies are often the only way in which municipalities can improve their precarious financial situation, as is certainly the case for Brussels (Kesteloot, 2013). In addition to zoning policy, public land ownership can be used to freeze land rent mechanisms and to guarantee affordable workspace in the city centre.

Referring to the example of concrete production, the Port of Brussels is an emblematic example of how public land ownership can be used to anchor foundational activities in central locations of the city. The banks of rivers and canals in inner-city areas are well-known in critical research on urban development projects (UDPs), which has documented the emergence of exclusive waterfronts or commercial districts, “foreign direct investment” enclaves, and other projects that have led to fierce gentrification and the creative destruction of neighbourhoods, replacing them with “generic” architecture (e.g., Koolhaas, 1995). Despite the pressure on the Port of Brussels to enrol its land in a property-development logic (Mazy, 2017), it continues to provide affordable, long-lease contracts to enterprises with canal-related supply and export activities.

Apart from the real estate dynamics, this example of the Brussels canal banks indirectly points to heavily contested UDPs as spaces to reconnect economic activities to social reproduction. To the extent that UDPs act as producers of public infrastructure, they add considerably to the liveability of the urban environment. Water supplies or sewage systems are foundational urban systems and cannot be self-provided by individuals but need to be organized collectively (Hall and Schafran, 2017). Current counterexamples of UDPs contributing to the social reproduction of the city do exist, in the form of urban projects where the provision of public infrastructure (e.g., upgrading public transport hubs) is still a cornerstone of urban intervention (Loeckx, 2004, 2009; Masboungi, 2013; Smets and Shannon, 2016; Solà-Morales, 2008). Next to this tradition, with its Southern European origins, global examples of innovation can be found, notably in South America. These include the construction of the cable car in Medellín, Colombia, to unlock the

barrios on the mountains and facilitate access to work by reducing workers' travel time by more than half (Sennett, 2018). Apart from current traditions, historical precedents can be cited, for example, the many health and sanitary interventions in cities all over Europe during the 19th century and early 20th centuries (Froud et al., 2018; Sennett, 2018). Instead of being part of a global interurban competition to attract foreign investors (Harvey, 2006 [1982]), this tradition shifts the focus of UDPs toward increasing the liveability of cities through the urban design and planning of neighbourhoods, social housing, squares, streets, parks, benches, lighting, planting schemes of public space, etc. Next to the direct provision of urban infrastructure, urban and regional governments (can) use planning regulations but also urban planning charges or incentive zoning practices to force UDPs to improve the liveability of the local urban environment (Levy, 2016). Dominant scholarly attention for the disruptive nature of UDPs has somewhat hidden this tradition from view and has linked the construction sector primarily to the disruptive and global mode of UDPs, thereby neglecting its local dimensions and alternative approaches alike.

Whereas today a finely grained landscape of small construction enterprises already caters to the everyday housing needs of dwellers, the segment of the construction sector that is usually associated with these large UDPs could also operate in a more foundational way. To the extent that this is linked to more socially and geographically sensitive approaches to public procurement, the local labour market could benefit from such an alternative project mode too.

5. Conclusion

Witnessing the ambiguous character of construction as both embroiled in spectacular-speculative urbanism and as being supportive of the everyday reproduction of the urban built environment, this paper has sought to distil a number of dimensions that characterize construction activities as being part of the foundational economy. The paper took inspiration from the Foundational Economy Collective (2018) but also drew on a long tradition of urban studies debates around what constitutes the basic economy of the city. Our conclusion was that the foundational economy idea echoes Blumenfeld's (1955) position that the basic economy is in fact constituted by those activities through which citizens supply one another. Urban development policy should, therefore, focus not only on the inherently volatile segments of the urban economy (Florida, 2004; Glaeser and Saiz, 2004; Glaeser, 2011) but also on the economic activities that maintain the daily functioning of the metropolis and its citizens. This is not an argument for some autarkic city-state future, but rather an argument for a more realistic vision for achieving a sound urban export base by focusing on the internal consumption of a city's citizens. It is also an argument for a more deliberate vision and strategy to help the urban government find the levers that can set in motion internal stabilizers for the urban economy.

Drawing on a case study of the construction sector in Brussels, we have aimed to unearth the contradictions around what we consider an archetypical example of foundational activities. The Brussels construction sector increasingly experiences competitive pressures through its enrolment in pan-European labour markets and is prone to rise pressures on urban land that prefigure capital switching to high-end activities. Nevertheless, against all odds, construction in Brussels continues to play its role as an internal stabilizer of Brussels' economy. That role hinges on the specific structure of the sector, based on dynamic SMEs that are easily accessible to parts of the labour force excluded from the "apex" service economy around the city's national and international administrative, financial, and legislative functions. It is also supported by fine-grained, inner-city geography that appears to ingeniously blend into inner-city residential areas. We would like to recall that the insights from this study are predicated on the specific continental European

context, where urban development strategies and linked urbanistic approaches are still oriented more explicitly toward the provision of public goods. This implies that the research context cannot be assumed to be the mirror image of the Anglo-American neoliberal, post-industrial prototypes that are common currency in urban studies. Crucial to our case is the observation that Brussels is indeed marked by a process of creative destruction – Brusselisation – reminiscent of the neoliberal heartlands. At the same time, Brussels, as part of the Belgian variety of capitalism, is still marked by a relatively strong welfare state, even though the deepening European austerity regime has punched holes in its fiscal foundations and further opened up domestic labour markets to mobile workers, who are often not well protected socially. Somewhat ironically, despite hosting the European Institutions, Brussels is very much experiencing Europe as an external governor of its urban economies. Reviewing what is possible in the areas of both labour and land markets, the paper has argued that strategies around public procurement, land ownership, and UDPs can, in fact, help the urban government to regain its role as internal governor *and* find ways to anchor construction as a foundational activity in the city.

Urban governments should not only mediate the redistribution of a part of the created surplus through social licensing (Bentham et al., 2013; Bowman et al., 2014; FEC, 2018) and tax privatized land to capture a part of the rent (Engelen et al., 2017). This paper claims that they also have to be actively involved in governing land markets through strategies of "freezing" ground rent dynamics, to guarantee the spaces of consumption and production of basic goods and services. These (work) spaces risk being gentrified (cf. Edwards and Taylor, 2017; Ferm and Jones, 2016), a process often instigated by local governments through changing zoning policies (De Boeck et al., 2017). To date, however, little is known about the urban economic geographies and the spatial needs of construction work. More research is required to understand the spatial needs of construction enterprises – and other foundational activities – in terms of warehousing, workshops, logistical space, supply chains, and networks. Such sector-specific knowledge is a necessary and valuable prerequisite for formulating new spatial design strategies and spatial planning regulations, especially for such a fine-grained and spatially embedded sector like construction. Mapping the spatial needs and geographies of construction enterprises include research into the possibilities of collectivizing parts of the supply chain, the organization of shared depot space, the development of building typologies for construction enterprises in an urban environment, and the design of logistical routes and hubs.

While urban governments are often crucial actors in spectacular-speculative UDPs that aim to attract exogenous sources of growth, this paper shows that there are historical as well as current traditions where UDPs, in fact, contribute to the infrastructure of everyday life. Since governments lean on the private construction sector to realize UDPs and other public construction works, these goods are literally purchased by the government and mediated by public procurement procedures. Further research is needed on the social welfare potential of public procurement in relation to local labour markets in a context of deep Europeanization. This is not without challenges, because the dynamic of competition is enforced in European procurement law through the prohibition of geographical criteria. Since public tenders are experienced as very time-consuming for both enterprises and public administrations alike, there is a general lack of motivation to explore the margins of creative policy design (Aerts S, head of public procurement of the Brussels municipality of Evere, 16 April 2018). If local governments (and other big players such as universities, hospitals, etc.) become aware of their huge purchasing power, they create a lever that has the potential to intervene strongly into the production processes, working conditions, and the grounded nature of construction.

INTERMEZZO: WORKSPACES.

PHOTOGRAPHS OF THE FIELD RESEARCH OF CASES IN THE BRUSSELS CONSTRUCTION SECTOR

No urban designer or planner has ever made a good neighbourhood. They can only gain insight into the way a successful community works and then support it. I hope that they do not confuse visual order with functional order. The intestines of a rabbit do not look very neat, but they work very well.
James C. Scott in De Groene Amsterdammer (13), 26 March 2008.

There is a quality even meaner than outright ugliness or disorder, and this meaner quality is the dishonest mask of pretended order, achieved by ignoring or suppressing the real order that is struggling to exist and to be served.
Jane Jacobs, 1992:144.

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CHAPTER IV
CHALLENGES TO THE PRESERVATION OF CONSTRUCTION COMPANIES' SMALL-SCALE WORKSPACES IN THE BRUSSELS-CAPITAL REGION (1965-2016)

This chapter co-authored and submitted as a journal article. The reference is: De Boeck, S., Degraeve, M., and Vandyck, F. (2020, forthcoming). Challenges to the preservation of construction companies' small-scale workspaces in the Brussels-Capital Region (1965–2016). In: Brussels Studies.

1. Introduction

While policy-makers are becoming more and more convinced that workspaces are a necessity in the Brussels Capital Region (BCR), the city is at risk of losing most of its small-scale production spaces. Productive functions are consistently losing out to residential functions because of a combination of housing shortage caused by population growth (Dessouroux et al., 2016), the growing need for municipal revenue from property and labour taxes (Kesteloot, 2013), and a strongly regulated and competitive real estate market (Van Criekingen, 2010). This leads to the increasing 'lofting' of industrial heritage. Moreover, construction companies are characterized by historically fragmented geography and an atypical, small-scale form of the organisation compared to companies in other sectors (Hillebrandt, 1985; Lacoste, 1959). The Brussels construction sector consisted of around 12,000 companies in 2014, which include the self-employed (PFCD, 2015). Of these, 71% are micro-companies with less than five employees, and 22% are companies with five to twenty employees. Because they are organized at such a small scale, these companies are not quite visible and accessible to the authorities. However, this small scale is also an advantage, because companies have long been well integrated into the BCR's urban tissue (see Figure 1, Map 1, and Map 2). Construction companies could even be seen as a great example of a successful combination of residential and productive activities in the city. In this article, we focus on the fact that the central location of construction companies constitutes an important added value. We argue that affordable and centrally located workspaces for small-scale industrial activities, such as those of construction companies, should be guaranteed in the city.

We researched the spatial organization of construction companies using qualitative data – obtained from interviews with building contractors[22] – and quantitative data that describe the spread of construction

[22] The case study was based on a series of eight semi-structured, in-depth interviews with building contractors and was geographically delimited through hotspot mapping. We analysed the geographical spread of current companies as well as of the industrial assets of construction companies identified in the 1980s (Inventaire Visuel de l'Architecture Industrielle, by Archives d'Architecture Moderne). Both datasets showed zones with heightened concentrations – or hotspots – that were compared in order to select six city fragments located on both canal banks: Woeste-Basiliek, Weststation, Historisch Molenbeek, Josaphat-Haachtse Steenweg, and Flagey-Malibran. This selection contains continuous and discontinuous commercial activity between 1965 and today. Next, active construction companies were contacted by telephone, visited in person, or sent an e-mail with an invite to participate in our research project. In every selected study area, at least one construction company was willing to participate in a two-hour interview about its history, spatial needs, local embeddedness, etc. Transcripts of these interviews were anonymized. Please note that interview quotes were originally in Dutch and French and have been translated.

companies in the BCR in 1965 and 2016. The data for 1965 were taken from trade and industry almanacs.[23] For 2016, we used the 'Kruispuntbank van Ondernemingen' (Crossroads Bank for Enterprises, KBO) where we selected NACE codes 41, 42, and 43 of the construction sector (FOD Economie, 2016). This historically comparative perspective shows how the construction sector has changed its organization in the past fifty years. Like in the mid-1960s, Brussels nowadays is characterized by population growth and a favourable economic climate, which manifests itself in high construction activity. In 1968, the BCR reached a demographic peak, with 1,079,181 inhabitants (Observatorium Gezondheid en Welzijn Brussel, 2006). After a strong decline to 948,122 inhabitants in 1996 (Hertogen, 2015), in 2016 the number of inhabitants increased to 1,187,890 by 2016, 10% more than in 1968 (Bernair et al., 2018). The number of companies in the construction sector declined by 15% during that period, from 4,433[24] to 3,830. By way of comparison, office stock increased more than tenfold during the same time period (Dessouroux, 2010). The decline of construction companies is caused in part by technological developments in the construction sector, by changing demand, and by the fact that Brussels is served by (often cheaper) construction companies from outside the BCR. However, the decreased availability of centrally located and affordable commercial spaces plays an important role in this too, because it complicates the production process and makes it more expensive. Several policies can help guarantee such workspaces.

Today, there is not much data on the production spaces of some economic sectors active within the territory of the BCR. Governments, unions, and educational and sector organizations do not pay attention to the spatial needs of construction companies, apart from mobility issues.[25] Although workspaces in the BCR were systematically mapped during the past decades, most construction companies fell off the map because registration only starts from 1,000 m^2 (De Voghel et al., 2018). Most construction companies occupy small plots, with sizes varying from 130 m^2 to 520 m^2, as can be seen in Figure 2, and have an average plot size of 223 m^2.[26] The statistical upper limit of the plot surface area of all construction companies is 1,050 m^2, which means that almost all construction companies occupy a surface smaller than the one measured.

[23] From the 1965 Almanac, 43 professions related to the construction sector were selected (excluding suppliers). The 4,433 companies corresponding to these categories were manually entered into a database, after which they were automatically mapped in GIS based on their address, using geolocalisation tools.

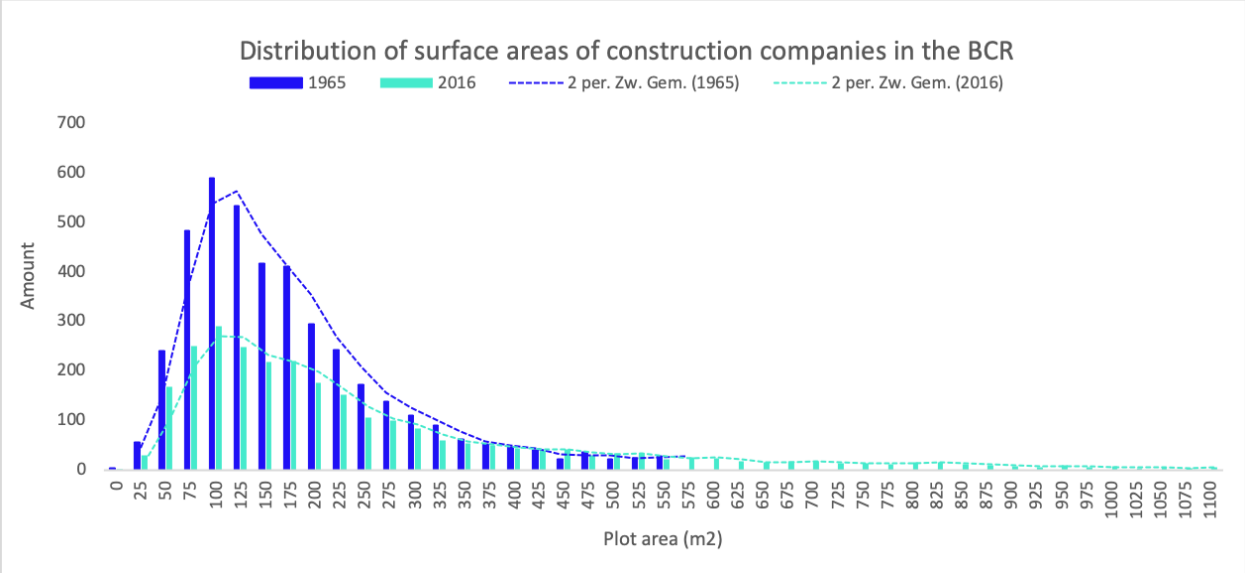
[24] In the 1965 Almanac, 4,433 construction companies were identified. The 1961 trade and local industry census provides a somewhat higher but still comparable number of 4,819 Brussels construction companies. The 1970 census mentions 4,618 companies.

[25] Close to fifty government and sector reports were scrutinised in search of the views and position of organisations like the Construction Confederation, Constructive, Actiris, the unions, etc. regarding available and affordable workspaces for construction companies.

[26] This data on the surface of construction companies should be partly nuanced by critically looking at the values measured. The surfaces measured were calculated by plotting address points on a cadastral map, based on KBO data. Our observations have shown that the registered office of a construction company and the company premises are often, but not always, located at the same address point. In this way, the surface is partially occupied by administrative address points and/or in some cases the place of residence of the company owner. Therefore, it is possible that the average surface of these construction companies that is calculated is somewhat smaller than in reality. On the other hand, these numbers can be partly nuanced using qualitative data. The building contractors interviewed indicated that they sometimes rent extra space according to need, like storage and parking space. This means that the total surface of a company's premises changes throughout time. Nevertheless, the average surface areas are still a good indication of the spatial footprint of construction companies.

©Building Brussels, (phot by Frederik Vandyck).

Figure 1: Brussels building contractors' embedment in the dense urban fabric



Sources: Almanacs (1965), Crossroad Bank of Enterprises (2016); processed by Matthijs Degraeve & Frederik Vandyck (surface calculated using ArcGIS-software on the contemporary cadastral map).

Figure 2: The surface area of construction companies in 1965 and 2016 in m²

Even though small-scale workspaces often house economic activities that are essential to the daily functioning of the city – like the construction sector – they are often valued only in terms of their current market value, also called 'point value' (Bentham et al., 2013). Functions with a lower 'point value' can, however, be appreciated differently if we employ an ecological perspective and view the city as a metabolism that requires certain functions for its daily operation. In this context, Bowman et al. (2014) speak of 'chain value', which means looking at the value of the entire and interrelated production process. Production space is then to be valued not only as an isolated good but rather as an essential part of the functioning of the city.

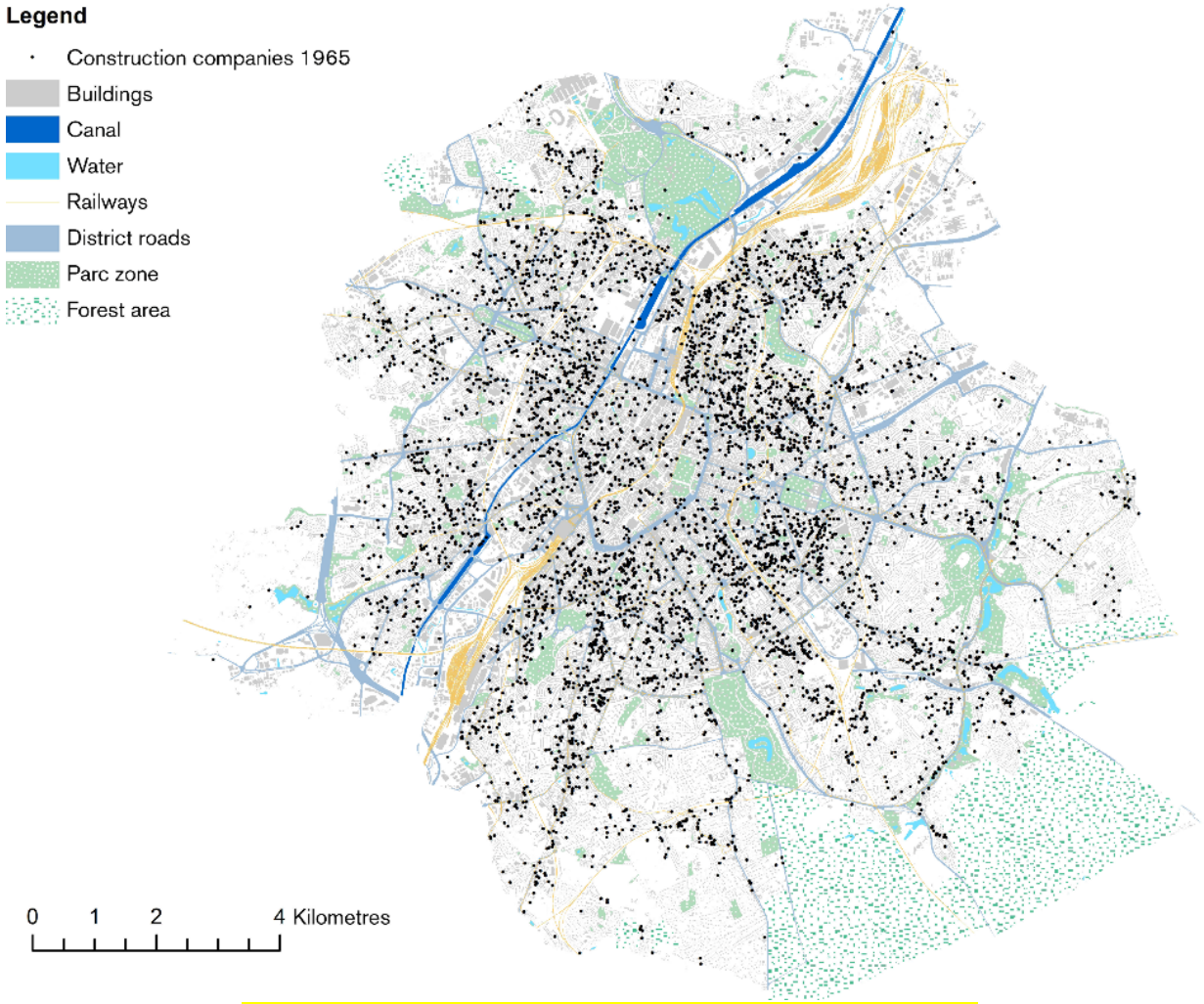
2. Geography of Brussels construction enterprises

In 2016, there were 3,830 construction companies that were widespread throughout the entire district and displayed a decentralized spatial pattern. Maps 1 and 2 show that in 1965 and in 2016, construction companies were often located in residential areas. The density of construction companies' locations, visible on Maps 3 and 4, shows that construction companies have historically been closely interwoven with the urban fabric. Some concentrations of construction companies, like in the Piersstraat in Molenbeek, are very path-dependent and can be traced back to the nineteenth century (Degraeve, *forthcoming)*. New concentrations were also formed during periods of urban expansion, for example on the border between Jette and Koekelberg. On the other hand, the construction companies that were located in the Vijfhoek have almost completely disappeared.

Reasons for being located in a certain area include a thorough knowledge of the neighbourhood because one lives or works there (Hayter, 1998), with the additional factors of affordable land, the site's accessibility, and in some cases the proximity of clients. A contractor from Jette says: "At first, we were located a bit further down the street. From there we moved over here in the 1960s because it was too small there. Why this area? I think my father and grandfather lived close by, in Koekelberg. That was like the countryside back then and still close to Brussels. It was probably cheap land."[27] A contractor from Molenbeek states: "I lived in the neighbourhood with my parents. During this time, my father rented a plot at the corner of the CPAS to store his materials. This is why I stayed in the area." A carpenter from Jette knew the area through his job: "I more or less knew the neighbourhood. And one day, I came back from the army and when coming back at night, I saw that this area was available and that is when I really took off. During this time, Jette was not yet the centre, and therefore rental prices were low. I had modest means when I first started, so I didn't know how to afford a very large workshop."

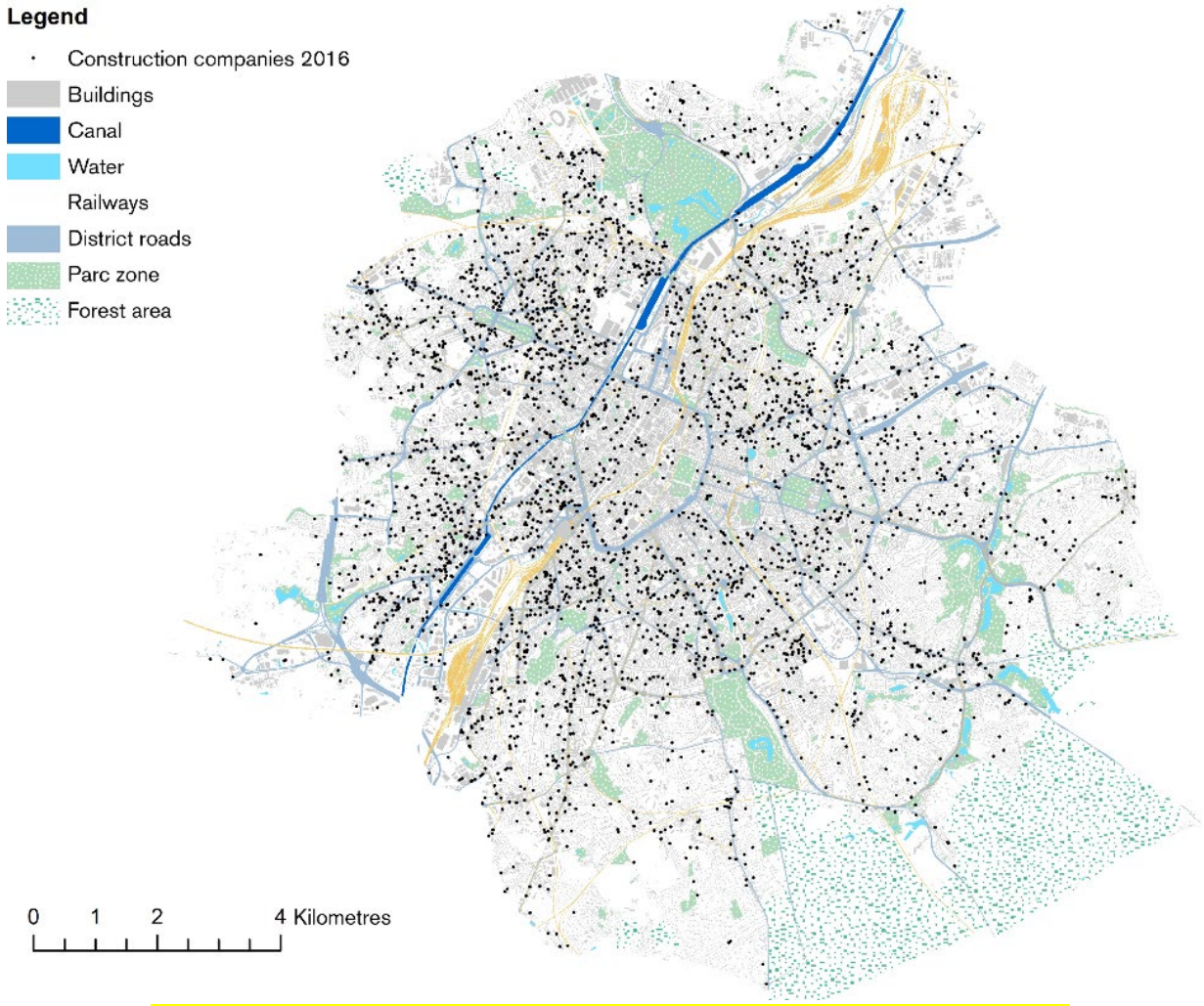
In the past, family-run businesses did not have trouble finding premises, because according to the owners there was a relative abundance of affordable plots. Today, everyone indicates that it has become very difficult to find available workspace. Some construction companies are looking for other locations in Brussels but cannot find any. Some small building contractors even work without any workspace: "I know several business owners who don't have a workspace. They have their van. They go to the client and they work on the road with two trestles."

[27] Research conducted in the trade almanacs confirms that this contractors family repeatedly relocated close to their existing home base, and hence in a familiar environment where existing relationships with clients, suppliers, etc. could be preserved. In 1946, the grandfather of the current manager pops up in Molenbeek. By 1953, he is in Koekelberg. In 1954, he has moved down a couple of streets, to Jette, and in 1965 he moves once more, further down the same street, where the company is still located today.



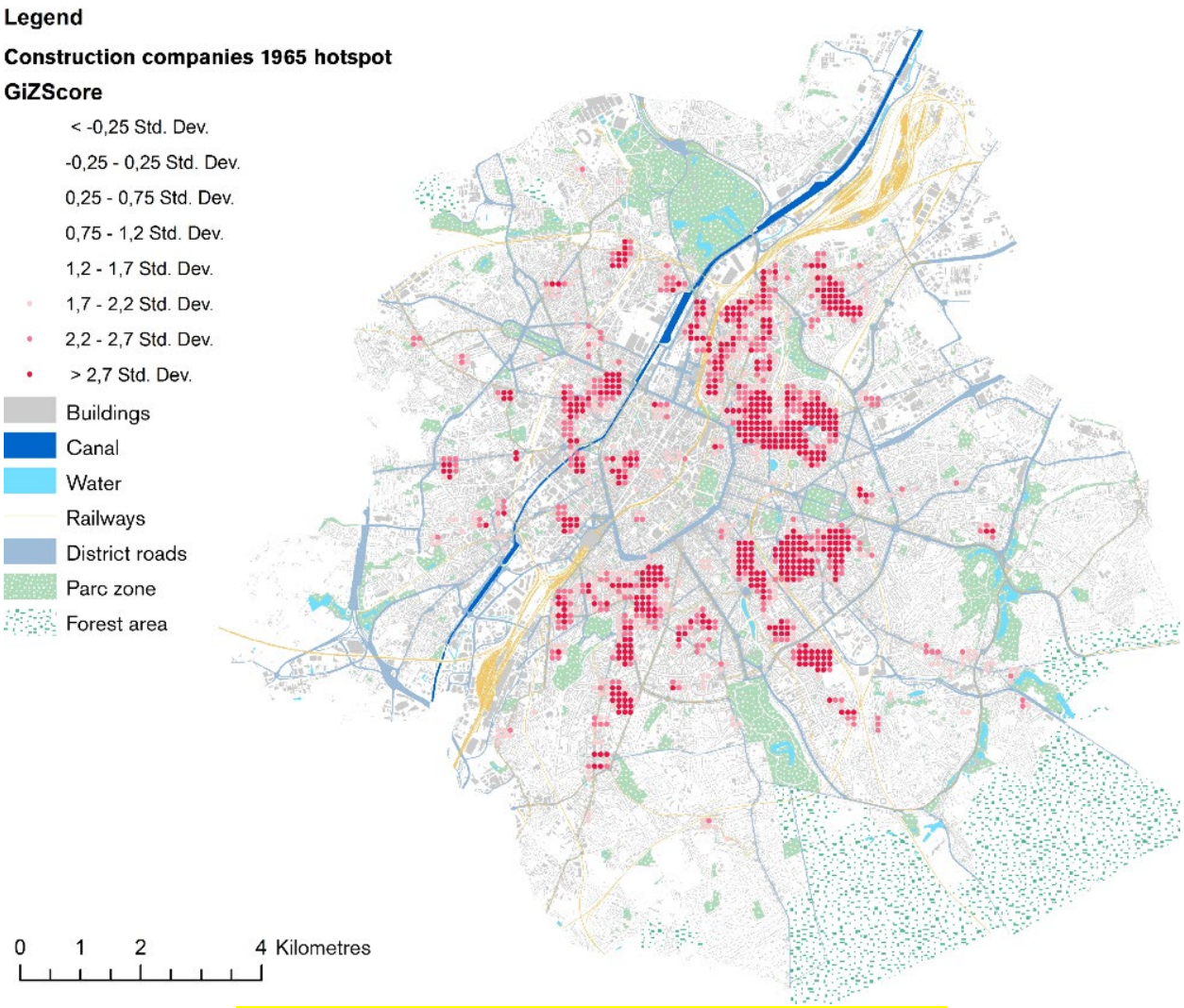
Source: Almanacs (1965), processed by Matthijs Degraeve & Frederik Vandyck; mapped by Frederik Vandyck.

Map 1: Construction companies' locations in the BCR in 1965.



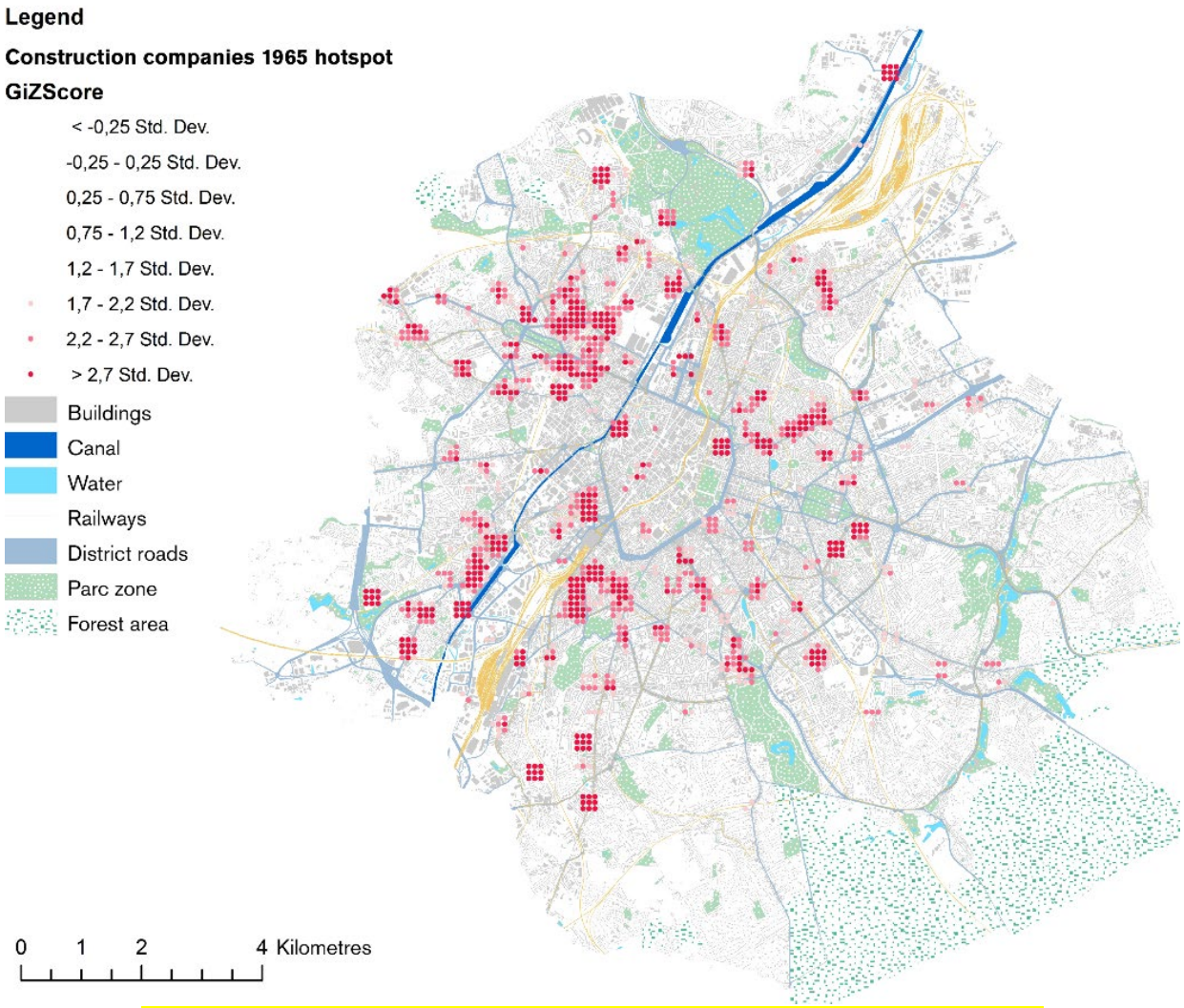
Source: Crossroad Bank of Enterprises (2016); processed by Matthijs Degraeve & Frederik Vandyck (address points selection of enterprises with NACE 41, 42, 43), mapped by Frederik Vandyck.

Map 2: Construction companies' locations in the BCR in 2016



Source: Almanacs (1965), processed by Matthijs Degraeve & Frederik Vandyck; mapped by Frederik Vandyck.

Map 3: The density of construction companies' locations in the BCR in 1965



Source: Crossroad Bank of Enterprises (2016); processed by Matthijs Degraeve & Frederik Vandyck, mapped by Frederik Vandyck.

Map 4: The density of construction companies' locations in the BCR in 2016

Others call on district authorities for assistance, with no results: "I am registered on the SDRB list[28] (Citydev). Every Friday, they send me a list of all available shops. But there are no available shops. […] They already offered me warehouses in Tour & Taxis, but I don't need warehouses; I need a workshop. If it was only about plumbing and electricity, you can say that a storehouse would suffice for the pipes and electrical equipment. However, as a carpenter, I need to be able to saw panels, assemble doors… […] And in Brussels, there is nothing left." When we compare Figure 2 with the building inventory of Citydev (2018), we see that today, about 10% of assets are occupied (partially) by construction companies. The average surface of Citydev's lots (5,355m^2) is after all twenty times the area of the average construction company (223 m^2). Here, it is striking that of the forty-three construction companies that are being housed in these, most opted for small buildings that are moreover located in the dense urban fabric.

[28] SDRB is the former designation of Citydev, the public developer of the Brussels Capital Region.

While storage space is relatively easy to find according to the interviewees, combining several functional spaces is a more complicated issue: “The problem is that you need parking spaces, you need storage space, you need office space. Hence, there are many functions coming together. If you want a bit of an area, you quickly reach the limit. You will easily find storage space, for example. In Kuregem, for example, there is a lot of storage, relatively speaking. But it often does not come with an office function. Hence, the combination is very difficult.”

Although some building contractors indicate that the industrial parks – ‘les zonings’ – located in Flanders and Wallonia would be perfect locations for their companies, the desirability of these parks is not so much related to the location of these sites but also, and especially, to their morphology. Every interviewed contractor prefers to stay in Brussels with their company. A carpenter in Jette, for example, loses a lot of working time because of an unsuitable workshop and the impossibility to park on the lot: “Compared to a workshop where you have everything at the same level, you lose a lot of time. Go to the front, the back, prepare everything, assemble everything, bring everything down, load everything, unload… it’s a crazy amount of time that we lose.” He explains that he is forced to charge his customers for the extra staff time, making him more expensive.

3. Spatial relations of Brussels construction enterprises

3.1 Relationships with clients and construction sites

The construction sector’s spaces of production – the construction sites – are constantly on the move. Therefore, building companies do not only value having their own, city-based premises and the typological advantages and disadvantages of this space, but also the way in which they spatially organize themselves in the public spaces of the city.

Since the 1960s, the nature of construction companies’ work has changed significantly. The (small-scale) new-build market was largely saturated by demographic stagnation, the number of plots available for new build decreased, and new build ended up in the hands of a few large construction companies. Meanwhile, the importance of renovation and maintenance work increased, which meant that construction companies had to be able to access any part of the city at all times. Several company owners explained that the current traffic and parking problems in the city constitute a serious challenge. Transport costs have risen sharply between the 1960s and today, not because of the large distances covered but because of the time, it takes to travel across small distances and the personnel costs involved in this. The volume of traffic on the roads means that it takes longer to reach a building site and finding and arranging to park is no easy task. Apart from the enormous stress placed on available parking space – caused among others by residential densification – construction companies are confronted with decentralized parking regulations and the absence of digital payment systems. Small-scale construction companies face similar parking issues close to their business premises. This is especially so for those companies who cannot park their vehicle fleet on their own site, especially in neighbourhoods undergoing a population increase and accompanying residential densification.

If a company’s premises are large enough to park work vehicles on-site, however, Brussels turns out to be a cheap operational base for construction companies. Extra transport costs caused by traffic jams in Brussels are high but still pale in comparison to the transport costs involved in entering the city (Vermeersch, 2019). One contractor from Jette, for example, says: “Traffic jams? You don’t fix that problem

by settling outside the city. For twenty-four years, we had storage space in [the north-western periphery][29] because we owned a large site there. In the end, though I sold it because the traffic problems between the E40 and Brussels had become very large. We lost way too much time. Now, we order at suppliers and we have storage space here." Or, as a contractor from Molenbeek explains: "I find the location of Brussels good. To get around, to get out of Brussels, to enter… this is how I ended up staying here. My goal was to not go to an industrial park; I wanted to stay in Brussels because the majority of my clients were in Brussels. They still are."

3.2 Relationships with suppliers

Brussels construction companies operate on a small scale. This means that they are not only spatially well embedded in the residential tissue, but according to interviews they are territorially well embedded as well, given their relationships with construction material suppliers.[30] With a few exceptions, these suppliers are all located within the BCR. The morphology of the site and access to the supplier are important to construction companies. Building contractors indicate that they gain a lot of time if there are ample parking spaces and enough space to load and unload.

Moreover, relationships with suppliers that are based on trust are as important to the organization of the production process in the construction sector (Buzzelli and Harris, 2006). A contractor states: "The advantage that I have is that I have the trust of the boss. That means that I can go into the shop, I serve myself, I put everything into my truck, I pass by the office, I tell them what I took. I don't have this advantage elsewhere. There, I am a client like everyone else, I await my turn, I wait until I am served, and I wait to pay." These relationships based on trust have spatial implications as well. On the one hand, contractors sometimes travel larger distances because they are on good terms with a supplier on the other side of, and in exceptional cases even outside, the city.

A carpenter from Ixelles says that he works with suppliers in Forest, Molenbeek, Jette, and Mechelen. On the other hand, these relationships often play out on a neighbourhood level. Interviews have shown that this was not just the case in the 1960s (the same carpenter from Ixelles had a regular supplier a few streets down) but is still often the case today. Even though they can find the same product farther away for a better price, many company owners choose to shop locally: "Even if certain products are a bit more expensive sometimes, I know that the store is in my area. I don't want to spend an hour in the car and stupidly spend money for a panel that costs a little less."

The territorial rootedness of the relationships between building contractors and their suppliers is under pressure. Company owners explain that trust-based relationships disappear because suppliers are systemically acquired by multinationals: "In the past, we had our regular suppliers, companies with an owner like me, whom we knew personally and were on pretty good terms with. Now, they're all big guys. A construction materials manufacturer not owned by a large international firm, you name them for me, but you're not going to find many anymore. We have a much more casual relationship with them."

[29] Location anonymised.

[30] Although it does not exclusively look at construction companies, the yearly survey of the Port of Brussels indirectly confirms this claim. The survey asks companies about their cooperation with Brussels- and non-Brussels-based suppliers (Brussels Observatorium voor de Werkgelegenheid, 2016). The survey shows that companies located on port grounds are more strongly territorially rooted if they have up to twenty employees. The larger the company – measured on the basis of number of employees – the less frequently it makes use of Brussels-based suppliers.

©Building Brussels (photo by Frederik Vandyck).

Figure 3: The hundred-year-old structure that was a timber trading company until recently

Moreover, more and more suppliers are leaving the city. Because of their large claims on space, they are very susceptible to the prevailing real estate dynamics, with rising land and rental prices leading to 'lofting' – a systematic conversion of industrial into residential space, also known as industrial or commercial gentrification (Curran, 2010; Wolf-Powers, 2005). Building contractors and especially suppliers with a large spatial footprint see this development as a threat to the continued operation of their company. Owners of larger plots are worried about being expropriated by Citydev because their land is ideal for residential developments. They are also worried about finding a successor and fear that they will be forced to sell to a real estate developer. Renters, in turn, are worried that their contract will not be renewed. A timber trading company in Schaerbeek, for example, had to close after almost one hundred years because the owner found it more lucrative to sell the land to a real estate developer (Degraeve, De Boeck and Vandyck, 2018). Moving operating activities to another location is moreover not at all self-evident. Within Brussels, available commercial space is becoming scarcer and scarcer because of the same trend. Moving outside Brussels means worrying about whether clients will follow. The timber trading company in Schaerbeek that we mentioned spent a long time looking for a new location, to no avail, but would not consider a property outside Brussels: "If you move, clients don't always follow, you know. […] If my husband asks our customers whether they would follow, they say no."

3.3 Relationships with workers

The construction sector has always been characterized by the high mobility of construction workers (Martini, 2016). In times of high demand, like in the 1960s (Versichelen, 1969) and today, there is a persistent shortage of construction workers and a permanent need for more builders. As soon as a new means of transport allowed for it, low-skilled surplus labour migrated (seasonally) or commuted in large numbers to major hubs of growth where their cheap labour was in high demand. When the reach of these means of transport expanded, the geographical scale of labour migration grew as well. A well-developed (regional) railway network around Brussels ensured that as early as 1910, no less than 31.7% of the 16,400

construction workers employed in the Brussels agglomeration at that time lived outside the city, especially in the surrounding Brabant villages (Scholliers 1990). The 1961 trade and local industry census show that increased car use in the twentieth century meant that already then, as much as 56% of the 45,741 people employed by Brussels construction companies came from out of town (NIS, 1967).[31] The construction sector's number was much higher than the total employment sector's general average of 32.4% commuters in Brussels in 1961 (NIS, 1967).

Today, there is an opposite tendency, where Brussels construction companies employ only 30% of commuters from outside the BCR. We suspect that this is in part related to the flexibilization and precarisation of the building profession, a strong tendency towards self-employment (De Boeck, Bassens, and Ryckewaert, 2019 *forthcoming*), and a large number of non-Brussels-based construction firms, whether they work as subcontractors or not. The number of firms from Flanders and Wallonia working on Brussels-based building sites is hard to quantify, but there is data on seconded workers. A large part of the demand for un- and low-skilled construction workers is fulfilled via intra-EU seconded jobs[32] through labour migration on a continental scale. De Wispelaere and Pacolet (2017) explain that for Belgium, 30% of seconded construction jobs should be added to the official employment statistics. From the numbers requested from the Rijksdienst voor Sociale Zekerheid (National Social Security Office, 2018), we see that for the BCR, this actually concerns an extra 75% (!). The Brussels building contractors interviewed state that this practice leads to unsustainable pricing competition with companies that work with intra-EU seconded jobs.

4. Conclusion

The construction sector remains an important player in the urban economy for new-build, renovation, and maintenance works. Moreover, it is an important sector that creates local jobs. Our research shows that the way in which construction companies spatially organize themselves in the city plays an important role in their endeavour to remain competitive. Construction companies moreover are constantly on the lookout for flexible adaptation strategies to more efficiently and productively organizing the work. The number of construction companies has declined sharply between 1965 and 2016, however. Apart from technological innovation, changes in the production process, and a constantly changing demand that form part of the sector's development, this is caused mainly by the lack of availability of centrally located and affordable commercial premises.

From the perspective of 'chain value' and as confirmed by interviews, small-scale and centrally located workspace has a crucial role in the construction sector's production process. We see that a strongly regulated and competitive real estate market in which residential functions and offices are more financially attractive than workspaces leads to the latter losing out. This means that if we want to preserve productive

[31] I.e., the 1961 population census indicates that only 20,296 people living in one of the nineteen Brussels municipalities were employed in the construction industry (NIS, 1967). According to Versichelen (1969), 25.9% out of 750 surveyed structural construction workers state that they commute to work by car, while the industry survey of 1961 shows that only 14.1% of the total active population takes the car to work.

[32] A seconded job is a job performed by a person domiciled in a European country who is coming to work in Belgium through a system of mobile labour migration. Social security contributions are paid in the country of residence. Apart from the employer's advantage of cheaper social security contributions, these seconded employees turn out to work more hours a week for the same wages, often under provisions of fictive self-employment and abominable living and working conditions (see also De Boeck, Bassens, and Ryckewaert, 2019).

activities – in this cause the building industry – in the city, we need to safeguard small-scale, affordable production spaces. In what follows, we present a number of specific proposals that can help urban authorities guarantee small-scale production space for construction companies:

When analysing the geography of construction companies, we see that the government should also map production spaces smaller than 1,000 m^2. Entire sectors using small-scale workspaces – such as the construction sector – are practically invisible to policymakers, and it is these sectors that benefit from an approach that considers their specific needs.

If we look at production space from the perspective of 'chain value', it becomes important to intervene in land rent mechanisms in order to safeguard this space and keep it affordable. This goes for workshops and storage space of urban construction companies but also and especially for suppliers, who are having trouble locating in Brussels with their large-scale claim on space. The possible disappearance of these actors from the urban fabric puts pressure on the territorial rootedness of the entire production network. The government can play an important role in this by implementing strategies that 'freeze' real estate dynamics in some places and that prevent the expropriation of production space.

Nowadays, private workspace is almost always converted into residential space, leading to its quick disappearance from the city. A licensing policy that limits the possibilities for conversion makes it possible to safeguard private production space. This can be accompanied by extensive typological research that looks at which building types need parking space on-site and/or where there are accessible options for loading and unloading. Design strategies could focus on how sites can be developed in a multi-functional way to house several functions. Building contractors are looking for locations that can house all elements that a construction company needs to function, such as storage, a workshop, an office, parking, loading and unloading space…

As far as public production spaces are concerned, the government can expand and diversify its centrally located production space assets. The affordability of workspaces can be safeguarded through low rental prices and/or via leasehold systems, which means that small companies will continue to be able to settle in Brussels. Contrary to the current location strategies in the periphery, Citydev should buy and/or build more small-scale production space in the city centre, manage it, and implement the logic of chain value in its purchasing policy next to its logic of property development. The Newton II project's first successful experiments with the development of micro-production space consisting of workshops of around 100 m^2 show the potential of such initiatives.

CHAPTER V
PLANNING FOR THE PRODUCTIVE CITY: COMPLEMENTARY STRATEGIES FOR THE LONG-TERM PROVISION OF AVAILABLE AND AFFORDABLE PRODUCTION SPACE

This chapter is co-authored with Michael Ryckewaert. It will be submitted in a reduced version for the special issue about local economic development of the journal Urban Planning (to be published in September 2020), and will focus on settlement patterns of production in cities.

1. Introduction

In Brussels as well as in other European post-industrial cities, there is a contradiction between a renewed attention for urban production since the financial crisis of 2008 and the empirical observation of ongoing deindustrialisation. Even in post-industrial cities, large amounts of urban production space continue to disappear at a fast pace. Many of the new urban industrial plans written after the crisis express the hope that productive activities can contribute to the diversification and resilience of the urban economy. These plans describe a range of urban production strategies aimed at maintaining and growing production. However, almost none of these plans include guidelines about the production spaces in which these activities should thrive. This chapter problematises this lack of attention because a guaranteed provision of available and affordable production space is a precondition for urban production. Based on the case of the Brussels Capital Region (BCR), this chapter aims to present insights into how cities (can) protect and stimulate affordable urban production spaces.

Starting from the hypothesis that 'a good city needs industry' (Brearly, 2015), the chapter draws from the work of various authors – such as Cities of Making (2018, 2020), Cleave et al. (2019), Ferreira and Prokopets (2009), Fitzgerald and Leigh (2002) Howland (2010), Koerth-Baker (2012), Lane (1995), Leigh (2013), Lester et al. (2013) McDermott (2009), and Phillips (2012) – who provide empirical evidence of the urban production need, using a variety of social, ecological, and economic arguments and data about sustainability, labour markets, urban ecosystems, circular economy, mobility, etc. The chapter does not aim to present an overview of the distinct arguments in defence of urban production. Instead, it focuses on urban policy strategies that can be used to counter certain kinds of deindustrialisation and keep production in cities.

Deindustrialisation is usually explained by a combination of internal and external factors, such as technological innovation and outsourcing to low-wage countries. This chapter focuses on a more recent account of industrial gentrification or the pushing out of production space through real estate dynamics as one of the causes of deindustrialisation (Camerin, 2019; Curran, 2007, 2010; Edwards & Taylor, 2017; Ferm & Jones, 2016, 2017; Salvini & Aalbers, 2016; Wolf-Powers, 2005). Together with the disappearance of these workspaces, cities also risk losing the basic goods and services that are produced in these spaces, as well as an increase in unemployment, especially of short- and middle-schooled blue-collar workers. Often, as explained by these authors, these fiercening real estate dynamics are instigated by policy measures such as land-use plans. Therefore, as I identify a wide range of productive city strategies based on an extensive literature review, these strategies are all assessed in terms of how they relate to maintaining and stimulating production space. As we shall see, most productive city strategies have negative side-effects

for the availability and affordability of production land or infringe on the liveability and spatial quality of urban neighbourhoods.

To find complementary strategies to preserve affordable production space, I start from the case of the Brussels Capital Region (BCR). Although a post-industrial city, the BCR still deindustrializes at a fast pace. Using a variety of Brussels cases, from small-scale workshops to mixed-use developments at the level of one or more building blocks, this article maps the Brussels industrial gentrification as a driver of industrialisation. I include the construction sector as a productive city case because construction enterprises have a similar spatial need for small-scale workspaces (De Boeck et al., 2020) as many other production activities (Cities of Making, 2020). Next to macro-data about the decreasing surfaces of the industrial patrimony, I also use a newly created dataset of building permits (BPs) of one Brussels municipality, Sint-Jans-Molenbeek. This dataset allows me to unravel industrial gentrification and to understand who are the gentrifiers and in what new uses do they convert the former industrial assets. This detailed cartography reveals that industrial gentrification manifests itself differently in various urban morphologies. I hypothesize that each of these forms of gentrification needs a different approach to counter it. Therefore, I designed an analytical framework to categorize the various typologies and call them urban settlement patterns of production (USPPs). The framework allows me to study productive city strategies that correspond with the diverse USPPs and to offer some clues that can be used to improve zoning, design, and management strategies to make and safeguard space for production in our cities.

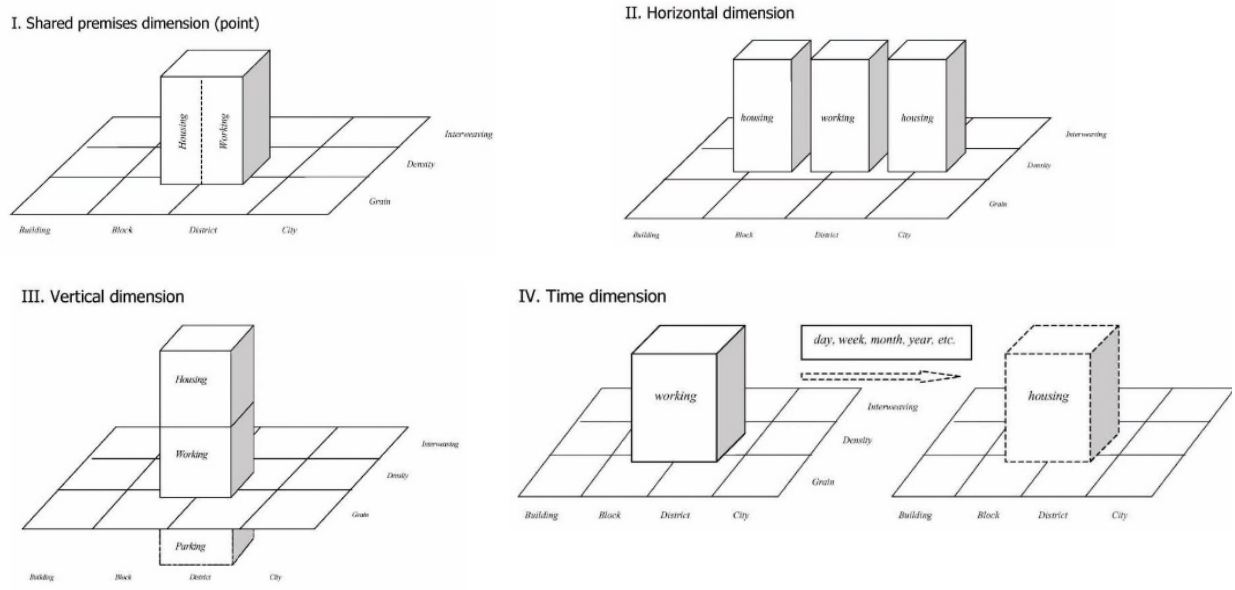
The chapter continues as follows: I start with the theoretical approach, where I explain the design of the analytical framework to categorize USPPs, I identify the delineation of productive activities, give an overview of contemporary productive city strategies, and elaborate on industrial gentrification as an explanation for deindustrialisation. Then, I continue with the empirical part of this chapter and map the deindustrialisation in the BCR on the regional scale and on the scale of five former industrial neighbourhoods in the Brussels municipality Sint-Jans-Molenbeek. Here, I demonstrate how productive workspaces disappear in each of the USPPs. By relating the theoretical and the empirical part of this chapter, I continue by pointing to the tensions between current productive city strategies and the preservation of affordable production space. The final section describes a set of zoning, design, and management strategies that seek to answer to the tensions between urban productive policy and the maintaining of production spaces, followed by a conclusion.

2. Analytical framework of urban settlement patterns of production

2.1 A typology of urban settlement patterns of production: juxtaposition, horizontal, and vertical mix at different scales

Urban production occurs within cities. Therefore, it is always confronted with a degree of a mix of uses, and it manifests itself in different urban settlement patterns of production (USPP). To study these USPPs, I create an analytical framework that reworks the multidimensional typology of mixed-use development of Hoppenbrouwer and Louw (2005). This mixed-use model allows us to approach urban production from a spatial and morphological perspective. The typology of Hoppenbrouwer and Louw describes four dimensions of a mix between different functions: (1) mixed use at a particular location (for example working at home), (2) horizontal mixed use or mixed use between buildings on a flat surface, (3) vertical mixed use in multi-level buildings (for example housing-over-shops), and (4) mixed use in sequential order (the time

dimension). The authors add scale (building, block, district, and city) and urban texture (grain, density, and the interweaving of functions). Figure 1 illustrates its basic framework.



Source: Hoppenbrouwer and Louw (2005:973).

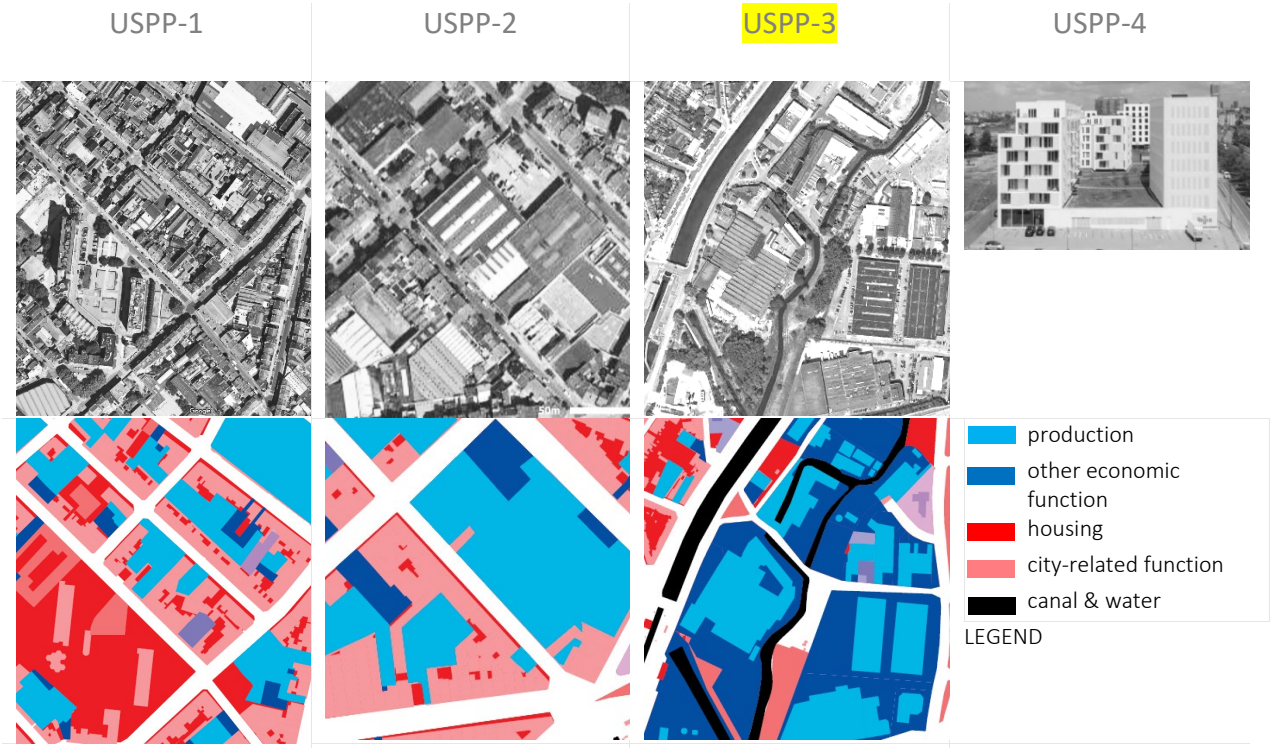
Figure 1: Multidimensional typology of Hoppenbrouwer and Louw (2005:973).

Based on the case of the BCR and a review of planning literature on typologies of urban production (Cities of Making, 2018; Hakuta & Ben-Joseph, 2017; Lane, 1995), I select the dimensions of horizontal and vertical mixed use for this chapter and add mono-functional uses. Mono-functional uses such as housing or production activities can be organised horizontally as well as vertically (apartments, warehouses) and might change into other functions over time (time dimension). Next, I refine this model with the dimensions of scale (building, building block, district) and urban texture (fine grain, rough grain). Instead of naming these dimensions 'multidimensional typologies of mixed use', I reframe the dimensions as 'USPPs'. This chapter, then, investigates two main kinds of mixing uses: production activities combined with other economic activities, and production activities combined with housing. The reworked analytical framework consists of four distinct USPPs, as shown in Figure 2, where each USPP is illustrated with a satellite image of a corresponding Brussels neighbourhood. Each image is marked by two main colours,[33] according to the methodology of RE:WORK [Moritz et al., 2012:32]. This was a design masterclass 'to develop cohabitation between city and economy', with a focus on urban manufacturing. Blue stands for economic activities and red stands for housing and city-related functions.

At the building and building block level, I discern two varieties of horizontal mix. First, USPP-1 is situated in fine-grained urban tissue with smaller-scale workspaces and an interwoven or close mix of functions in or between buildings. For example, a building block with production spaces in the courtyard surrounded by a closed front of housing (red surrounds blue in Figure 2). Second, USPP-2 represents a mixed-grain tissue with the juxtaposition of production activities and housing at the scale of the building block. For example, one building block consisting of production spaces stands next to a building block consisting of mainly

[33] Each USPP is abstracted, except for the vertical mix of USPP-4, where we have production on the ground floor and housing or other city-related functions (ex. school) are situated on top.

housing (a red building block juxtaposes a blue building block in Figure 2). USPP-3, or the horizontal mix at the district level in rough-grain urban tissues, appears as a juxtaposition of mono-functional areas. A vertical mix appears in USPP-4 at the scale of the building, building block, and district in rough-grained tissues where functions are stacked upon one another.



USPP-1	USPP-2	USPP-3	USPP-4
Horizontal	Horizontal	Horizontal	Vertical
Building, building block	Building block	District	Building, building block & district
Mix Interwoven	Mix Juxtaposed	Mono Juxtaposed	Mix Stacked
Fine grain	Fine & rough grain	Rough grain	Rough grain

Sources: Google Earth Pro, Hoppenbrouwer & Louw (2005), Moritz et al. (2012); processed by Sarah De Boeck.

Figure 2: Typology of urban settlement patterns of production (USPP)

During the course of this chapter, other dimensions are added to the framework in addition to typological and morphological dimensions to demonstrate that each USPP requires different productive city strategies to safeguard production spaces. The extra dimensions are: the three main categories of urban production strategies (zoning, design, and management strategies), public and private actors, and specific types of production (material, immaterial, and construction). This enables us not only to situate productive city strategies in urban space but also to provide an analytical framework of comparison between the different USPPs.

2.2 Identifying productive activities

Academics and policymakers use various sets of words and definitions to delineate urban production. The most often recurring words in no particular order are manufacturing, industry, production, maintenance, and repair. I adopt a broad definition because this allows us to study a diverse range of productive economic activities in terms of their spatial needs and their emergence in USPPs. This is why I add the construction sector, for example. Previous research on the geography and spatial needs of construction enterprises in Brussels demonstrates that their need for small-scale workspaces is similar to that of other production activities (Cities of Making, 2020; De Boeck et al., 2020). The aim of a broad definition is to create awareness regarding the behaviour (and effects) of each of these productive activities in the various USPPs, which may then influence the delineation of production activities in policy in the future. I use the case of the BCR to illustrate the broadness of the definition.

There are different methods of delineating urban production. Measured by the number of jobs per sector, the BCR has a share of 3 per cent of industrial activities that represent 22,007 jobs (Actiris, 2017). This refers to industry counted using traditional three-sector models (Schafran et al., 2018). While most classification systems separate construction from industry, I follow the classification system of Schafran et al. (2018) that includes construction as a production activity. In the BCR, 4 per cent or 28,620 of all regional jobs are construction jobs. The Productive City Plan of Vienna (2018) explicitly mentions maintenance and repair activities as part of urban production. Because of a rigid sectoral NACE-code approach to economic data in the BCR, I cannot separate the percentage of maintenance and repair jobs from the other sectors, implying that the BCR has a larger share of production jobs than the now mentioned 7 per cent. Traditional industry and construction, maintenance, and repair are considered as material production activities and are the main focus of this chapter. These productive sectors host higher percentages of short and middle-schooled blue-collar workers and are sometimes difficult to mix with residential functions because of possible friction. Conflicting opinions arise on whether to include immaterial activities in the definition of urban production. In the BCR as well as in Vienna, information and communication (6 per cent in the BCR) and the liberal professions together with academic and technological activities (7 per cent in the BCR) are regarded as productive activities. This implies that the BCR would still have 20 per cent production activities. Governments are keen to include immaterial production because they can easily be mixed with housing and the jobs are filled by high-profile employees. Without taking position on whether to include immaterial activities in the definition of urban production, I take them into account throughout this chapter because they seem to have a considerable impact on real estate dynamics and the availability of material production space.

2.3 Contemporary productive city strategies

Productive city strategies diverge according to the specific needs these strategies try to address. I distilled the needs from an extensive body of industrial retention literature and included the results of the recently conducted European research project Cities of Making (2020). This chapter identifies four needs related to the retention of productive activities in a mixed urban context where living and working compete for space: (1) affordable and available land, (2) the reduction of conflicts between uses, (3) targeted support to address the complexity of production processes, and (4) the efficient use of scarce urban land resources. I elaborate on these needs by going deeper into the strategies researchers and planners propose to answer these needs. I distinguish three main kinds of strategies (1) zoning strategies, (2) architectural and design strategies, and (3) local economic development strategies. Most of the reviewed literature focuses on

zoning strategies and architectural and urban design strategies, which is also the focus of this chapter. Some of these strategies do not attain their goal of industrial retention, although the needs they try to address are very real. This chapter proceeds with an extensive summary of the literature describing these needs and strategies.

All literature on the retention of urban production consulted emphasised the need for available and affordable land in order to preserve productive activities in cities. Apart from this consensus, authors propose three different zoning instruments: mono-industrial or non-cumulative zoning (Catungal et al., 2009, for Toronto; Charnock et al., 2014, for Barcelona; Chapple et al., 2017; Ferm & Jones, 2016, 2017, for London; Indegaard, 2009, for New York; Lester et al., 2013, for San Francisco; Picco, 2019, for Chicago), mixed-use zoning with economic activities (Cotter, 2012; Lane, 1995), and mixed zoning with housing (Armstrong & Lund, 2005; Lane, 1995; Schleiper & Hill, 2010). Cotter (2012) and Leigh et al. (2009) propose a combination of densification and mixed-use zoning with housing as a strategy to preserve and even expand urban industrial land. Their proposal refers to an intensification of land use by stacking functions on top of each other. The Productive Stadt plan of Vienna (2018) illustrates this combined strategy. With the help of mixed-use zoning in inner-city areas, Vienna has the ambitious goal of creating an extra 300 hectares of land for productive uses.

Next to affordable land, another relevant need of urban manufacturing as well as city dwellers is the reduction of conflicts between uses. Fitzgerald and Leigh (2002) describe how manufacturers use land in ways that frequently conflict with residential ideals. Some firms follow 24-hour-schedules, loading and unloading trucks that block the streets or sidewalks during the day and cause noise during the evening or night. There is extra pressure on parking spots, inhabitants park on loading zones, some firms produce penetrant smells, others leave litter on the streets, etc. Three strategies come to the fore to support the co-habitation of conflicting uses. The first strategy is the classic separation of functions through a mono-industrial zoning policy (Borret, 2019; Fitzgerald & Leigh, 2002). The second strategy proposes to mix conflicting uses and look for architectural (Citydev Brussels, 2019; Schleiper, 2010) and urban design (Borret, 2019; Cotter, 2012; Lane, 1995) solutions to reduce the conflicts. The third strategy is considering the compatibility of activities, such as the introduction of light instead of heavy industrial activities into mixed-use developments with housing (Cotter, 2012). Traditional environmental permits, which focus on the reduction of potential nuisances and dangers, are also a good example of a strategy to reduce conflicts between uses. Equally, (support for) technological systems to reduce nuisances such as better air filtration, noise insulation, and so on can increase compatibility between uses. Not only does housing need to be protected against nuisances from urban manufacturing, but manufacturing itself needs to be protected from residential proximity. Managers of manufacturing enterprises point to the entering of (potential) problems from surrounding deprived neighbourhoods, as appeared from our interviews conducted with construction companies in mixed neighbourhoods in Brussels. They fear theft, drug use, and squatting. They also fear complaints from new occupant-owners entering the neighbourhood through the construction of new middle-class housing developments in existing mixed zones. Only the preservation of mono-industrial zones seems to alleviate these fears (Lane, 1995).

Another recurring argument is the spatial need to support the complexity of production processes. Several trends underpin this need. There is a shift from large-scale industrial production to small-scale industrial production (Cities of Making, 2018; Hakuta & Ben-Joseph, 2017; Mistry and Byron, 2011). Urban manufacturing benefits a lot from agglomeration effects (Cooke & Morgan, 1998; Ferm & Jones, 2017). New thinking in supply chain management (Hakuta & Ben-Joseph, 2017), the shift from 'just-in-case'

systems with a large stock and warehousing to 'just-in-time' processes (Leigh & Hoelzel, 2012), circular economy thinking and re-using waste as a resource (Kampelmann, 2017), and the blurring of boundaries between manufacturing and services (Daniels & Bryson, 2002; Lerch & Gotsch, 2013) contribute to the complexity of production processes. These changes question current spatial strategies such as big-box and single-story factories, superblocks, and mono-industrial zones that are not only used in the hinterland but also within cities. Strategies that answer the need to accommodate a higher degree of complexity of production processes occur at the level of zoning on the one hand and the level of architecture and urban design on the other. Lane (1995) pleads for a combination of horizontal mixed zoning as well as design strategies to give enterprises more fine-grained access to the city.

Another problem is the underuse of mono-industrial space due to abandonment. Where plural cases show how speculation initiates abandonment, Armstrong and Lund (2005) and Schleiper (2010) formulate an explanation for the abandonment of industrial areas and buildings. They state that owners do not have any incentive to redevelop or invest in these areas, as the low land prices for such uses yield only a moderate return on investment as compared to residential redevelopment. If owners do not need the infrastructure, there is no pressure to do something with it in mono-industrial areas. This observation causes great feelings of resistance in cities with a growing population and a historical structural housing crisis such as New York, London, and Brussels. The arguments to massively convert mono-industrial land into 'more efficiently used' mixed-use land and create housing are convincing at first sight (Armstrong & Lund, 2005). However, evidence in Brussels and London shows that the housing typologies built in these areas often do not correspond with the socio-economic profiles of a large part of the growing population and generate gentrification (De Laet, 2018; Dessouroux et al., 2016; Ferm & Jones, 2017). While Brussels requires a significant increase in social and affordable housing to solve the housing crisis, principally higher middle-class apartments are constructed. Still, mixed-use development, whether land use is intensified by vertically stacking functions or uses or creating mix horizontally, is the only proposed strategy to address the need to avoid derelict or underused buildings.

2.4 Urban production and deindustrialisation

Although the case for keeping production within cities is made strongly in academic (see literature quoted above) and policy discourse (see for example Productive City Plan of Vienna, 2018), we witness a continuous disappearance of urban production space. We need to understand how production left and continues to leave the city to be able to devise adequate strategies to counter this trend. Cities such as Brussels, London, or Chicago are known as post-industrial cities. The term post-industrial refers to the transition of a producing economy into a service economy (Shaw, 2001), caused by deindustrialisation or a continuous decline in the share of manufacturing employment (Saeger, 1997). The BCR, for example, lost more than 85 per cent of its manufacturing jobs between 1970 and 2014 (BISA, 2016; Vandermotten, 2014). The literature on deindustrialisation describes internal causes, proper to changes in production, as well as external causes. Internal causes are a shift of demand from productions towards services, a changing demand of households, growing incomes (Clark, 1967; Vernon, 1957), and rising labour productivity in manufacturing (Rowthorn & Ramaswany, 1999; Tregenna, 2011) due to technological innovations in production processes. External causes are delocalisation due to low-wage production and the import of cheaper goods and products due to the foreign competition of global trade (Saeger, 1997). Next to these more general causes explaining the decline of manufacturing jobs in Europe and the U.S., there are also external causes that have a specific impact on the geography of urban production. The change from rail-

and water-based to road-based transport and the subsequent fall in transportation costs made manufacturing 'footloose' and more detached from the city. Production was increasingly located in peripheral regions and large- to medium-sized industrial parks (Ryckewaert, 2011). This detachment favoured large-scale firms with large spatial claims over small-scale firms, and the bigger ones could also add up the cost advantages related to mass production (Vernon, 1957).

More recently, the literature on deindustrialisation also relates the disappearance of production space to land-use policy and its influences on real estate dynamics. Urban functions such as housing, productive space, accessible green space, offices, etc. compete for scarce urban land. Thereby, productive uses such as manufacturing and construction have a more vulnerable position in an urban land market governed by property-led development. Uses such as housing and offices create bigger profit opportunities and raise real estate prices, thereby displacing productive activities and causing industrial gentrification. A range of academic literature provides empirical evidence on how planning policy, and zoning policy in particular, initiates the process of displacement in (former) industrial neighbourhoods (to name a few: Camerin, 2019; Charnock et al., 2014, for the Poblenou district in Barcelona; Ferm & Jones, 2016, 2017, for London; Curran, 2007, 2010; Wolf-Powers, 2005, for Williamsburg in New York; Savini & Aalbers, 2016, for Milan). This explicit link between the displacement of production activities and different types of zoning policy is key to the further elaboration of this chapter.

3. The disappearance of urban production

3.1 Empirical data on the disappearance of urban production space in Brussels

Above, I examined how urban production leaves the city in general. This chapter describes how production leaves Brussels in particular. I illustrate the case of the BCR with macro-data on land use (Statbel, 2019). Most of the Brussels statistics on urban production focus on large surfaces above 1,000m² (Perspective et al., 2018). These can fall in the USPP-2 and USPP-3 of the typology of Figure 2: the horizontal mixed-grained, mixed-use sites and the horizontal rough-grained mono-industrial sites. This methodology ignores small-scale production spaces below 1,000m². Recent research about the Brussels construction sector reveals that 93 per cent of these enterprises are SMEs with one to 20 employees, using production spaces below 1,000m² (De Boeck et al., 2020). They are thus invisible to policymakers and researchers alike. To obtain more insights into small-scale production spaces in the horizontal fine-grained and mixed-use settlement pattern of urban production (see Figure 2, USPP-2), I complement the macro-data on land use with a local dataset of building permits (BPs) in five out of 12 neighbourhoods of the Brussels municipality Sint-Jans-Molenbeek, of which two coincide with a park. These micro-data also give us more insights into the actors of reconversion and the types of new uses.

Empirical data from the BCR show a continuous and rapid decline of productive space since the year 2000, even if Brussels was already established as a post-industrial city for many years before that date. Table 1 shows how the BCR lost 106ha of productive buildings between 2000 and 2018. That is a loss of 16 per cent of its industrial assets. In 2000, 6 percent of the total surface of the BCR was allocated to industrial use. In 2018, this diminished to 4,2 per cent. Most losses occur in the former industrial Brussels municipalities along the canal: Anderlecht (-34ha), Sint-Jans-Molenbeek (-16ha), and Schaerbeek (-12ha), and in Uccle (-14ha), which is further away from the canal but touches the southern industrial areas of Flanders. The municipalities along the canal are recognised as deprived neighbourhoods (Vermeulen, 2015). Most of the socio-economically more vulnerable groups within Brussels's growing population take up residence in these

formerly industrial areas. They function as arrival cities because of the presence of affordable housing and a survival economy. The local authorities of these municipalities are continuously trying to cope with budgetary deficits. Local revenues cannot cover the required expansion of services for a fast-growing population.

Table 1: Changes in the share of land uses of the Brussels Capital Region between 2000 and 2018.

BRUSSELS CAPITAL REGION	2000	2018	% of change between 2000 and 2018
Total built surface (ha)	**7.143**	**7.670**	**7%**
housing	4.306	4.923	**13%**
production & storage	791	685	**-16%**
offices	281	274	**-3%**
commerce	518	492	**-5%**
public buildings & other	1.252	1.304	**4%**
Total unbuilt surface	5692	5180	**-10%**
Not cadastred surface	3.288	3.364	**2%**
Total surface	16.123	16.214	**1%**

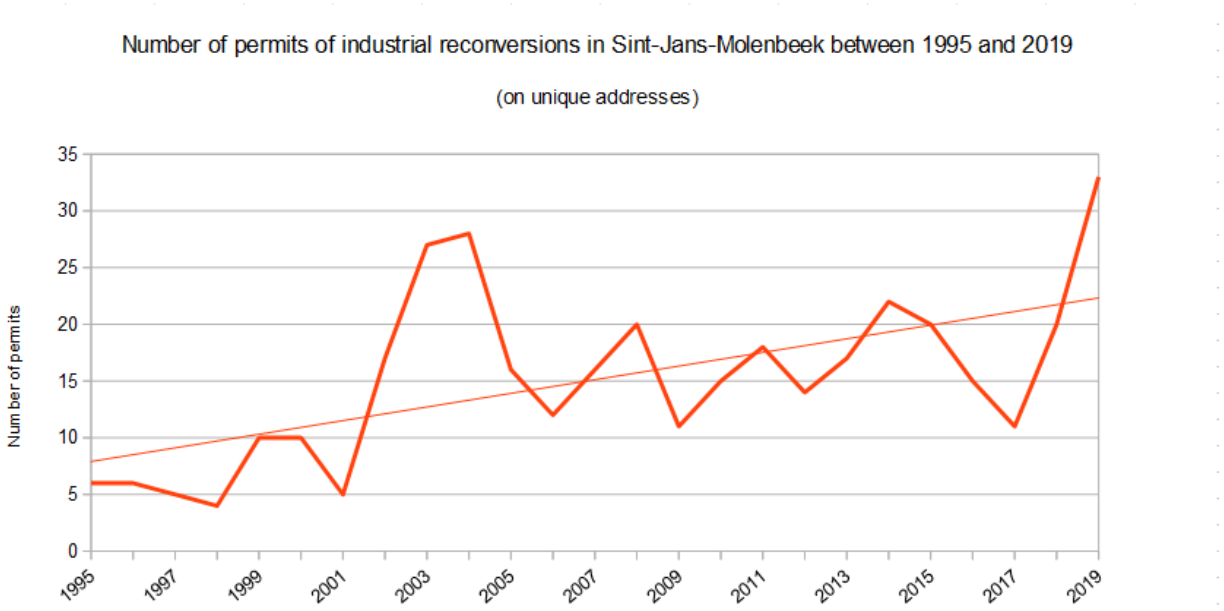
Source: Statbel (2019); processed by Sarah De Boeck.[34]

The land-use plan of the BCR maintains a unique zoning methodology at the scale of the building block: every single building block has its own set of uses and building prescriptions. The perimeter of the local dataset for Sint-Jans-Molenbeek consists of building blocks in three zoning typologies of the regional Brussels land-use plan: zones of residence, mixed zones of residence, and strongly mixed zones of residence (PRAS, 2014). The plan consolidated the existing land-use situation of 2001. The assigned use of a building block thus rather represents the situation of 20 years ago instead of the actual situation, indicating that the mixed and strongly mixed residential zoning typologies hosted many production facilities in 2001. Today, we observe the transformation of these mixed-use zones into mono-residential zones.

To retrieve the BPs related to the reconversion of productive space, I screened them using the following terms in the subject field of the permits: *workshop*, *productive activity*, *productivity*, *mixed building*, *storage space*, *industrial building*, *industrial site*, *buildings in the interior of the building block*, *building at the end of the parcel*, and *back house*. After refining the dataset (deleting duplicates, unifying addresses, etc.), I found 447 BPs in total, on 378 unique addresses. Figure 3 shows the number of permits for industrial

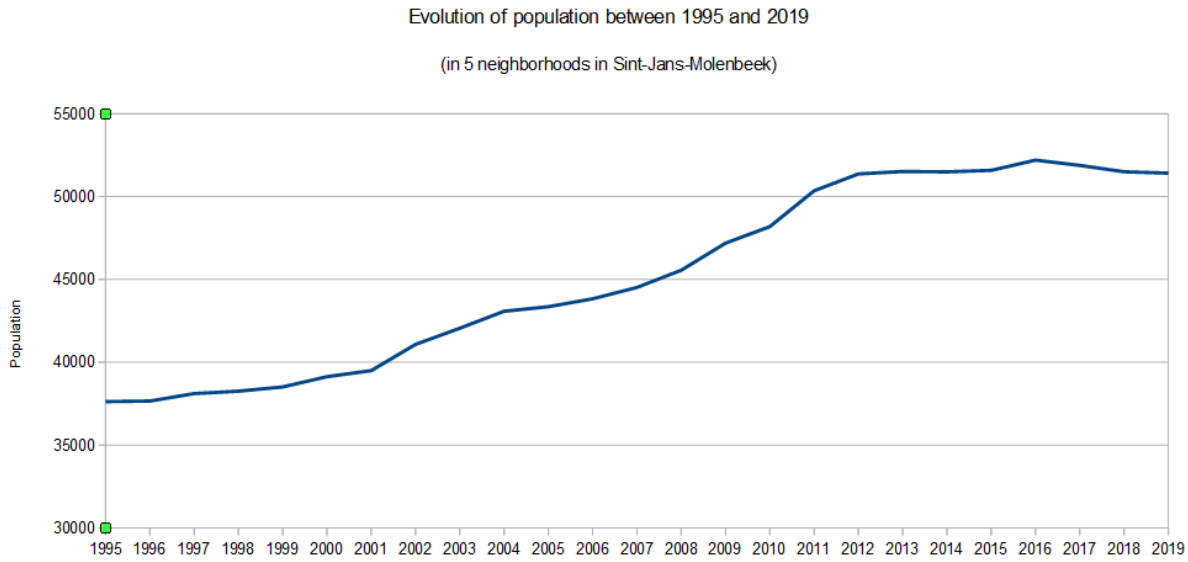
[34] Methodology: The Belgian federal data on land registry (Statbel, 2019) categorizes the land uses per municipality and per built and unbuilt parcels. The unbuilt parcels comprise the functions farmland, pasture, gardens and parks, orchards, forest, wasteland, outdoor recreation, and sport, registered water and roads, and others. The built parcels consist of apartments, houses, and farmhouses, annexes including greenhouses, buildings for crafts and industry, storage spaces, financial banks, and offices, commercial buildings, public buildings, spaces for utilities, buildings for care and social wellbeing, education, research, and culture, religion, recreation, sport, and others. I have merged these subcategories in one category of the unbuilt surfaces and five categories of built surfaces. These five classifications are (1) housing (apartments, building, houses, farmhouses and annexes including greenhouses); (2) production & storage (buildings for crafts and industry and storage spaces); (3) offices; (4) commerce; and (5) public buildings & other (public buildings, utilities, care, social wellbeing, education, research, culture, religion, and indoor sport and recreation). I selected the years of 2000 and 2018 as the two intersections to show the evolution of increasing and decreasing surfaces for land use for the Brussels region (= aggregated data of the 19 municipalities).

reconversions per year. The increasing amount of permits partly coincides with the increasing evolution of the population in the same five neighbourhoods, as shown in Figure 4.



Source: Sint-Jans-Molenbeek (2019) dataset of building permits; processed by Sarah De Boeck.

Figure 3: Number of permits of industrial reconversions in Sint-Jans-Molenbeek between 1995 and 2019 (on unique addresses in five neighbourhoods).

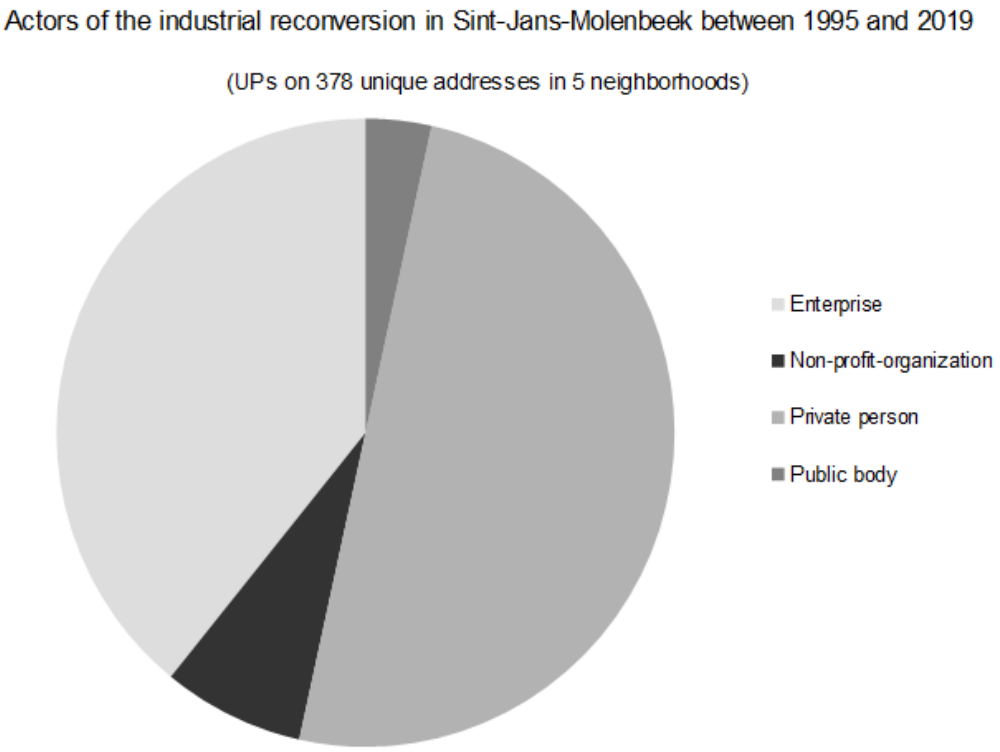


Source: Wijkmonitor Brussel (2019); processed by Sarah De Boeck.

Figure 4: Evolution of population between 1995 and 2019 in Sint-Jans-Molenbeek (in five neighbourhoods).

To analyse these data, I and my co-author developed a methodology to process the rough data of BPs and encode them based on the subject description (Ryckewaert, 2009). The encoding of permits consists of (1)

dividing the BPs into types, and (2) trace the use before and after the BP-approval. The applicant of a BP is free to describe the subject into a text field on the form. The BP register copies the subject line straight from the application form. There is no fixed series of sentences or terms characterising the nature of the application. The absence of a systematic nomenclature in the permits makes it difficult to analyse the data.

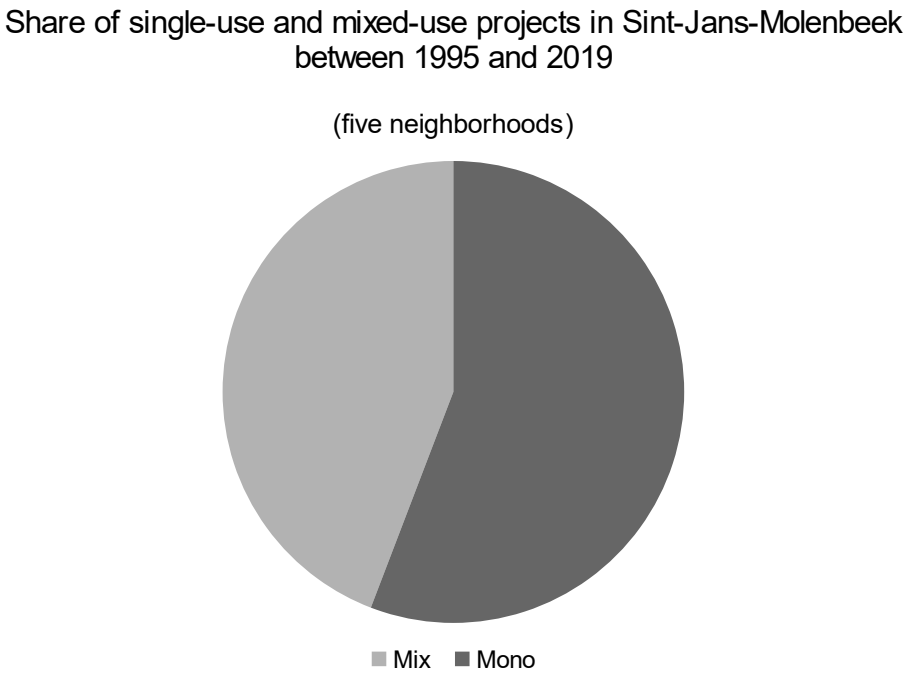


Source: Sint-Jans-Molenbeek (2019) dataset of building permits; processed by Sarah De Boeck.

Figure 5: Actors of the industrial reconversions in Sint-Jans-Molenbeek (in five neighbourhoods).

Next to the encoding into types and uses, I anonymised the applicants into four categories of actors to provide more insights into the drivers of reconversion: public body, enterprises, non-profit organisations, and private persons (individuals or households). Figure 5 shows that private persons are responsible for 50 per cent of the reconversions of production space. 70 per cent of the formerly industrial buildings owned by private individuals were converted into housing. Most of these reconversions are back houses, warehouses, and workshops situated in the courtyard of building blocks. Since Sint-Jans-Molenbeek has a fine-grained inner-city morphology, where most building blocks consist of a closed front of houses surrounding production spaces inside the block, these reconversions happen mainly out of sight. The slow, 'drop by drop' rhythm, with an average of 15 to 16 BPs a year (see Figure 3), seems to reinforce the invisibility of the disappearance of productive land. Enterprises, representing a diverse set of economic activities, are responsible for 39 per cent of all Molenbeek industrial reconversions. A couple of sectors stand out, such as real estate (29 per cent), retail (24 per cent), construction (7.5 per cent), and wholesale (7.5 per cent), especially of construction materials. When looking at the types of BPs, half of conversions done by real estate developers consists of merging two or more parcels to create residential apartment developments. Formerly industrial buildings seem to be popular places to convert into places of worship. Seven per cent of actors are non-profit organisations, of which half convert their industrial property into

mosques and evangelical churches. Less than 4 per cent of these conversions are done by public bodies, mainly to construct social housing and buildings for social, cultural, and educational services.



Source: Sint-Jans-Molenbeek (2019) dataset of building permit; processed by Sarah De Boeck.

Figure 6: The share of mono- and mixed-use reconversions in Sint-Jans-Molenbeek (in five neighbourhoods).

Figure 6 displays half of the reconversions as single-use projects and the other half as mixed-use projects. Although several authors define mixed-use development as having at least three uses (Rabianski et al., 2009; Urban Land Institute, 1987), planning regulation is the main reason why this chapter follows the definition of Aygoren (2004) of a minimum of two uses. When the owner of a residential building wants to add parking, they need to apply for a modification of use with the local municipality. Since the law considers housing in combination with parking as two different uses, I prefer a definition that relates closely to this planning regulation practice and follow the definition of minimum two uses. The mixed-use projects of the Molenbeek dataset consist mostly of the conversion of production spaces into housing in combination with commerce and parking. The main architectural typology is a shop on the ground floor and apartments on top. Sometimes offices are added. In only two cases, the industrial back house is demolished to make space for a garden. Almost 10 percent of the single-use conversion BPs are about the renovation of industrial spaces. The other single-use conversion BPs concern: 37% housing, 28% commercial, 17% of services and other uses (sports hall, cultural space, social space, artist studio, etc.), 4% places of worship, and the remaining 4 percentages are two parking areas, three offices, and one brownfield.

3.2 Comparison of the disappearance of production space in four USPPs

The Brussels regional macro-data on the surface of production space exhibit a fast disappearance of large plots of production space. This chapter complements this observation with a local dataset of BPs of industrial reconversion in one Brussels municipality, Sint-Jans-Molenbeek. This local dataset exposes an additional and invisible removal of smaller industrial plots and buildings, below 1,000m², in a fine-grained and mixed inner-city morphology. Table 2 categorises the disappearance of production space according to the four USPPs (see Figure 2). For every USPP, I provide an example, define the location of this type of settlement pattern within the BCR, add zoning (and local development) strategies, and specify the actors and diverse types of urban production involved.

For the first two settlement patterns of production in inner-city locations, I use data on the construction sector (De Boeck et al., 2020) and the local dataset of BPs of Sint-Jans-Molenbeek. All production activities situated in USPP-1 and USPP-2 are located within residential areas of the Brussels land-use plan, where zoning law focusses on residential development and allows production within certain surfaces: zones of residence, mixed zones of residence, and strongly mixed zones of residence. Production space disappears at a steady pace; most of it happens invisibly in the courtyard of building blocks. USPP-2 is also present in more peripheral areas. Production spaces in this settlement pattern are also located in business parks developed by public developer Citydev. These business parks were former wastelands or former production areas, often with polluted soil. Next to these 'islands', Citydev experimented with the redevelopment of large plots (or merged plots) of former inner-city industrial land, where production is horizontally mixed and juxtaposed with housing. Contrary to the middle-class subsidised housing projects that are sold on the market, Citydev leases its workspaces on short- and long-term contracts. The diversity of production activities in the business parks is high, ranging from the maintenance of elevators and construction to the production of biscuits and beer. These public production and workspaces are very successful and have vacancy rates of less than 10 per cent. Citydev, as a public developer, plays an important role in the preservation of urban production space on larger plots in peripheral areas and occasionally on larger plots in inner-city areas. USPP-3 is the traditional mono-industrial zone. The BCR has two peripheral mono-industrial zones: one in the north of Brussels and one in the south, both along the Brussels–Charleroi canal. Occasionally, dispensation to convert a part of the site into offices related to the production activities is requested. This kind of zoning is the best guarantee of preserving industrial zoning, since almost no conversions take place. USPP-4 is the vertical mixed-use typology, closely related to the Enterprise Area for Urban Development (EAUD), a rezoning of mono-industrial areas into mixed-use development areas in 2013 in response to growing housing needs following projections indicating strong demographic growth (PRAS Démographique 2013). In these areas, a mix of productive and residential uses was proposed that implicitly relies on vertical mixing at the building level.

Table 2: Overview of how productive space disappears in four urban settlement patterns of production.

	USPP-1	USPP-2	USPP-3	USPP-4
Cases	Construction sector BCR & local dataset BPs Sint-Jans-Molenbeek	Construction sector BCR & local dataset BPs Sint-Jans-Molenbeek, and public projects Greenbizz and peripheral business parks	Mono-industrial zoning area Biestebroeck, Anderlecht	Public project Citygate II/Petite Ile and private project Citydox, in Biestebroeck area, Anderlecht
Location	Inner-city	Inner-city & peripheral	Edge, peripheral	In-between, peripheral
Zoning policy according to land-use plan (PRAS)	Residential, residential mixed with production and other uses, residential strongly mixed with production and other uses	Residential mixed with production and other uses, residential strongly mixed with production and other uses	Mono-industrial uses	Mixed-use production with residential and other uses, Enterprise Area for Urban Development (EAUD)
Local economic development strategies and other	Environmental permits, Urban Enterprise Zone (ZEUS), Support & subsidies for expansion-relocation-research-travelling to fairs, Tax exemptions	Environmental permits, Urban Enterprise Zone (ZEUS), Support & subsidies for expansion-relocation-research-travelling to fairs, Tax exemptions	Environmental permits, Support & subsidies for expansion-relocation-research-travelling to fairs, Tax exemptions	Environmental permits, Support & subsidies for expansion-relocation-research-travelling to fairs, Tax exemptions
How does productive space disappear?	Continuous conversions at a steady pace (see Figure 1), mostly invisible	Continuous conversions at a steady pace (see Figure 1)	Conversions exclusively through the change of policy instruments: former mono-industrial land converted into mixed-use land	Former mono-industrial land converted into mixed-use land
Main locations and kinds of conversion	(1) Conversions of buildings in the interior of building blocks, such as back houses and inner-	(1) Conversions of buildings in the interior of building blocks	(1) Complete clearing of large former industrial plots	(1) Mostly the conversion of large peripheral areas, and some larger plot inner-city areas

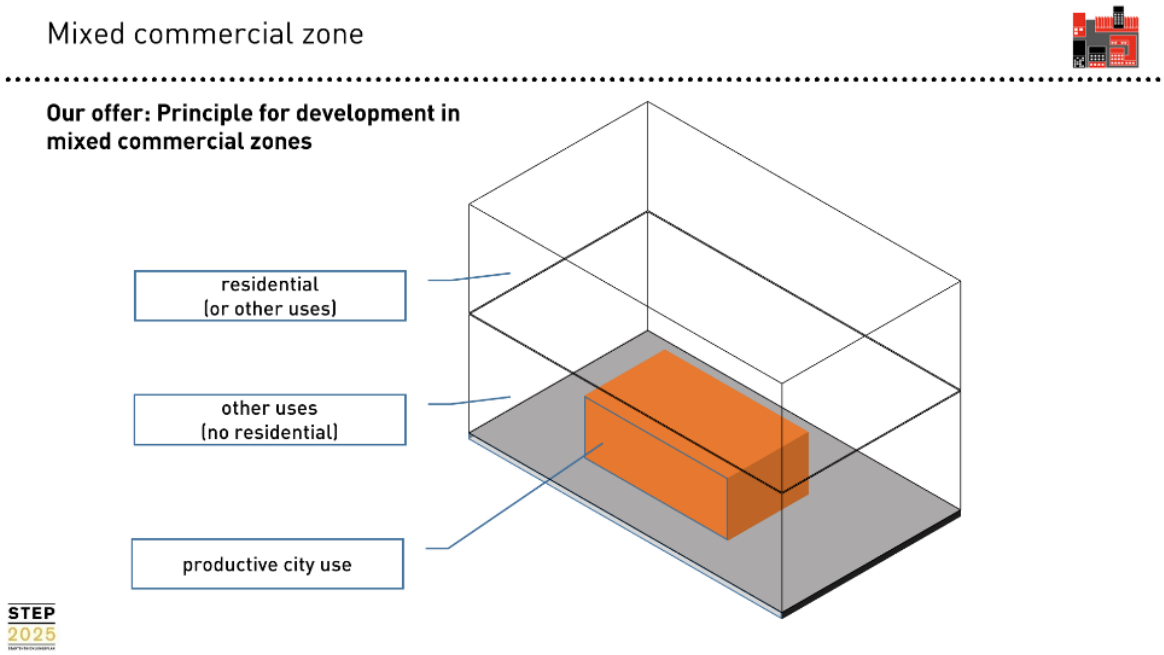
	USPP-1	USPP-2	USPP-3	USPP-4
	block warehouses and workshops (2) Small surfaces	(2) Renovation and rebuilding into housing and big commercial surfaces. (3) Small and large surfaces		
Main uses before conversion	Productive: workshops, warehouses	Productive: workshops, warehouses, wasteland	Productive: workshops, warehouses	Productive: workshops, warehouses
Main uses after conversion	Housing, retail, offices	Housing, retail, offices (production)	Housing, material & immaterial production, retail, public services	Housing, mainly immaterial production, offices, retail, public services
Mixed-use or mono-use projects?	54% mono-use projects 46% mixed-use projects	54% mono-use projects 46% mixed-use projects	100% mixed-use projects	100% mixed-use projects
Actors	50% private persons 39% enterprises 7% non-profit organisations 4% public bodies	50% private persons 39% enterprises 7% non-profit organisations 4% public bodies	Mainly productive enterprises, and public bodies (equipment)	Mainly project developers, investors, and public bodies

4. Tensions between productive city strategies and the preservation of urban production space

4.1 Available and affordable land in relation to zoning regulations for productive uses

The international literature discussed in the introduction and the empirical data on Brussels demonstrate that many of the strategies employed to maintain and grow urban production do not guarantee the preservation and expansion of the available and affordable production land. In all USPPs, persisting tensions and pressure tend to push out productive uses. Furthermore, a typological conception of a mix at the building level that relies on strict enforcement of a vertical mix, with production on the ground floor and housing on top, risks excluding material production activities while also putting pressure on the viability of neighbourhoods. Regarding the need for available and affordable land, the consulted authors propose three different zoning instruments that have different outcomes. The first proposal, mono-industrial or non-cumulative zones, is the best guarantee of attaining the goal of affordable land. Empirical analysis in several cities (see literature above) shows that the preservation of mono-industrial zones works is the best zoning strategy for keeping land prices affordable. The introduction of higher-value uses, whether these

are commercial, industrial, or residential, generates industrial displacement through speculation and rising land prices in each of the consulted cases. Even the diversification of mono-industrial zones with only closely related economic activities, the second proposal, cannot avoid an increase in land prices. Ferm and Jones (2017) refer to several cases of displacement by digital manufacturing, of which San Francisco (Hutton, 2009) is the best-known example. The third zoning strategy is the introduction of housing in former mono-industrial zones. Introducing housing into these zones negatively influences the availability as well as the affordability of land (Ferm & Jones, 2017). This finding contradicts the productive expansion strategies used by cities and city regions such as Brussels and Vienna. The BCR employs a strategy similar to the strategies of Vienna and London, converting mono-industrial land into mixed-use land in peripheral areas to convince private developers as well as public authorities to redevelop. Unlike Brussels, Vienna and Barcelona also use this strategy to develop inner-city areas. Figure 7 of the Productive Stadt Plan of Vienna displays a conceptual scheme where the orange box is the current situation: a one-story factory box. The city of Vienna offers an expansion of the floor surface for productive uses and the construction of a maximum of six floors of residential development. Figure 7 shows these as transparent volumes.



Source: Vienna (2019) Productive City Plan.

Figure 7: The Vienna strategy of densification and mixed use to convince private property owners to develop extra productive land (Productive City Plan of Vienna, 2019).

Next to instigating a dynamic of industrial displacement, the USPP-4 of vertical mixed-use development constrains the possibilities for production. Regarding the needs and strategies for keeping productive activities in cities, the compatibility of activities is a popular strategy used to address the need to reduce conflicts between uses, support the complexity of production processes, and make efficient use of scarce land resources. Academic literature and new urban industrial plans demonstrate how immaterial activities are popular in mixed-use environments. Moreover, immaterial production activities also subscribe to financial reasoning, since Cotter (2012), among others, argues that R&D and similar forms of light manufacturing can afford higher land rents. Immaterial productive activities seem to be an ideal urban

strategy for industrial retention. To conclude, immaterial activities are attractive for urban governments as well as for private developers because of reasons of compatibility with housing and because of higher rents, but they risk displacing material production activities.

4.2 Available and affordable land in relation to the spatial organisation of mixed use

Related to this hypothesis of how material production activities are pushed out for more lucrative uses in vertically mixed schemes, I observe two dynamics based on evidence from London and Brussels. First, Ferm and Jones (2016) point to the speculative mechanism and the promise of higher rents when production spaces in vertically mixed developments are converted into retail spaces in London, again illustrating that retail and housing have higher compatibility than housing and production. The authors found that developers responsible for the sale and lease of the production spaces on the ground floor claimed not to find the proper production enterprises as outlined in the zoning laws. The pressure of developers to relax the zoning laws, in combination with the fear of the negative impact of 'dead facades' of empty spaces on the ground floor, is convincing local governments to give in to the demands of developers and allow retail to replace production. This example from London illustrates how mixed-use developments answer to a financial logic of value capturing rather than to the need for keeping production in the city. The potential consequence is not necessarily displacement but rather a complete absence of production whatsoever in mixed-use neighbourhoods.

Second, evidence from London and Brussels shows how the lack of quality of the architectural design of the production space on the ground floor puts pressure on the viability of the neighbourhood. Wedding the mitigation of nuisance and requirements of production (for example logistics) with the desired quality of the residential environment proves to be a very challenging design question that arose in the private and public mixed-use development projects in the Biestebroeck area along the Brussels canal. This is not easily solved under the existing Brussels building regulations, which enforce a vertical mix without considering plot sizes, density, etc. A vertical mix strategy was enforced in the EAUD areas along the southern sections of the Brussels canal via a local zoning plan (BPA Biestebroeck) and design-and-build competitions inviting urban designers and developers to propose private mixed-use developments. Zoning prescriptions permit dense programming of the sites. Some of the design issues that need to be addressed include the requirements for logistical access to productive activities; the problems of locating housing structures with smaller floor spans and building depth on top of productive buildings requiring larger floor spans and building depth; the need to provide high-quality outdoor spaces for residences or public amenities such as schools or day-care centres; the difficulty to have lively and animated ground floors when productive activities are located there, etc. In the first Biestebroeck project Citydox (BMA Brussels, 2019a), the vertical zoning strategy is in fact translated into a juxtaposition with offices serving as a buffer towards the street, limited production space, and maximum residential density. The first buildings developed in the project concern mono-functional housing, leaving the more challenging housing-over-production to later development stages. In the most recent project Petite Ile/Citygate II (BMA Brussels, 2019b; Citydev, 2019b; NoArchitecten, 2018), however, as I will explain below, the competition approach did result in more successful alternative design strategies for mix, not in the least because the winning project opts for the lower limit of the required density. Another illustration that juxtaposition or horizontal mix is probably a more appropriate design strategy for mixing uses on large plots is the Greenbizz project (Architectenassoc, 2012; Citydev, 2016). The circulation of residents and production-related traffic are separated in horizontal

mix projects that do not lose their connection to the city and that positively benefit from the agglomeration effects.

When I zoom in to USPP-1, the more fine-grained settlement pattern of small production spaces in residential areas, I recognise that these spaces are not protected at all within the existing land-use plan. This removal of small-scale production spaces conflicts with the spatial needs of construction enterprises demonstrated in previous findings (De Boeck et al., 2020). As many of these enterprises are small or very small, existing warehouses and workshops within building blocks in various typological configurations provide ideal spaces to accommodate such small-scale production. However, as these are located predominantly in mixed zoning categories, the transition to residential uses is always possible and dominates the transformation of these spaces.

4.3 The dilemma of vertical mix versus mono-functional zoning

Cities make use of a toolbox containing numerous strategies that can be used to address the needs of urban production, such as reducing conflicts between urban functions, supporting the complexity of production processes, and efficiently using scarce land resources. Two main conclusions emerge: (1) vertical mixed-use developments with housing and production potentially reinforce use conflicts and the disappearance of material production activities. And, (2) mono-industrial zoning seems to be the best strategy to guarantee the affordability of land, even if it has its own problems due to the risk of abandonment for lack of investment incentives. These findings point to a crucial dilemma, since most industrial retention strategies cause a degree of diversification or mix in mono-industrial zones. Moreover, every time a mono-industrial zone diversifies the slightest – even when exclusively with other economic activities and no housing – land prices go up and instigate processes of industrial gentrification. The question following this conclusion is how to deal with these strategy conflicts? This chapter looks to answer this by searching for strategies complementary to mono-industrial zoning to guarantee available and affordable production space in cities and reduce conflicts of use in mixed-use developments.

5. Complementary productive city strategies, with the focus on available and affordable production space

This chapter suggests a set of complementary productive city strategies that are not part of the traditional local economic development strategies like tax exemptions, subsidies to expand or relocate, urban enterprise zones, etc. The strategies proposed here concentrate on the reduction of conflicts between strategies to maintain and grow production within cities, with a focus on the availability and affordability of land. Table 3 at the end of this subsection presents an overview of strategies, organised per USPP, and categorised into zoning and design strategies, alternative business model strategies, public real estate strategies, and management strategies.

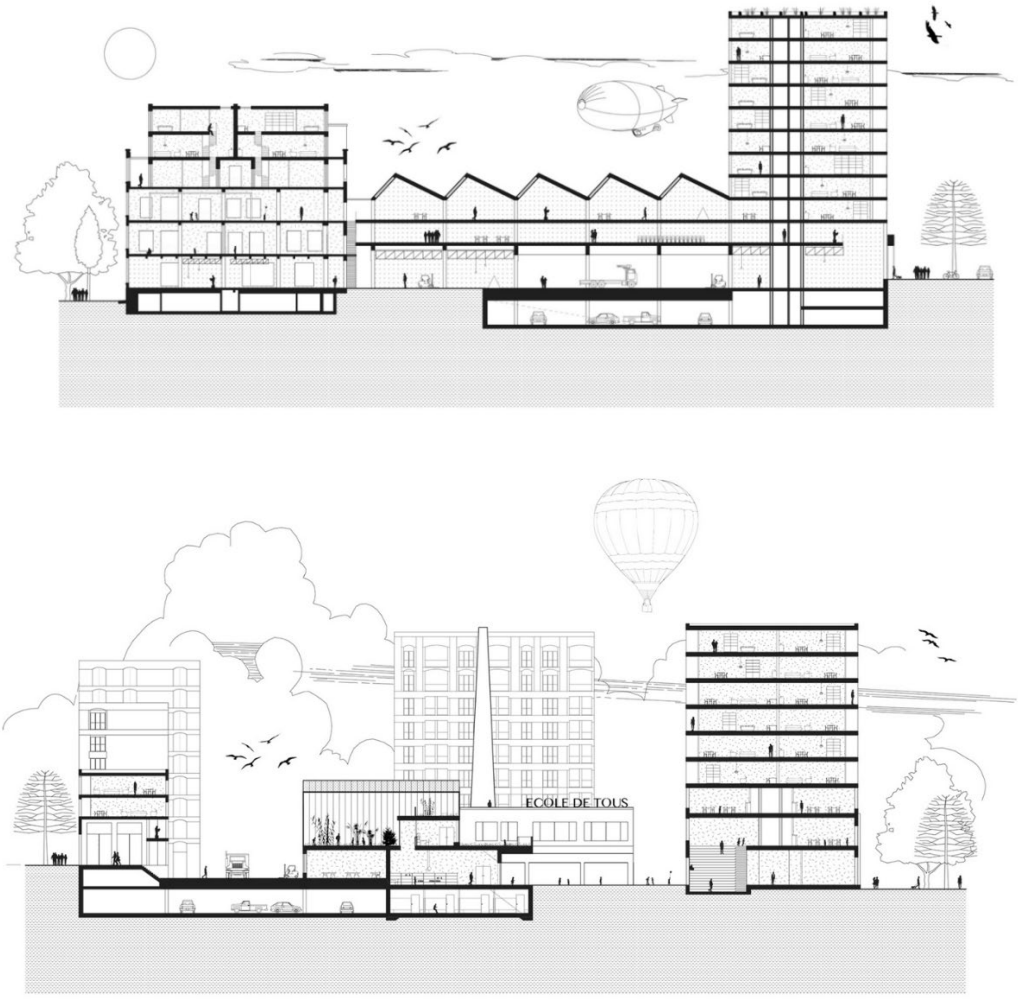
5.1 Zoning and design strategies

Although I observe a tendency towards project planning in cities, traditional zoning-based planning is still relevant today because it offers the best guarantee to control land prices. USPP-3 and the related mono-industrial zoning in the BCR but also in most other cities underpin this observation. Contrary to European cities, in U.S. cities, new mono-industrial areas have been added since the late 1980s, of which the fifteen Planned Manufacturing Districts and Industrial Corridors in Chicago are well recorded in academic literature (Fitzgerald & Leigh, 2002; Hakuta & Ben-Joseph, 2017; Lane, 1995; Leigh & Hoelzel, 2012; Lester et al.,

2013; Picco, 2019; Schleicher & Hills, 2010). Mono-industrial zoning also guarantees space for those productive activities that are not compatible with housing and create too many conflicts of use, such as a flower plant, concrete plants, wood-sawing on a large scale, etc. Since Schleicher and Hills (2010) rightfully observe that private property owners do not have a financial incentive to redevelop their parcels if they do not need to use them, mono-industrial zoning can benefit from the implementation of management strategies within the productive perimeter and a pro-active coupling of enterprises and assets to avoid abandonment or derelict buildings. Although they must challenge the fragmented ownership of mono-industrial areas, a zoning manager can run the area similar to how they would run a business park. Chicago undertook the Local Industrial Retention Initiative as early as 1984, combining a combative attitude of city authorities with a community-based orientation (Fitzgerald & Leigh, 2002). More recently, the city of Vienna divided the city into three economic zones and will start experimenting with district managers that take care of the needs of businesses within the zone (Vienna Business Agency, 2019). The project in Vienna goes beyond the mono-industrial areas and includes larger areas of the city. The district managers may also function as a platform to create symbioses between enterprises, thereby pro-actively reinforcing agglomeration effects. Here, we see how zoning can be complemented by diverse kinds of project management.

Some authors, such as Lane (1995), criticise mono-industrial zones because they are unable to address the need to accommodate complex production processes. However, the degree of complexity can also be increased in the surrounding areas, for example by using micro-zoning. The Brussels Bouwmeester, Borret (2019), pleads for micro-zoning as a strategy to increase urbanity, or, reframed, to increase mix and complexity. An example of what this micro-zoning could entail is offered by the winning competition design of the Petite Ile/Citygate II project discussed above. While the competition tender specified vertical mixing, the winning competition design relies on a more classical fine-grained juxtaposition of different functions. They designed some housing-over-shops at the edges of the development and shed structures in the courtyard of the building blocks with, among other things, a school on top of productive spaces (see Figure 7). The winning project relies on a more moderate and hybrid typology combining juxtaposition with a vertical mix, in which the more ambitious forms of vertical mixing, such as housing-over-production, are limited. This solution will possibly require an easing or adaptation of zoning prescriptions. This example illustrates how research-by-design via a competition approach enables the refinement of urban mixed-use approaches. Ideally, such *designerly* investigations should be conducted as part of the rezoning process, rather than occur post-factum. Too strictly formatted regulations concerning the physical organisation of mix are best avoided. Rather, place-based designerly investigations in a competition approach, based on a specific site, its context, and a detailed programme, are a better way to approach the issue of shaping mixed use from a spatial point of view.

Brussels's public developer Citydev also uses this strategy of micro-zoning on the scale of a project where production and housing are juxtaposed in a building block (cf. Greenbizz). This strategy not only contributes to the complexity of uses, for example by adding higher-value economic activities, but also balances land rent mechanisms in the long term through the introduction of lower-value areas in high residential areas. This indicates that micro-zoning can be used in the areas surrounding the mono-industrial areas of USPP-3, but also in USPP-2. To increase efficient land use in mono-industrial areas, architecture and design strategies can complement the zoning strategy. Research-by-design helps explore opportunities to collectivise common uses and reinforce the spatial efficiency of mono-industrial areas, including waste collection, storage, reception of customers, cafeterias and restaurants for personnel, parking space, etc.



Source: BMA Brussels, 2019b; NoArchitecten, 2018.

Figure 8: Winning design for the Petite Ile/Citygate II project by NoArchitecten (2018).

Another strategy complementary to zoning is an innovative approach to heritage preservation. Industrial heritage in Brussels today is approached from an architectural perspective, with obligatory, strict

architectural preservation rules for the renovation and rebuilding of industrial assets. Degraeve and Vandyck (2019) propose a different perspective on industrial heritage preservation. Their proposal consists of preserving the productive use of former productive parcels and buildings, instead of preserving the architectural remains of former industrial buildings regardless of future use. Instead of being displaced through gentrification dynamics, productive activities are allowed to stay put in fine-grained residential areas. This is especially the case for the small-scale workshops of Brussels construction enterprises. An economic geography analysis demonstrates that these enterprises are still very well represented in residential areas (De Boeck et al., 2020) and seem to be exemplary of settlement pattern USPP-1. A broader understanding of the heritage value of these structures, in which it is not only the built structure but also its historical uses that are protected, could safeguard these spaces for productive activities. It means that on top of zoning strategies, heritage protection measures could aid in safeguarding these spaces for production.

Finally, more inspiration from historical settlement patterns of production is offered by the concept of the vertical factory. Whereas this model originates from the historical needs of water- and rail-based logistics of the pre-car era and the structural innovation of concrete building (Ryckewaert 2011; Rappaport 2014), it might offer new spatial strategies to solve some of the issues identified above, such as the need for lively and active ground floors. Adapting zoning regulations to allow vertical urban factories permits the ground floor to be activated with other uses. Many examples of organising production vertically can be found in Rappaport (2014) and Rappaport and Lane (2020). Vertical production spaces might also be a partial solution to the speculation of property developers on ground floors in mixed-use buildings, as described by Ferm and Jones (2017). Since these ground floors are currently filled by retail activities instead of production, it will become more difficult to rent first, second, and third floors to retail activities.

5.2 Public real estate and management strategies

This section presents three real estate strategies for public bodies in order to guarantee available and affordable land in the long term. The underlying idea of the suggested strategies is to reinforce the public character of land and/or to avoid or reduce the value-capturing mechanism of private property. In addition, the final strategy sketches alternative management approaches for mixed programmes with adequate governance structures to mitigate and mediate between potentially conflicting functions and uses.

A first strategy consists of building and enlarging a production heritage based on the renovation of existing buildings or new construction. Leasing instead of selling this public production property guarantees affordable workspace in the long term. The Brussels public developer Citydev has 45 years of experience in constructing and leasing new production assets. They consist of extensive developments of industrial and business parks on brownfields or greenfields in peripheral areas of the region and hosted more than 24,000 jobs in 2016. More recently, Citydev also built a series of smaller production spaces of approximately 100m² per unit. Vacancy rates lower than 10 per cent indicate the enormous success of these assets in various sizes. Following the heritage preservation approach mentioned above, the question arises whether Brussels the existing production assets in fine-grained residential areas should be renovated too (USPP-1 and USPP-2). During an interview, Philippe Antoine, director of Economic Expansion of Citydev, was positive about this strategy but indicated that a serious reflection is needed, because it requires a partial rethinking of Citydev's mission and financial business model. The development of an industrial park requires less time and personnel costs than the development of smaller-scale production assets scattered throughout the city. Instead of one procurement procedure, multiple of these would be necessary. Instead of one

entrepreneur, a series of general contractors and construction sites would need follow-up. With a partially adapted financial business model, the director estimated that it might be feasible from a certain scale onwards if several buildings could be renovated at once. It would also require the support of a pilot project to gather expertise and assess the risks. Expanding the production patrimony with renovated assets also requires decentralised management instead of the centralised management of an industrial park. Here, a public developer could join forces with other regional administrations that have more field expertise in local economic development such as Impulse, or, as we shall see below, it could co-govern these spaces in a mix of public and private actors (cf. Community Land Trust model).

The former real estate strategy of extending public production patrimony and leasing production land closely interrelates with forms of project management to create symbioses between enterprises. Although Citydev pays sincere attention to sustainability at the level of the architecture of their buildings, circular economy thinking for example – where flows and waste as new resources intertwine – needs a thorough reflection on and investigation into the potential collaboration between enterprises. This supports the earlier suggestions of using research-by-design strategies rather than pre-defined building regulations to determine the best physical organisation of mixing at the building level. The same difficulty appears in private development projects, in which investment and construction expertise are separated from the production activities that will occur in these buildings.

Bryson et al. (2017:456) promote long-term public land ownership as a third real estate strategy of 'mediating the relationship between localities, property developers and global finance'. As their case of the Birmingham City Council (BCC) illustrates, as the owner of 40 per cent of inner-city land in 2015 Birmingham can generate new rounds of value capturing through land rents every few decennia by keeping the freehold rights and selling only the leasehold rights. Bryson et al. (2017) use two arguments to defend public land ownership and the public financial innovation that goes along with it in the case of Birmingham. One, surplus from land rents is re-invested into society instead of disappearing out of the territory. Two, local authorities have a higher influence on development 'outside the planning system, by a process of negotiation with property and financial intermediates and through the establishment of joint ventures formed to redevelop plots or larger areas' (461). Especially the first argument is extremely persuasive as a strategy to magnify city budgets. This appears to include the benefit of continuous surplus injections into society. However, the question here is what happens to the urban spaces for production when developing this public model of financialisation? Can these forms of value capturing guarantee the availability and affordability of urban production space? Unfortunately, the answer is no. To ensure the creation of long-term land rents and maximise profits, the public landowner needs to search for higher use values every couple of decades. Consequently, the displacement of lower-value uses is unavoidable under this financial model and goes hand in hand with the disappearance of productive space in city-centres as well as their peripheries. Empirical evidence from cases such as the deliberate displacement of the wholesale markets in Smithfield, Birmingham, or the 22@ redevelopment of Poblenou district, Barcelona, prove that these financial interpretations of value reinforce the vulnerability of production space in real estate dynamics and conflict with the urban production's need for available and affordable land. When this model of public value capturing is used to increase city budgets, it needs to be done as part of an overall territorial reflection and be accompanied by an awareness of and knowledge about the consequences for production space.

A possible way out of this conundrum is to develop strategies that avoid land-value capturing in the long run. In the field of housing, the Community Land Trust (CLT) model is increasingly advocated to achieve this goal (Davis, 2014; Moulaert & Midheme, 2013). This is done by splitting the ownership of land and

buildings. Rather than selling it to the residents, the land is held in a trust managed by public authorities, residents, and local or neighbourhood associations. As such, private land-value capturing and increasing land prices are prevented. By establishing resale conditions that stipulate that any added value realised in the building is split between the former resident and the trust, the long-term affordability of housing is achieved (Aernouts & Ryckewaert, 2018). When applied to productive activities and mixed projects, the CLT model potentially offers several advantages compared to more classic approaches, for example public bodies leasing out land for productive uses, an approach which also allows curbing the land-value-capturing mechanism. First, the model takes the cost of land out of the equation, adding to that a mechanism to valorise the buildings as well. This implies more careful decisions about the re-use of structures. Second, as the trust is composed of public authorities, residents, and other users as well as neighbour(s)(hood associations), any decision on new or future activities involves their concerns and needs. Here, productive uses are considered as well. The notion of 'stewardship' in CLTs means that during occupancy, users and residents co-govern and manage the project. Aernouts and Ryckewaert (2018) stress the importance of 'commoning', the continuous process of co-governance between residents, managers, and other interested partners, as a crucial practice to support the preservation of common resources such as urban land or housing. The combination of this governance set-up and commoning practices creates an arena where conflicts between uses or real or potential nuisances can be mitigated and resolved on a permanent basis, and is particularly valuable in mixed-use projects. Interestingly, Brussels is the first city on the European continent to have established a CLT for affordable housing. Moreover, public real estate developer Citydev is increasingly interested in leasehold mechanisms, not only for productive but also for residential uses, as illustrated in its recent collaboration with the Brussels CLT. A CLT strategy therefore seems a viable way to also develop and manage mixed-use projects where the barriers between ownership and leasing are replaced by a strategy of long-term stewardship of affordable land. Research illustrates that, when commons institutions run the risk of an enclosure, this risk is strongly reduced when public authorities participate in the democratic management of the resource.

Table 3: Overview of complementary strategies to guarantee available and affordable production space, and to reduce conflicts of use (summary of section of 5).

	USPP-1	USPP-2	USPP-3	USPP-4
Zoning strategies	(*) Innovative heritage approach: retaining functions instead of aesthetics	(*) Micro-zoning for production (*) Innovative heritage approach: retaining functions instead of aesthetics	(*) Mono-industrial zoning (*) Adjacent mixed-use and micro-zoning for production	
Design strategies	(*) Criteria to retain and convert industrial land (e.g., accessibility of the building, accessibility of the building block)	(*) Criteria to retain and convert industrial land (e.g., accessibility of the building, accessibility of the building block)	(*) Research-by-design, exploring collective uses to reinforce spatial (and management) efficiency	(*) Less dense programming to create buffer space between uses (*) Mixed-use zoning allowing vertical production

	USPP-1	USPP-2	USPP-3	USPP-4
Alternative business model strategies	(*) Business models that take land out of the development and production costs: ~ Community Land Trust, cooperatives	(*) Business models that take land out of the development and production costs: ~ Community Land Trust, cooperatives	(*) Business models that take land out of the development and production costs: ~ Community Land Trust, cooperatives	(*) Business models that take land out of the development and production costs: ~ Community Land Trust, cooperatives
Real estate strategies for public bodies	(*) Buying, renovating, and/or constructing small-scale production spaces (*) Leasing instead of selling production land	(*) Buying, renovating, and/or constructing production spaces (*) Leasing instead of selling production land	(*) Leasing instead of selling production land	(*) Value-capturing strategies in non-productive activities areas (*) Leasing instead of selling production land, in combination with the leasing of housing to control real estate prices
Management strategies	(*) Decentralised management of small-scale inner-city production spaces (*) Project management to create symbioses between enterprises	(*) Decentralised management of small-scale inner-city production spaces (*) Centralised management of peripheral business/production parks (*) Project management to create symbioses between enterprises	(*) Managing mono-industrial zones (as business parks) (*) Project management to create symbioses between enterprises	(*) Centralised and decentralised management of small-scale inner-city production spaces (*) Project management to create symbioses between enterprises

6. Conclusion

Despite renewed attention for urban productive activities in academic and policy discourses alike, this chapter demonstrates that production space continues to disappear. In the mid-20th century, conflicting uses were duly separated and gave rise to peripheral and isolated industrial parks. In contrast to this modernist model of production space, embedding productive activities within the urban fabric amounts to various degrees of mixed uses. By reworking the multidimensional typology of mixed use by Hoppenbrouwer and Louw (2005), this chapter identified four USPPs that characterise the productive city tissue in the BCR. These patterns cover: USPP-1, a fine-grained mix of residential and productive uses at the building block level; USPP-2, or districts horizontally mixing or juxtaposing uses; USPP-3, the mono-

functional industrial areas; and USPP-4, or vertical mixed-use projects. Each of these settlement patterns comprises different spatial mechanisms that push productive activities out, as well as different productive city strategies to retain or develop productive activities.

What all these mechanisms have in common is a strong interrelation between zoning regulations and processes of land value increase that put pressure on the affordability of space (land and buildings) for productive uses. Whenever higher-value opportunities occur, industrial and residential gentrification pops up. Mono-functional industrial areas seem to be the best guarantee of affordable production space. But they run the risk of underuse, as the incentive for redevelopment of derelict productive infrastructure is low. In the USPP-1 of a more fine-grained tissue, workshop and warehouse spaces in the courtyards of building blocks are predominantly transformed into housing (or places of worship). This risks displacing the small-scale workshops needed for construction. Within the vertical mixed-use typology, urban production risks equivalent industrial (and residential) displacement since developers anticipate the conversion to other uses in the building design. These mechanisms reveal a dilemma between vertical mix on the one hand and mono-functional areas on the other. There is one USPP in the Brussels case that seems to escape from this dilemma, namely USPP-2, or the mixed-grain areas where productive and residential uses are juxtaposed, mainly at the intermediate building block level. A decisive factor in this respect is the management and provision of productive space by the Brussels public real estate developer Citydev.

To counter such displacement mechanisms, this chapter elaborates on a series of complementary strategies to improve current productive city strategies. First, as part of zoning and design strategies, the spatial pattern of a juxtaposition of different uses indicates fewer problems than vertical mixing. Design competitions for vertical mixed-use projects in Brussels reveal that the most successful projects apply more moderate modes of the vertical mixing, such as housing-over-shops, a combination with immaterial production, or a mix between offices and production as well as juxtaposition. Together with juxtaposition at the building block level, these moderate strategies fit under the header of 'micro-zoning' as promoted by the Brussel Government Architect. Additional design and typology clues are offered by revaluing the historical spatial organisation of production. (1) Workshops and warehouses in the courtyards of residential building blocks could be preserved for productive uses by not only considering their value as built heritage in heritage preservation regulations but also their productive use. (2) Integrating the vertical organisation of production in zoning regulations for mixed areas fits well with spatial juxtaposition and micro-zoning, reviving a spatial settlement pattern of urban production that was predominant in the late 19th and early 20th century. (3) The tendency to determine the spatial organisation of mixed use in zoning codes and building regulations, as is the case in the EAUD Biestebroeck, does not guarantee the mitigation of conflicting uses. Research-by-design approaches for mixed-use areas that consider the specificities of the site and the local context prove to be more successful.

Second, in addition to these spatial zoning and design strategies, land tenure and management strategies can increase the provision and affordability of urban production spaces. Industrial park management can optimise the use of space and prevent underuse and the decay of industrial infrastructure in mono-functional areas. Public acquisition, leasing, and management by a public actor, such as Citydev in Brussels, proves to be a successful recipe for safeguarding production space at affordable prices. The portfolio of public actors can be extended to include small-scale production spaces such as workshops and warehouses in inner-city areas. Centrally located small-scale workspaces largely remain under the radar today but offer great opportunities for the many SMEs that make up much of the productive activities in our cities today. For public real estate agencies, this implies developing new acquisition strategies as well as a

decentralisation of management. In mixed-use areas or buildings, the CLT model of land tenure offers opportunities to create a community between residents and businesses. This involves the co-development and co-management of productive and residential space as a shared resource, while also guaranteeing long-term affordability. 'Commoning' and stewardship within CLTs – the practice of co-governance and shared activities – is a promising and more effective method to continuously discuss and mitigate conflicts between users than passive and fixed zoning regulations.

This chapter claims that productive city strategies need to be adapted to the specific local context and consider the realities of the various spatial settlement patterns of production in our cities. The various difficulties encountered in the concepts and practices of the productive city do not warrant its dismissal but call for a strengthening of productive city policies at all governance levels in order to maintain and grow urban production.

CHAPTER VI
CONCLUSION

This dissertation started with the observation of the displacement of basic needs and services in European post-industrial cities with growing populations and severe real estate dynamics. This observation raises two major urban problems. On the one hand, if industrial gentrification continues at its current pace, we risk creating a structural scarcity of the provision of urban basic goods and services as well as reinforcing unemployment and strengthening social inequalities. A lack of space for people and their workspaces threatens the quality of life and well-being of citizens of socio-spatially polarized cities. It reinforces short-schooled labourers' need to work under vulnerable and under- or low-paid contracts in unacceptable working conditions, including long commuting times. On the other hand, the ongoing deindustrialisation confronts us with the contradiction between renewed government attention for urban production since the North Atlantic financial crisis of 2007–2009 and the emergent lack of production spaces. At a time when urban governments express their desire to strengthen the diversity and resilience of urban economies, there will be little to no affordable space left to achieve this.

I mainly address these two urban problems by using the inspiring strand of thinking of the Foundational Economy Collective and call these basic needs and services the foundational economy (FE). Referring to the grounded economy as well as to an ideological academic and policy project, the FE provides me with a conceptual body for critical analysis and helps me create a framework of action, here in the specific form of policy recommendations. The reality of displacement and its adverse effects on liveability, well-being, and equality necessitates looking for urban economic development practices for post-industrial cities that align with the socio-economic profiles of their inhabitants and the spatial context of their territories.

A primary aim of this dissertation is to investigate how one can sustain decent lives for citizens confronted with socio-spatial inequalities, using the hypothesis that the FE and its related operational concepts can help preserve and expand the provision of basic goods and services in European post-industrial cities where demographic growth puts extra pressure on the land available. More specifically, the outcome of the research indicates that public real estate and management strategies have the potential to become new protagonists in the provision of affordable production workspaces.

This final chapter synthesises how I arrived at the answers to the question of how to make space for the FE in Brussels – in the literal and metaphorical sense – and discusses the possible planning and policy implications for other post-industrial cities as well as other FE sectors apart from construction. More precisely, this chapter addresses the following question: What are the spatial and non-spatial tools to make space for the FE? First, the conclusions of the chapters follow. These conclusions narrate the four approaches that can be used to make space for the grounded economy and translate these into four subquestions that more or less correspond to the four chapters of this dissertation. The four approaches of making space for the FE are (1) a diverse policy perspective on spatial policy, (2) the creation of an FE framework for policy action, (3) the production of sector-specific knowledge, and (4) productive city strategies. Then, I reflect on the conditions under which space for an FE can be made. In subsection 2, I reflect on the implementation of FE in other sectors. In subsection 3, I point to how we can learn from the

planning & policy perspectives from Brussels for other post-industrial cities. The fourth subsection delineates some of the governance challenges of the urban planning and policy perspectives to make space for the FE. In the fifth and final subsection, I point to several future research avenues for the FE in the fields of mobility, land-use, planning & urban design, and public procurement.

1. Conclusion of chapters

The following chapters are based on co-authored papers that have been published or submitted for review.

1.1 Making space for the FE through a diverse economy perspective on spatial policy

This chapter is published as a journal article. The full reference is: De Boeck, S., Bassens, D. and Ryckewaert, M. (2017). Easing spatial inequalities? An analysis of the anticipated effects of Urban Enterprise Zones in Brussels. In: European Planning Studies, 25(10): 1876–1895.

The first objective is to approach making space for the grounded economy through spatial policy. In the second chapter, *Easing spatial inequalities*, I look at the spatial planning context of Brussels in terms of economic development and at the interplay between these planning instruments in the Brussels canal zone. The banks of the canal were the former industrial heart of the BCR and still host a mix of small-scale and large-scale production spaces. This area houses the largest concentrations of poor and unemployed people, and the employed are mainly short- and middle-schooled blue-collar workers. A range of territorial planning instruments aims at easing spatial inequalities in this area. To understand what the impact of spatial policy is on the jobs and workspaces, the question that accompanies this research is: What are the (anticipated) effects of current spatial policy instruments with regard to economic activities in the BCR, and can they be interpreted as policy measures effectively reducing spatial inequalities?

Starting from a comparative analysis of urban enterprise zones (UEZ) in France and the identification of the anticipated effects of the implementation of a UEZ in the BCR, one of the first conclusions of this chapter is that **the eradication of uneven development with current planning policy is unlikely**. Through the perspective of a political economy reading, I observe that such instruments strengthen socio-spatial inequalities instead of mitigating them because they are integrated into several competitive logics. One of the potential effects perceived through the ex-ante analysis of the Zone of Economic Expansion (ZEE) is that enterprises that are easily delocalisable – mostly offices – will come to the zone to benefit from tax exemptions, instigating a territorial competition for commercial locations between the Brussels municipalities. Concerning the interplay of planning instruments, another negative effect results from the absence of alignment with other present planning instruments in the same territory. To give an example, the Enterprise Areas for Urban Development (EAUD) or the conversion of former mono-industrial zones into mixed-use zones will increase real estate prices and make it more difficult for productive activities to settle. Looking at the interplay between planning instruments in the canal zone reveals pull-and-push mechanisms that are present at the same moment and that contradict each other. The effects of this interplay have an impact on the displacement of jobs that are accessible to short-schooled people that live in this area. The main conclusion of Chapter 2 is that **while some spatial economic development policies are supposed to be inclusive and ease spatial inequalities, they seem to reinforce exclusivity**. Territorial policy then actively contributes to displacement dynamics and reinforces socio-spatial inequalities, while the explicit purpose of the policy is to remedy them.

Since the current planning policy in the BCR is not likely to escape this territorial trap of uneven development, I argue that **a shift is needed in how we conceptualise the economic underpinnings of the city, away from competitive dynamics**. I follow the diverse economic perspective that changing economic imaginaries are crucial to rethinking our economy and transforming policies. A key question, then, is how current economic policy can be more aligned with the social and economic profiles and spatial opportunities of the territory and soften competitive mechanisms of displacement. Here the concept of the FE enters the stage. The FE opens the possibility of making space for different layers of urban economies present in the city. Based on this idea of economic multiplicity, **regions could assign spaces to each of the economic layers**. This would imply that some parts of cities host functions that are more vulnerable to real estate mechanisms and need extra policy protection to keep land rents low, while other areas host functions that can more easily bear the exposure to rising land prices. Boldly stated, some neighbourhoods could be conceived as a playground for foreign investors and other spaces can be preserved for the grounded economy.

Another outcome of the comparative analysis and learning from France is **the need for a Brussels metropolitan consensus to mitigate internal competition between the municipalities within the metropolitan area, also beyond the limits of the BCR**. Collaboration on a metropolitan scale needs to be operationalised through an institutional framework to support an urban community that extends the administrative borders. Various types of metropolitan collaboration have been put in place (Van Wynsberghe et al., 2007). Examples are the London Greater Authority and 'les communautés urbaines' in France, like Grand Paris or Lille Metropole. In Belgium, political relations between the regions make it impossible to reach a consensus for the time being and force the BCR to find solutions within its boundaries. The political impossibility of sustainable metropolitan cooperation provides an additional argument for the FE as a salient scenario for local job creation – a set of economic activities less prone to territorial competition, yet susceptible to ethnic entrepreneurship and associated social mobility effects and elementary in the social reproduction of numerous neighbourhoods within and across the border of the region.

The hypothesis of the FE as a new and less competitive way to conceptualise the economic underpinnings of the city raised two new questions. The first question is how to apply the concept of the FE to the planning practices of the BCR. While the Foundational Economy Collective has contributed much to the conceptualisation of the FE, work has to be done on implementing and practising the FE. I elaborate on the application of the FE in Chapter 3. The second question is how space can be planned and (re)designed to mix and accommodate elements of the FE within the existing and newly developed urban fabric of the BCR. I approach this question from an economic geography, urban design, and planners' perspective in Chapters 4 and 5.

1.2 Making space for the FE through the creation of an FE framework for policy action

This chapter is published as a journal article. The full reference is: De Boeck, S., Bassens, D. and Ryckewaert, M. (2019). Making space for a more foundational economy: The case of the construction sector in Brussels. In: Geoforum, 105: 67–77.

The second objective of this dissertation is to approach space for the grounded economy through materialising FE thinking into an implementation that leads to new policy opportunities. The provision of a framework for analysis and action occurs in Chapter 3, *Making space for the foundational economy*, with the methodological support of the case of the Brussels construction sector. Even though the construction

sector is not part of the original delineation of the FE, I observed several foundational tendencies, such as hosting a large amount of local employment, a great presence of small-scale workshops in residential areas, etc. I hypothesise that the FE is not only situated in the consumption of basic services and goods but can also be found in its production. I make use of the construction sector to test this hypothesis. My research question is: In what ways is the construction sector key to the social reproduction of the contemporary city? And, concerning the outcome of this question, what are the labour and land opportunities for less competitive urban economic development practices in the BCR?

Chapter 3 starts by outlining a theoretical legitimation of why the FE deserves policy attention. Focusing on debates on what constitutes the basic economy of the city, Chapter 3 draws on a long tradition of urban studies debates that follow the Blumenfeld (1955) position that **the basic economy is constituted by those activities through which citizens supply one another**. Urban development policy should, therefore, focus not only on the inherently volatile segments of the urban economy but also on the economic activities that maintain the daily functioning of the metropolis and its citizens. The FE does not aim at achieving an ideal growth model as, for example, proposed by Florida (2004) or Glaeser (2011). It supplies a resilient economic base in cities, varying from 30 to more than 50 per cent of total employment. Several facts require us to acknowledge the enduring role of the FE: first, that daily needs and services are less prone to cyclical fluctuations, and second, that the consumption as well as production of these needs creates local employment - and as such, that the FE generates more well-being for the population itself (jobs, basic provisions, local multiplier effects).

Witnessing the ambiguous character of construction as both embroiled in spectacular-speculative urbanism and as being supportive of the everyday reproduction of the built environment, Chapter 3 proceeds to distil a set of dimensions that characterise construction activities as being part of the FE. The Brussels construction sector is increasingly prone to competition through its enrolment in pan-European labour markets as well as through urban land pressures caused by real estate dynamics that strive for higher-end activities. However, the construction sector has foundational dimensions because **it produces urban infrastructure (waste disposal, sewage systems, cables, pipes, etc.) as well as the infrastructure of social reproduction (housing, public administration offices, schools, hospitals, etc.)**. This grounded character results from the specific structure of the sector, based on **dynamic SMEs that are easily accessible to parts of the labour force excluded from the 'apex' service economy around the city's national and international administrative, financial, and legislative functions**. More than **70 per cent of 'domestic' employment is supplied by the more vulnerable segments of young and local blue-collar workers, often with a migration background**. The grounded character of construction is also supported by a **fine-grained, inner-city geography interwoven in residential areas**. Although construction is typically considered 'low-skilled', construction enterprises are not concentrated in the poorer parts of Brussels – such as the former industrial canal zone – but are **distributed throughout the region in the same way as food stores and supermarkets**. This implies **local embeddedness and catering to the local market that needs the proximity of construction enterprises, construction materials, and construction sites in terms of the production process**.

Starting from this ambiguous case, I look for policy opportunities in the areas of both labour and land markets that can mediate or soften tensions and strengthen the grounded character of the construction sector. The main conclusion concerning labour and land opportunities for less competitive urban economic development practices is that urban governments should not only mediate the redistribution of a part of the created surplus through social licensing (Bentham et al., 2013a,b; Bowman et al., 2014; FEC, 2018) and

tax privatised land (Engelen et al., 2017) to capture part of the rent. As part of my contribution to the FE literature, I demonstrate that **urban governments also have to be actively involved in governing land markets through strategies of 'freezing' ground rent dynamics to guarantee the spaces of consumption and production of basic goods and services**. Chapter 2 confirms that these workspaces risk being gentrified through processes often instigated by local governments through changing zoning policies (De Boeck et al., 2017; Edwards & Taylor, 2017; Ferm & Jones, 2016). The observation of the need for locally available and affordable workspaces for the grounded character of construction in Brussels directed me to the importance of adding a spatial dimension to the FE.

Next to the crucial involvement of urban governments in land markets, the research exploring options to preserve the grounded character of construction leads to multiple and promising **policy possibilities such as urban development projects (UDPs) as contributors to the infrastructure of everyday life and public procurement procedures for a socially and ecologically sustainable construction of the urban built environment**. UDPs and procurement will be explained in more detail in the *Further research* subsection of this chapter. Because the presence of affordable production land is a primordial condition for the grounded character of construction enterprises, I chose to go deeper into the land-use matter in the second part of my dissertation.

From a theoretical point of view, the combination of the critical urban studies and planning literature makes it possible to highlight the industrial gentrification mechanisms at play but does not say anything about countering industrial gentrification, which is my explicit goal. Furthermore, to formulate policy measures that can counter industrial gentrification, I need a better understanding of this phenomenon. For Brussels, residential gentrification is extensively studied (cf. the work of Van Criekingen 2006, 2009, 2010). This is less the case for industrial gentrification. Moreover, I also wanted to understand the spatial organisation of the construction SMEs on a regional and metropolitan scale, and to identify their spatial needs in terms of warehousing, workshops, logistical space, supply chains, parking space, networks, etc. Sector-specific knowledge is a necessary and valuable prerequisite for formulating new spatial design strategies and spatial planning regulations, especially for such a sector as fine-grained and spatially embedded as construction. However, certain kinds of knowledge – such as the sector-specific knowledge of construction – were missing.

1.3 Making space for the FE through the production of sector-specific knowledge

This chapter is submitted as a journal article. The reference is: De Boeck, S., Degraeve, M., and Vandyck, F. (2020, forthcoming). Challenges to the preservation of construction companies' small-scale workspaces in the Brussels Capital Region (1965–2016). In: Brussels Studies.

The third objective of my dissertation is to empirically contribute to spatial sector-specific knowledge about the construction sector and to use this knowledge to look for potential spatial policy margins. My research question is: What is the economic geography of Brussels construction enterprises and what are their spatial needs? In Chapter 4, *Challenges for the preservation of small-scale workspaces*, I approach the question analytically through a relational value-chain perspective (Bowman et al., 2014), where physical workspace is studied as being an indispensable part of the production chain. The enterprises are mapped within their networks of employees, their suppliers, their clients, and the construction sites. Through mixed-method research employing semi-structured in-depth interviews with construction entrepreneurs and quantitative data, this investigation shows that the way in which construction enterprises spatially organise themselves plays an important role in their endeavour to remain competitive. Construction enterprises follow patterns

of spatial distribution similar to supermarkets and comparable decentralised basic goods and services. The qualitative research on the construction entrepreneurs indicates that many of these enterprises cater to the local market and work with local construction workers. They are constantly on the lookout for flexible spatial adaptation strategies, navigating between suppliers, sites, and clients and the location of their enterprise in order to more efficiently and productively organise their work.

A historical comparison of the number of construction enterprises exhibits a sharp decline between 1965 and 2016. The entrepreneurs explain this decline by traditional deindustrialisation dynamics (technological innovation, changes in the production process, constantly changing demand, etc.) but also see the lack of available, centrally located, and affordable premises as an imperative push factor. Their statements support the industrial gentrification hypothesis (Ferm & Jones, 2016, 2017). A competitive real estate market in which residential functions and offices are financially more attractive than workspaces leads to the latter losing out. Looking at production space from the perspective of chain value confirms the importance of intervening in land rent mechanisms in order to safeguard space and keep it affordable. This is valid for workshops and storage space of urban construction enterprises but also and especially for suppliers, who are having trouble locating in Brussels with their large claim on space. The potential disappearance of these actors from the urban fabric puts pressure on the territorial groundedness of the entire production network. Following these observations, I conclude that if we want to preserve urban productive activities such as the construction sector, we need to safeguard small-scale and affordable production spaces. This is not only mandatory to guarantee the grounded character of the Brussels construction sector, but other sectors in the BCR or in other cities with similar spatial needs benefit from a guaranteed stock of affordable production spaces as well.

Another conclusion about the spatial needs of construction enterprises concerns the typology of workspaces. Although some building contractors indicate that the industrial parks – *les zonings* – located in Flanders and Wallonia would be perfect locations for their companies, the research shows that the desirability of these parks is not so much related to the location of these sites but to their morphology. The difficulty of finding centrally located workspace not only has to do with the shortage and unaffordability of stock but also with the need for a specific typology of space that can simultaneously accommodate various functions such as storage, office, studio, and parking. This research also demonstrates that the workspaces of construction SMEs are mostly smaller than 1,000m². I came to realise that almost an entire sector is completely invisible to policymakers, since the regional government only maps production spaces starting from 1,000m².

1.4 Making space for the FE through productive city strategies

This chapter will be submitted as a journal article for a special issue on local economic development of the journal Urban Planning. The reference is: De Boeck, S. and Ryckewaert, M. (2020, forthcoming). Planning for a productive city: Complementary strategies for the long-term provision of affordable production space. In: Urban Planning.

The fourth objective of this dissertation on making space for the grounded economy is to study urban manufacturing as part of the FE. I motivate urban manufacturing as being part of the FE via the productive city discourse that advocates for the preservation of industry in cities with a focus on production spaces. The productive city literature provides the perfect tool to spatialise the insights of the FE. It helps provide a state of the art of production spaces in a city and reveals neglected spaces, like small-scale production spaces, as a potential policy opportunity to support the groundedness of the FE. The hypothesis that the preservation of urban manufacturing is required to accommodate FE activities raises two research

questions. The first question is how to regulate competition between the functions of living and working in a land market governed by fiercening real estate dynamics and property-led development. The second question is how to create a non-exclusionary (or inclusive) intertwining of working and living. This question rephrases a similar question resulting from Chapter 2 on how space can be planned and (re)designed to mix and accommodate elements of the FE within the existing and newly developed urban fabric of the BCR.

From a critical urban geography perspective, one can presume that promoting mixed-use development is misleading because higher-value uses generate higher rents that de facto instigate displacement mechanisms. Mono-industrial uses prevent rising land prices. But urban history and planning history and theory cite numerous cases of a successful mix of residential and productive functions. As it opposes mono-functional urban space, a mix of uses results in rich and highly liveable urban environments. Also, Brussels, where this research is situated, has a long history of typologies of mixing working and living (Inventaire Visuel, 1980; Vanderhulst, 1992; Van Dyck & Degraeve, 2019). If we want to make space for the FE, a rigid anti-mix conclusion does not correspond to the actual (cf. Chapters 2 and 3) or historical observations. Therefore, this research proceeds in Chapter 5, *Planning the productive city*, by studying how to organise a mix in a sensible and non-exclusionary way, where the competitive dynamics of real estate are weakened so as to make space for the FE.

I empirically demonstrate in Chapter 5 that, despite more and more policy and academic attention for productive activities, production space in the BCR continues to disappear at a rapid pace. I consider that the fact that this is not manifest on the mental map of administrators and politicians puts urban production at risk. To answer the need for systematising research on production spaces and to generate a clear overview of related actors, existing and potential policy measures, urban morphology, etc., my contribution consists of the creation of an analytical framework to categorise different urban settlement patterns of production (USPP). These patterns cover: (1) a fine-grained mix of residential and productive uses at the building block level, (2) districts horizontally mixing or juxtaposing uses, (3) mono-functional industrial areas, and (4) vertical mixed-use projects. Each of the settlement patterns of urban production involves different spatial mechanisms and different actors that push productive activities out. Each of the patterns also has specific productive city strategies to retain or develop productive activities.

A new contribution of my research to the industrial gentrification literature is that by categorising production spaces into distinct settlement patterns and analysing these patterns we obtain insights into different types of industrial gentrification. Production spaces in a fine-grained and mixed residential fabric disappear in a way different from production spaces in mono-industrial zones, for example. These mechanisms display a common interrelation between the zoning regulations in USPPs and processes of land-value increase that put pressure on the affordability of workspaces. Whenever higher-value opportunities occur, industrial and residential gentrification processes are inescapable. Where mono-functional areas are the best guarantee of affordable production space, they also need incentives for the redevelopment of underused buildings. Industrial assets in fine-grained inner-city areas are mainly transformed into housing through individual choices of private ownership. Mixing production vertically with housing risks most displacement because of commercial incentives for developers. Micro-zoning, where productive and residential uses are juxtaposed at the level of the building block, partially escapes this dynamic, especially when a public developer – such as Citydev in Brussels – provides and manages the workspaces.

The categorisation into distinct USPPs does not only identify distinct types of industrial gentrification but also allows us to sketch policy proposals tailored to countering each of the specific displacement types. I elaborate on two sets of complementary strategies to improve current productive strategies in the BCR: (1) zoning and design strategies, and (2) public real estate and management strategies. In the zoning and design strategies, micro-zoning – or the USPP 2 of juxtaposition in mixed-grain inner-city areas at the level of building blocks – emerges as the best spatial strategy for combining the goals of maintaining and growing production workspace while respecting the residential liveability of the neighbourhood. The project Greenbizz (Architectassoc, 2012; Bilande et al., 2016; Citydev, 2016) hereby figures as an exemplary project regarding the typology of juxtaposition and micro-zoning. Even in the EAUD Biestebroeck – a land-use zone that requires a vertical mix – design competitions reveal that winning projects apply more moderate modes of vertical mixing by integrating degrees of juxtaposition. While this dissertation observes that zoning codes and building regulations tend to determine the spatial organisation of mixed use (cf. EAUD Biestebroeck), it pleads for using a research-by-design methodology that considers the specificities of the site and the local context in order to mitigate conflicting uses.

Additional design and typology clues are offered by revaluing the historical spatial organisation of production. The production patrimony of workshops and warehouses in the interior of residential building blocks could be preserved and reused for productive uses by not only considering their value as built heritage but also their productive use. Integrating the vertical organisation of production in zoning regulations for mixed areas fits well with spatial juxtaposition and micro-zoning, thereby reviving a spatial settlement pattern of urban production that was predominant in the late 19th and early 20th century.

Public real estate and management strategies can reinforce the provision and affordability of urban production spaces. Industrial park management can optimise the use of space and prevent underuse and decay of industrial infrastructure in mono-functional areas. The portfolio of public actors can be extended to include small-scale production spaces such as workshops and warehouses in inner-city areas that remain under the radar today but offer great opportunities for the many SMEs that make up much of the productive activities in our cities. This implies developing new acquisition strategies as well as a decentralisation of management. In mixed-use areas or buildings, the Community Land Trust (CLT) model of land tenure offers opportunities for creating a community between residents and businesses. This involves the co-development and co-management of productive and residential space as a shared resource, while also guaranteeing long-term affordability. 'Commoning' and stewardship within CLTs – the practice of co-governance and shared activities – constitute a promising and more effective method to continuously discuss and mitigate conflicts between users instead of passive and fixed zoning regulations.

2. How can these results be applied to other FE sectors?

This dissertation advocates for aligning urban economic development with the grounded dimensions of urban economies. This is not a plea for a kind of autarchic city-state, nor for the abolishment of the economic success that is related to Brussels's status as a small world city and as the capital of the European Union. By pointing to the grounded dimensions of urban economies, this research gathers arguments for urban economic policy opportunities that contribute to mitigating socio-spatial inequalities within cities.

I have shown that the FE provides a valuable approach to reconceptualising certain strata of the urban economy away from competition and bring them more in line with the socio-economic profiles of citizens. Departing from the original delineation of the FE as related to consumption, I illustrate how the production

of essential goods and services can also be made more grounded by applying an FE perspective to study sectors involved in the production of the base economy. A major contribution is that by following the production perspective my dissertation demonstrates that especially people with short- and middle-schooled profiles would benefit from urban economic and spatial policies supporting the FE. In the BCR, as in most post-industrial city-regions, the deindustrialisation process that started in the 1970s has triggered a crisis of structural unemployment of especially short-schooled profiles that is unresolved until today. Supporting the FE sectors, and partly reindustrializing the city by producing more locally, could create more local employment for the short-schooled segments of the labour market.

The combination of a relational production chain perspective with the newly created FE framework for sectorial analysis serves as a powerful tool that can be applied to sectors other than construction. An FE analysis of sectors helps unravel the tensions that exist within these sectors embedded in a specific geographical context. Tensions emerge between degrees of groundedness and degrees of being part of a more extensive competitive logic. While Braudel (cf. Chapter 1) makes a sharp division of economic layers according to the dominant mode of exchange – non-market, market or anti-market – I observe that economic sectors participate in the three modes of exchange at the same time. The implementation of an FE analysis of sectors identifies the different modes of exchange, manifests the tensions between the different modes of exchange, and looks for opportunities to pull them more into the foundational realm. An FE analysis contributes to thinking about how to support an economic sector – such as construction – that has clear links to the apex economy and is part of the global financialised economy, so it becomes more foundational and forms part of a social and ecological transition of urban economies.

3. How can these results be applied to other (European) post-industrial cities?

In terms of providing for the foundational economy as an alternative economic imaginary as well as an urban economic development praxis, the Brussels planning and policy perspectives transcend the case of the BCR and are applicable to other growing post-industrial cities.

Regarding the construction sector in the BCR, this research argues that strategies around public procurement, land ownership, and UDPs support the urban government in regaining its role as an internal governor and finding ways to anchor construction as a foundational activity in the city. An FE sectorial analysis in other cities and sectors will reveal additional, place-specific internal governors who can grow the grounded economy. Possible governance trajectories support the upscaling of production of smaller-scale urban manufacturing initiatives or innovation in production processes, financial and business organisation models, relations with employees, relations with suppliers, etc.

Transcending both the case of construction and the BCR, my main argument is that urban governments should not only intervene in the redistribution of a part of the created surplus through social licensing (Bentham et al., 2013a,b; Bowman et al., 2014; FEC, 2018) and tax privatised land to capture a part of the rent (Engelen et al., 2017). I insist that if urban governments want to promote the groundedness of their economies, this implies active involvement in governing land markets. To guarantee the spaces of production of basic goods and services, public real estate strategies are essential to softening ground rent dynamics. Public interference in land prices seems to be a universal internal governor in cities dealing with fiercening real estate dynamics.

I explicitly write 'universal' because, next to construction, many other productive sectors in European cities have similar spatial needs for small-scale workshops and storage spaces, preferably combined with small office space. The BCR hosts, for example, several indoor urban farmers growing highly nutritious microgreens (Microflavours, 2020) and mushrooms (Le Champignon de Bruxelles, 2020) in inner-city

production spaces of less than 500m². There are also beer breweries, chocolate factories, printing companies (books, magazines, brochures, restaurant menus, etc.), factories that make medical equipment, folding bikes, air quality sensors, locks and hinges, tools, cutlery, reproductions of recorded material, garments, furniture, flowers, the supporting sectors of repair (bike, car, public transport vehicles), painting, maintenance, electronics, material supply, and the recycling sectors of waste and urban mining, to name but a few of the many examples of small-scale production space 'users' in Brussels, London, The Hague, and Rotterdam (Cities of Making, 2018). Losing small-scale production spaces equals losing the diversity of local producers catering to a local market (and beyond), creating local employment and directly contributing to the functioning of the city and the well-being of citizens.

The awareness of the effect of real estate dynamics on production spaces and the understanding of different types of industrial gentrification opens a whole new set of productive city strategies to support and stimulate urban manufacturing in post-industrial cities. To explore these potential productive city strategies, there is a need to make a state of the art of the grounded economy first and to understand the foundational tendencies already present in urban economies.

First, such an FE analysis requires the development of sector-specific knowledge in relation to the production of the grounded economy. When it comes to making space for the FE, including construction, there appears to be a knowledge gap at the level of the government. Contrary to economic development in the Fordist era (Ryckewaert, 2011), regional administrations have very little sector-specific knowledge. Construction appears to be an exception, in the sense that construction waste and construction materials play an important role in the circular economy policy of the Brussels environmental department and the Brussels Port. Currently, this is knowledge about large-scale operators and large plots of harbour land along the banks of the canal. But there is no knowledge about the decentralised and fragmented spatial organisation of 93 per cent of the Brussels construction enterprises that have less than 20 employees. In cities with hollowed-out governments, such as in the UK, this would require reinstalling inhouse sector expertise instead of outsourcing it to private firms. The exodus of professional expertise has reached a point where local governments in the UK can often no longer judge the value of the work done by private firms and become extremely vulnerable to implementing bad policy. For the BCR, the planning department and the economic development department could integrate more sector-specific knowledge into the new industrial plan (*in the making*) and their economic development plans. It can run FE analyses on the current spatial planning instruments and on all sectors that provide basic goods and services. In the BCR as well as in other cities, the accessibility of basic goods and services and their relation to production can be mapped. To guarantee the accessibility of FE activities, their consumption needs to be spread out equally over the territory and its presence checked in every neighbourhood. This information could be the start of a new strategic plan that truly contributes to the social and ecological transition of cities and regions (cfr. Barcelona).

Second, such an FE analysis requires an understanding of the industrial gentrification dynamics at hand in one's city. My typology of USPPs and its related zoning and regulatory frameworks can be applied to other urban contexts throughout the world to address planning strategies for the productive city. With the help of the analytical framework of USPPs, productive city strategies can be adapted to the specific local context and consider the realities of the various USPPs. The analytical framework presents management strategies to guarantee long-term affordability as well as the mitigation of conflicts between uses.

Based on the FE diagnosis that results from building sector–specific knowledge and the typology of industrial gentrification, different strategies can be applied: enlarging the public portfolio of production land, coproducing and managing production land, and specific conditions on how to organise mixed-use development. First, the public acquisition, leasing, and management of production land by a public actor, such as Citydev in Brussels, proves to be a successful recipe to safeguard production space at affordable prices. The portfolio of public actors can be extended to include small-scale production spaces, such as workshops and warehouses in inner-city areas, that are probably often overlooked in city policy. This is not without difficulties and necessitates new expertise in the BCR about new acquisition strategies and decentralised management of production land. Second, the CLT model of land tenure offers opportunities to create a community between residents and businesses in mixed-use buildings where residential and production space is managed as a shared resource. This model does not only guarantee long-term affordability but is also a promising method for mitigating conflicts between uses. Third, the observation that mix and diversity do not always have a positive impact on the urban liveability of each of the functions undermined the initial hypothesis that a mix and diversity of functions are always positive and contribute to the liveability of the city and that conflicts between functions could be solved by urban design solutions. The essence of this research shows that mix as such is not the problem, but that there are many ways to organise mix with several outcomes. Research-by-design rather than generic planning regulations should be used to find the best solution adapted to a particular local context. This dissertation focuses on how to organise a mix of residential and production functions in a sensible and non-exclusionary way and stresses the merits of juxtaposition and micro-zoning.

Unlike the cities of Paris and Amsterdam, Brussels has a decentralised planning system with great urbanistic autonomy for its 19 municipalities. A decentralised planning system reinforces the absence of policy alignment and becomes a playground for conflicting agendas between different scales of governance, which is reinforced in the BCR through a decentralised municipal revenue system. I illustrate this with an example of the attitude vis-à-vis density in Brussels and Vienna, because raising residential density has consequences for real estate dynamics and the availability and affordability of production spaces. In Brussels, residents pay employment tax in their official place of residence (where they are domiciled). Advocating for residential density is one of the main strategies that Brussels municipalities use to raise their budgets, because higher densities imply not only more employment taxes but also more property taxes. In Brussels, this is/was the case for the municipalities of Anderlecht and Sint-Jans-Molenbeek under liberal governance. In Vienna, the planning system is also partly decentralised, but the financial revenues for the city of Vienna are centralised. Michael Rosenberger, the Head of the Vienna Planning Department (personal communication, 2019), explains that the boroughs of Vienna have a different attitude towards density than the Brussels municipalities, because higher densities do not affect their budgets. On the contrary, while the city of Vienna advocates for higher residential densities, the boroughs try to keep the density low because they are afraid of losing votes in the next local elections. This seems to have a positive impact on the availability of production space. The example of governmental attitudes towards gentrification in Vienna and Brussels illustrates that the implementation of the FE needs a clear vision and a will to protect urban space against far-reaching gentrification dynamics. As we saw, gentrification is an attractive strategy for fuelling municipal and regional budgets. A major challenge will be to convince urban governments of the added value of the FE approach in the long term.

4. Urban planning and policy perspectives and challenges for the governance of FE

I demonstrate that the reconceptualisation of the economic underpinnings of the city needs an altered awareness of the negative effects of current policy instruments on socio-spatial inequalities as well as an increased awareness of internal governors of urban development. This research shows that fragmented and even conflicting policies overlap in certain territories, such as the Brussels canal zone. To achieve this awareness, there is a need to align fragmented and conflicting policies that are present within a certain territory at the same time. This is not without challenges.

Pointing back to the beginning of this concluding chapter, I wrote about the urgent urban problem that lay at the origin of this dissertation: the risk of creating a structural scarcity of urban basic goods and services. This scarcity will not only be felt by the most vulnerable citizens – as happens today in the BCR with the immense shortage of affordable housing (the waiting list for social housing equals three times the actual number of available social housing units in the BCR) – but also by the wealthier ones, who will be confronted more and more with issues of scarcity. I hypothesise that this scarcity will endanger the liveability of the city in the long term and further fuel urban flight, undermining the fiscal base of the city. The lack of schools and accessible green spaces has been described as an important reason for urban flight for some time and are both examples of urban functions that generate low rent. To illustrate this with the example of the construction sector, more and more people start complaining about the impossibility to find affordable plumbers, electricians, etc. to repair or replace heating, toilets, leaking pipes, and water taps. A recent example in the Brussels municipality of Schaarbeek shows how real estate dynamics can block the economic transition agenda of the Brussels regional government. At the only place in the BCR that still has a connection between the railways and the canal, and even though railway infrastructural firms are legally obliged by European law to provide such a connection, the Belgian public (!) railway infrastructure company Infrabel is clearing the land and taking away the rails in order to be able to sell the land to the highest bidder (De Sloover, 2020). The economic transition plans to develop a multi-model transfer track to transfer cargo to canal boats and take thousands of trucks off the roads is put on hold because of the profit-oriented policy of the Belgian Federal Government.

The alignment of policies is not only a challenge because of the different planning regimes and financial revenue systems of the city but also because of the division of powers between different government departments with their own budgets and incentives, which does not make it easier to govern. There is a need to further develop more transversal policy coalitions across government agencies. However, there are little to no external incentives for departments to collaborate. One of the first initiatives in the BCR in this direction was Team Canal, a collaboration between the Brussels Bouwmeester, the planning department, and the land management department, but further research needs to clarify why its operation weakened after a few years. We observe new, promising initiatives popping up around new Brussels project planning instruments (e.g., PAD Heyvaert), in which the planning department and local economic development department start collaborating. Finally, a third challenge to the alignment of policies are the different deadlines of subsidy channels on a regional, national, and European scale.

For the BCR and its relation to less competitive urban development specifically, there is a need for metropolitan consensus to soften internal competition in the metropolitan area. As long as the Belgian regions do not agree on economic collaboration on the metropolitan scale, competition dynamics will continue to work. Whether the borders of the metropolitan area are seen as comprising 31 municipalities (Dujardin et al., 2007) or 62 municipalities (Luyten & Van Hecke, 2007), research keeps pointing to how

economic dynamics do not coincide with the administrative borders, thereby weakening the impact of policy on balancing out socio-spatial inequalities (Van Wynsberghe et al., 2009). The administrative borders should not prevent the Brussels region from thinking and organizing itself on a metropolitan scale. At the operational level in particular, there are opportunities to buy land in the other regions to host productive city functions and to set up interregional collaborations with private actors to guarantee the provision of basic goods and services.

The concept of the FE involves active governments. In the range of global initiatives that outline a new praxis of alternative economies, governments are often crucial partners in scaling up many, mostly isolated and small-scale bottom-up initiatives and connecting them to each other. Local governments have the potential capacity to create leverage. A first step would be to create an overview of what is already happening and to check whether symbioses are possible. Although Brussels is aware of alternative practices, too many of them are isolated initiatives or related to small, one-shot subsidies, and we know this is the case for most European cities. Today, no overview of these initiatives and experiments exists, only bits of knowledge. As a result, the municipalities and the region miss out on many opportunities. It is hopeful that the current Brussels government appointed a State Secretary of Economic Transitions, who is also responsible for Innovation and Research. I would like to make a strong plea for the creation of a platform or observatory that can map out and evaluate the many initiatives currently taking place in various sectors. Such an observatory allows the government to make very focused policy choices, to explicate what expertise is available and what is not, and to link different partners into interdisciplinary alliances and coproduction. The research institute Brussels Studies Institute, hosting several universities studying the BCR, would be the perfect host for such an encompassing study of diverse economic practices, analogous to the observatory of the pedestrian area in Brussels city. Innoviris would be the perfect government body to support these interdisciplinary collaborations, where researchers with technical profiles join forces with researchers with more social profiles. We can think of circular economy specialists mapping complex production processes on different scales and analysing the potential of resources, working together with planners, urban designers, and business organisation experts together with human geographers and economists, studying where, how, and with whom we can create and reinforce the different links in the supply chains of foundational sectors.

An FE approach also critically questions governments as being solely responsible for human well-being and involves a courageous attitude that dares to break open the current way of working. It is an inherently interdisciplinary approach – as is this research – and sees its agency as being part of alliances and the coproduction of governance, academia, civil society, and the private sector. In this sense, an FE approach starts with what is present, here and now, and from changing society from within. This is part of the ideological project of not wanting to replace less attractive or less 'aesthetic' economic sectors with the innovative and technological apex sectors. Starting from what is present in society is extremely valuable, since it considers the innumerable layers of history, former decisions and imaginaries, lived lives, and the diversity of people that lived and live in certain places or just pass by. An FE approach stands for an approach that supports an economic development practice in alignment with the people living in a certain territory. Because a FE analysis point to the different modes of exchange in a sector and to the tensions that exist between them, the government can also play a more important role in mediating between these different economic logic.

At the same time, effecting a courageous governmental attitude and exploring collaborations through new alliances will also be one of the main challenges of the FE in a European Union that tends to engage in

populist and rightwing political discourses. Chapter 2 demonstrates, for example, how EU posting workers in construction are invisible in Belgian statistics, while many are not taking Belgian jobs but complement the demand in the construction market, because Belgium is not able to provide enough educated construction workers (De Wispelaere & Pacolet, 2017). Although the Brussels construction entrepreneurs are very well aware that the EU posting law is responsible for disloyal competition between construction enterprises, interviews demonstrated that this awareness did not stop extreme feelings of racism. So, ideally, Belgian federal and regional governments could look for strategies to change their temporary posting contracts into permanent contracts with Belgian residency and start creating a common narrative and policy. However, as I write in Chapter 2, almost no political party will want to take the electoral risk of directly encouraging migrant workers to permanently settle in Brussels or in any European city today, not even if this would imply capturing a part of the locally created surplus. This is only one example that indicates the vulnerability of the FE approach vis-à-vis the political climate of cities and regions.

5. Future research to make space for the FE

5.1 Planning and urban design avenues for the FE

This research elaborates on the planning tools for the productive city and on various urban typologies of a horizontal and vertical mix of living and working. The subquestion of how space can be (re)designed to mix and accommodate the grounded economy within the existing and newly developed urban fabric of the Brussels metropolis is a research trajectory that can enhance the liveability of residential and productive functions. This question does not aim to further elaborate on architectural typologies that focus on the mitigation of mutual conflicts between living and working. It rather aims at making space for the production of the grounded economy at the urban scale. Here, research-by-design methods can be complemented by economic geography analysis and anthropological research methods for explorations to spatially anchor the grounded economy. What could a contemporary urban industrial site look like? What are the (potential) relationships between decentralising and centralising spatial patterns in the production chains of FE sectors? What can we learn from decentralised supply models in relation to the concept of hubs (mobility, logistics, supply chains, etc.)? What can be collectivised in terms of collective uses such as, for example, construction and other waste or work-related transport vehicles?

Future planning avenues could concentrate on the missing links in the production chain on the local, regional, and metropolitan scale. What kind of production spaces do we need to accommodate the production of the grounded economy? What can a city or metropolitan area produce by and for itself and what needs larger scales of production? To illustrate, Bigh, an urban farm on the rooftop of the slaughterhouse in Anderlecht, grows vegetables on a surface of 4,000m² and wishes to expand (Bigh, 2020). The urban farm needs local refrigerated storage space but cannot find it, nor can it find investors to build it because they judge the investment as too risky (Cities of Making, 2020). At the same time, the expertise to build ecologically sustainable refrigerated storage spaces is present in the BCR. A beautiful example is ‘Loods C’, a warehouse on the Brussels fruit and vegetable wholesale market Mabru, which is partially built with straw by Metamorfose Architects (Mabru, 2013). Currently, Bigh signed a contract with supermarket chain Carrefour and transports its vegetables in trucks to a massive storage space outside Brussels that functions as a national dispatch centre for all Belgian Carrefour shops. A part of these vegetables is then driven back into Brussels to be consumed in the Brussels Carrefour shops. Paradoxically, Bigh is an enterprise that wishes to contribute to an ecological transition of the urban economy but is only partially able to do so because of the lack of available and technologically equipped and refrigerated storage space.

This brings me to another major matter in the BCR regarding the production of the grounded economy: urban planning regulations concerning production spaces. While some Brussels municipalities (cf. Sint-Jans-Molenbeek) intend to protect industrial heritage located in the fine-grained residential urban tissue, they lack an adapted urbanistic framework to do so. The same absence of an adequate urbanistic set of rules is affecting new developments. Often, there are no guidelines for minimum heights of production spaces or the weight that a floor must be able to carry. This exercise of adapting urbanistic law for productive spaces should be carried out on the regional level for the BCR instead of being carried out separately – and differently – in every single Brussels municipality. Today, industrial heritage is not always equipped to host modern productive activities. Many of these buildings are run down, empty, and hidden in the interior of building blocks. A thorough reflection is needed on how to rebuild them, isolate them, and equip them for modern small-scale production facilities and whether this renovation process can be supported by financial incentives such as regional subsidies.

While this dissertation specifically focuses on strategies to counter various typologies of industrial gentrification, several other land strategies might contribute to the preservation of affordable production spaces. Drawing on the conclusion that regions could assign spaces to several economic layers, the concept of land exchange might be a viable path for exploration. In agriculture and forest management, a tradition of land exchange exists to close agricultural cycles and to increase the surface of forest areas. In Flanders, the concept of land exchange is examined to create more open space by the rearrangement of a suburbanized model of residential development (Leinfelder et al., 2016; Mabilde, 2017; Vanderheiden et al., 2013). The concept is understudied in an urban context. It might serve as a land management strategy to rearrange and rethink high and low-value uses and as an alternative to expropriation. For the BCR, the rearrangement of high and low-value functions cannot be thought apart from larger fiscal solidarity between the Brussels municipalities. Low-value uses usually generate lower revenues and would penalize municipalities with higher concentrations of low-value uses.

5.2 Mobility and the FE approach

The suggested policy recommendations need to be implemented in a broader mobility frame, since mobility cannot be separated from the workspace. This is not only about commuting, a research subject that is well covered for Brussels (cf. Ermans et al., 2018), but also about the traffic related to the production process of the grounded economy that is understudied today. The fieldwork and interviews of this dissertation revealed valuable hints for future research trajectories that are not addressed here.

Work-related traffic in construction follows atypical mobility patterns on the metropolitan scale. In retail, we often observe movements between centrally located storage facilities (on the national and international scale) outside the city and the inner-city shops. A full cargo-loaded truck drives towards the shop and returns empty. In the spatial organisation of the construction sector, we observed that this is not or almost never the case. The production process of construction works requires major flexibility as well as efficiency to save on personnel costs. Construction entrepreneurs of SMEs and their drivers possess an excellent tacit knowledge of the street plan, ongoing public works, and the location of construction sites and material suppliers. When they are working, each movement is exploited to the maximum, and empty vans or trucks are avoided at all costs.

The pressure on work-related parking spaces is another important theme that requires attention. Industrial gentrification and the higher residential densities that go along with it reinforce competition for available

parking spots at the scale of streets and neighbourhoods. Cars for residents compete with vans and small trucks. Some municipalities are resolutely giving preference to the residents. This is reflected in the abolition of loading and unloading areas when 'paid parking' is introduced (cf. Jette). Among other things, such measures often make construction companies feel particularly negative towards municipalities. Raising residential densities de facto demands new solutions for parking work-related traffic vehicles. Large vans or small trucks cannot park in underground parking spaces. Another observation related to parking that emerged from the interviews was the increase of spatial conflicts within the interior of building blocks. Increasing residential densities asks for more accessible (green) public spaces. Empowered citizens start fighting for such areas where vans have been parking after work for years.

5.3 Public procurement and the grounded economy

A logical perspective emanating from this dissertation is the policy tool of public procurement to create scale through the purchasing power of big players such as local and regional governments, schools, hospitals, etc. Further research is needed on the social welfare potential of public procurement in relation to local labour markets in a context of deep Europeanisation. This is not without challenges, because the dynamic of competition is enforced in European procurement law through the prohibition of geographical criteria. Since public tenders are experienced as very time-consuming for both enterprises and public administrations alike, there is a general lack of motivation to explore the margins of creative policy design. If local governments (and other big players such as universities, hospitals, etc.) become aware of their purchasing power, they create a lever that has the potential to strongly intervene in the production processes, working conditions, and grounded nature of construction.

Public procurement would also be the perfect policy instrument to support an ecologically sustainable transition of urban economies. While the environmental agenda is only occasionally mentioned in this dissertation, procurement potentials for sustainable construction materials are endless. The production of construction materials consumes large amounts of energy and disposes of large volumes of polluted water. Only a part of the currently used construction materials can be recycled. Since governments on all scales are building contractors and developers of the urban and public built environment as well as gatekeepers for private building projects, procurement can be used as a huge environmental lever.

ANNEX
QUESTIONNAIRE (ENG): EVOLUTIONS OF CONSTRUCTION COMPANIES FROM THE 1960s UNTIL TODAY

These questions were used for the semi-structured interviews of construction entrepreneurs and are the qualitative empirical data to fuel Chapter 4.

Identity company

- Founding year?
- What is the status? (one-man business, self-employment, public limited company, etc.)
- Is this a family business? If yes, during how many generations?
- What is the size of the company? (number of workers, how many employees, in what joint committee, etc.)
- What is/are the NACE-code(s)? What are the enterprise activities? Subsectors? What is the history of the NACE-code trajectory?
- Do you do mostly renovation works or new production or both?
- Do you work mostly as the main contractor or a subcontractor? Do you collaborate with a fixed set of construction enterprises?

Location of the enterprise: motivation and strategy

- Why is your company located here? Why is it located in this neighbourhood and on this plot?
- Has the company ever moved and why? What is the reason you moved?
- How was it to find a business premise (difficult, easy, why)?
- Why did you choose this location?
- What are/were the advantages and disadvantages of the former/present location? Has that changed since then?
- What is the ideal location for your business? Why? (Why are you not established there?)
- Are you happy with this space? Why or why not?
- Was the location of this site part of a well thought out decision-making process?
- Where did the person who established the company live and work just before?
- Did or do you live here? If so, what motives were dominant: a favourable place to live or to work?

Relationship with other companies, suppliers

- Which companies such as suppliers, customers, (sub)contractors did, and do you work with? Where are they located?
- Did the collaboration with these companies change over the years?
- With which building materials do you work? From which suppliers do you obtain these building materials?
- Do you work with regular suppliers or not? Why?
- How does the supply take place? Does your company pick up the building materials at the store? Are they delivered? If so, are they delivered directly on the construction site or at your depot?
- Do you purchase the building materials on a regular basis? Why?

- Are the building materials stored? Why?
- What happens with the construction waste? Do you place a container on-site or take it to the depot? Why?
- What is your opinion about hubs for building materials, such as the current building materials village of MPro?
- What is your opinion about the existence of several smaller container parks scattered all over the city where construction waste can be delivered?

Relationship with employees

- How many staff do you have today and before? Why the change?
- In what language do you communicate with the staff members?
- Do you find employees easily? Why/why not? Was that different in the past? Why?
- Do you have a big turnover of employees? Why?
- What status do employees have? Are they employed, self-employed, interim, subcontracting? Did you notice a shift in employee status over the years?
- How much do you pay gross per hour/day? Is that the basic wage? Is that a lot? Is that little? Are all employees receiving the same pay or are there differences? Why?
- Where do your employees live? Is that similar to the past?
- How do they get to work? How did employees get to work in the past?
- Are they going directly to the construction site or are they going to the company first?

Relationship with the neighbourhood

- Do you have contact with the neighbours? How is communication with the neighbours going? Is there a difference between the past and today?
- How is the relationship with the neighbours? Is there a difference between the past and today?
- Are there any complaints from neighbours? If so, what kind of complaints? Is there a difference between the past and today?
- How do you feel/think about your neighbours? Is there a difference between the past and today?
- Are there facets of the work that can be perceived as annoying, such as sounds or smells? If so, do you take any measures? Is there a difference between the past and today?

Relationships: with the local/regional government

- Do you have contact with the government? If so, what kind of contact? (administrative, personal, in your network, etc.) Are these contacts useful for the thriving your business? Is there a difference between the past and today?
- Do you feel that the municipal government is positive about companies? Or rather negative? Could you explain or give examples of this?
- Do you sometimes contact the government yourself? And if so, for what kind of business?
- What taxes do you pay as a construction company? Have there been recent changes to this tax system, e.g. the surface tax for companies?
- What is your opinion about the government concerning your business? Can you explain your position?
- What could help you, from the government, to make your business run better?

Relationship with customers, construction sites

- Who are your customers?
- What are construction sites located? Do you work all over Belgium and beyond, more or less in Brussels, in a particular neighborhood, etc.? Did the locations change over the years?
- How do you select your customers? Do you follow demand, or do you have to make selections? What are the selection criteria (capacity of employees, accessibility, distance, time, etc.)?
- How important is the criterium of mobility in your relationship with customers? Can you explain why?

Patrimony: construction history, functions and organization

- What activities are being organized on this plot today? (storage, workshop, parking, office, living, customers received, others)
- Are you the owner or tenant of this building?
- Does your company have its own properties? (depot, studio, parking, office, other) If so, since when? Does your company have other properties? If so, what and where?
- What is the surface of your property/this building? How many square meters are assigned per function?
- If you are the owner: did you build or purchase this property? Were you already active in the construction sector when you built this property?
- If self-built (owner):
    - Do you remember the initial price of the property?
    - What was the context? Was it a former brownfield? Were there any other buildings in the street or building block? Who was the previous owner of the property? What previous activity took place in the building?
    - What requirements, such as safety, were to be met? Were there any restrictions imposed by the municipality?
    - Who was the architect? How did you choose an architect?
    - (depending on the functions) Was the workhouse built at the same time as the living room? If not, what adjustments were made?
    - Was the building renovated? If so, how often, when, and with what reason?
    - Do you have pictures or plans for building these renovations?
- If not self-built (tenant or owner):
    - Do you remember the initial price/rent of the property? How much rent do you pay per month?
    - Who took over the property and what activity was previously taking place? Why did the building attract your attention?
    - Have you adjusted this building? If so, which, and why? How often have you renovated the property and for what reason?
    - Do you have pictures or plans for building these renovations?
- Are there other companies and/or residents on the plot? If so, are the different parts rented separately? What is the ownership structure?

Transport and mobility

- What vehicles do you have?
- Do you park on your plot or on the street?
- What is the demand for parking for your staff and your clients? How do you provide that demand? (own plot, public space, other)
- What kind of trajectories do you make? Between construction sites, suppliers, business location, home? How do you move in each of these cases? (van, bike, public transport, car, etc.)
- Does this location answer to your mobility needs? Why?

Daily organization of the company

- What is the organization of a working day?
- How do the employees go to the construction sites? Are they picked up? Are they picked up at home or a central point?
- At what time starts/ends the day?
- Where does a working day start and end? (construction site, depot, other)
- How does a regular working day end? (actions, similar/different, other)
- What are the working hours?
- What aspects of the work are carried out at the site of the enterprise and which ones are carried out at the construction site? What preparatory work do the workers have? Do you notice a difference between the past and today? Please explain.

Education of employees

- Where did you learn the craft of construction work?
- Does your company need skilled workers?
- Do you sometimes work with trainees? What is your opinion about working with trainees?
- Would you like to work with trainees in the future? Why/not?
- Do your staff members follow training? How many times? On an annual base? What training? Why/not?
- Should they pay for it themselves? Does the employer pay for this?

Transformations of (the activities of) the enterprise

- How do you rate the impact of the changing circumstances on the performance of your business? What factors play(ed) a changing role in the running of your company?
    - Was it a changing demand, quantitative and qualitative? Do you know why the demand changed?
    - Was it a change in technology, mechanization, and/or standardization? Which of these aspects influenced your business? How did you deal with these changes?
    - Was it transport, mobility? (infrastructure, transport, traffic congestion, other)
    - Was it urban deindustrialization? (relocation, type of buildings, division of labour, other)
    - Was it a change in real estate prices? Were the buildings, for example, more expensive or cheaper elsewhere?
    - Was it a change in the availability of working spaces?

    - Were you faced with a changing zoning policy along the way, with changing planning tools such as the land use plan? What is your opinion about these planning tools?
    - Did you participate in a neighborhood contract? Why or not? What is your experience with it?
    - Have you been confronted with changing legislation and/or regulations (urban planning, safety, environment…)? How did you deal with this?
    - Were you faced with changing taxes? How did you deal with this?
    - Were you confronted with changing labour relations? How did you deal with them?
    - Did you experience changes in finding suitable and trained personnel?
    - Did you experience differences in the availability of credits and access to loans?
- How did you respond to these evolutions? Have you made any adjustments to respond to these changes?
    - Have the changes affected your company's size: expansion or reduction?
    - Have the changes influenced a differentiation of activity and/or specialization?
    - Did you reorient toward new activities?
    - Was there a need for new skills?
    - Did you reorient toward other geographic regions and places to recruit customers?
- What is the role of the location, the spatial relationships with suppliers and customers, and your assets in the changing circumstances? Have they made certain changes more easy or difficult?

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