THE IMPACT OF TRANSFORMATION ON BUSINESSES

Balancing Urban Growth and Industrial Retention in the Netherlands

Master Thesis by Britt Koekkoek

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Student

Name	Britt Koekkoek
Student Number	5307252

University

Name	Delft University of Technology
Faculty	Faculty of Architecture and the Built Environment
Address	Julianalaan 134, 2628BL, Delft

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Supervisors

First Supervisor	Dr. K.B.J. (Karel) Van den Berghe
Second Supervisor	Mr. G.A.H.M. (Ruda) van Ravensteijn
Delegate	Prof.dr.ir. M.J. (Martin) Tenpierik

Preface

Looking back on the past months, this thesis has been one of the most rewarding parts of my master's journey. What began as a simple curiosity about transformation areas and the businesses within them grew into a project that taught me so much more than I had expected. I learned academically, professionally, and personally, and I genuinely enjoyed the entire process.

Working on this thesis allowed me to dive into a topic that truly fascinated me. Analysing data, exploring legal and spatial frameworks, and speaking with people who experience transformation firsthand made the subject feel very real and meaningful. Even the inevitable challenges, such as interviews that could not be included, became part of the learning experience. They reminded me how complex and sensitive redevelopment can be, and how much happens behind the scenes.

I am very grateful to my supervisors, Karel van den Berghe and Ruda van Ravensteijn. Their guidance, knowledge, and encouragement helped me grow enormously as a researcher. I have learned to approach problems more critically and to structure my thinking with much more confidence. I truly appreciate the time and attention they invested in me and in this project.

I also want to thank all the people around me for their constant support throughout this journey. Their positivity and encouragement have meant more than they know. A very special thank you goes to my brother, Roy, who helped me tremendously with the Python data analysis. I genuinely could not have made this thesis possible without you.

Finally, I am grateful for the opportunity to explore a topic that plays such an important role in the future of Dutch cities. Working on this thesis has strengthened my interest in urban transformation and shown me how many perspectives, decisions, and people lie behind every redevelopment process.

I look back on this period with gratitude, pride, and a great sense of fulfilment.

Britt Koekkoek

Delft, January 2026

Abstract

Urban transformation has become a central instrument in Dutch urban policy, particularly as cities seek to address housing shortages and sustainability goals within the limits of the compact-city model. Former industrial areas are increasingly redeveloped into mixed-use districts, raising questions about what happens to the existing businesses that occupy these zones.

This thesis examines how such transformations lead to business displacement and how this process is shaped by societal narratives, spatial-planning decisions, and legal frameworks. Using a mixed-methods approach, combining literature analysis, a multi-case study design, LISA database analysis, GIS mapping, and semi-structured interviews, this research investigates two Dutch transformation areas: Cruquius (Amsterdam) and the Binckhorst (The Hague). These contrasting governance models, one developer-led and one publicly steered, provide insight into different paths through which industrial restructuring unfolds.

The results show that displacement rarely occurs through direct measures such as expropriation or formal zoning bans. Instead, it emerges through gradual and indirect mechanisms: regulatory uncertainty, the revaluation of urban land toward housing and creative functions, tightening environmental norms, and strategic use of legal instruments under the (former) Environmental and Planning Act. Quantitative analysis reveals divergent business trajectories between the cases, ranging from managed relocation to large-scale disappearance, while qualitative insights highlight how uncertainty influences business behaviour long before redevelopment becomes formalised.

Overall, the findings demonstrate that industrial displacement is not an unintended side effect of mixed-use transformation but a systemic outcome of broader institutional and societal shifts. The thesis contributes to ongoing debates on urban productivity, economic diversity, and sustainable redevelopment, and offers recommendations for balancing urban growth with the retention of essential productive functions in Dutch cities.

Keywords: Urban Transformation, Industrial Displacement, Mixed-use, Spatial Planning, Land-Use Regulation, Planning Law, Post-Industrial City

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SUMMARY

Dutch cities are undergoing a profound shift in how they use and value urban land. As pressure for housing, sustainability ambitions, and mixed-use development continues to grow, former industrial areas increasingly become locations for large-scale transformation. Although these projects promise new urban functions and spatial quality, they also raise a fundamental question: what happens to the businesses already located in these areas? Industrial firms, ranging from small workshops to long-standing manufacturing companies, often find themselves in positions of uncertainty as redevelopment plans unfold around them. This thesis investigates how business displacement occurs within transformation areas and how social attitudes, spatial-planning frameworks, and legal instruments work together to shape that process.

The research focuses on two Dutch case studies. The Cruquius area in Amsterdam is an example of a developer-led transformation where industrial companies were gradually bought out or encouraged to relocate. The Binckhorst in The Hague represents a contrasting governance model in which the municipality plays a more direct steering role, guided by a new environmental plan and broader strategic ambitions for the district. Although these areas differ in their planning approach and development history, both illustrate the pressures that mixed-use redevelopment places on existing productive functions.

To understand these dynamics, the thesis uses a mixed-methods approach. Quantitative analysis draws on the LISA business database, which provides yearly information on company presence and employment. This dataset makes it possible to trace trajectories of businesses over time, including those that stay, relocate, adapt, or disappear. GIS mapping gives spatial clarity to these movements and allows for a visual comparison between the two cases. The quantitative patterns are complemented by a legal analysis that examines how environmental norms, planning instruments, and municipal procedures influence business operations. Semi-structured interviews with a business owner and a municipal official add important qualitative depth by revealing how uncertainty and negotiation shape decision-making behind the scenes. Together, these methods create a fuller picture of the forces driving industrial restructuring during urban transformation.

The findings show that displacement is rarely the result of a single, direct action. Instead, it unfolds gradually through a combination of (in)direct mechanisms. In both Cruquius and the Binckhorst, uncertainty plays a central role. Companies face unclear timelines, shifting policy messages, or inconsistencies between long-term visions and day-to-day permitting. As uncertainty persists, companies postpone investments, reduce activity, or begin to explore relocation. Over time, these decisions contribute to a thinning out of industrial presence.

Legal and environmental frameworks also have a significant impact. Although expropriation or formal prohibitions are relatively uncommon, environmental norms such as noise limits, emissions categories, and operational thresholds gradually restrict what companies can do. In some cases, environmental regulations create opportunities for developers or municipalities to negotiate buyouts or repurposing agreements. These interventions are often presented as measures to protect residential quality or prepare for future mixed-use developments, yet the pressure they can apply also works indirectly as tools that enable transformation by making industrial presence less feasible.

Spatial-planning decisions reinforce these processes. As land becomes more valuable for housing and creative functions, industrial uses lose their strategic priority. The planning focus shifts toward densification, economic diversification, and sustainability goals, which implicitly relegate industrial firms to the background. Even when policy documents express care for existing businesses, the practical effect of zoning reclassification or redevelopment strategies often limits their long-term prospects.

The comparison between the Cruquius and the Binckhorst shows that different governance models can lead to similar outcomes. In Cruquius, the developer-led approach resulted in buyouts and negotiated departures that quietly reshaped the industrial landscape. In the Binckhorst, the municipality used broader planning instruments and environmental rules to guide which activities could remain. Despite these differences, both cases reveal a steady decline in industrial presence. Some businesses relocate, some adapt, but a significant portion simply disappears from the area altogether. This pattern suggests that industrial displacement is not an incidental byproduct of transformation but a structural outcome of current planning and economic priorities.

The research contributes to a better understanding of how displacement works in practice. It shows that industrial areas are transformed through a blend of market dynamics, legal frameworks, and governance choices that together steer long-term spatial change. While these transformations often bring new value to cities, they also risk undermining the diversity of urban economies. Productive functions like manufacturing, logistics, and repair remain essential for circularity, local employment, and urban resilience, yet they are increasingly treated as incompatible with contemporary mixed-use ambitions.

The thesis concludes by reflecting on the implications of these findings for planning practice. If cities aim to remain productive and socially inclusive, industrial functions cannot be left to decline by default. More transparent decision-making, long-term spatial strategies for productive uses, and clearer communication with businesses are essential. Without these measures, displacement will continue to occur quietly and unevenly, shaped by uncertainty rather than deliberate policy.

This research therefore invites planners, policy makers, and developers to reconsider how transformation areas are governed and how industrial functions are valued within the contemporary city. It argues that a sustainable and balanced urban future requires not only new housing and public space but also the retention and support of essential economic activities that allow cities to function in the first place.

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CHAPTER 1 – INTRODUCTION

A key urban development strategy in the Netherlands is to transform areas (Gelinck & Kersten, 2022). There is a need for housing and mixed-use development in the cities. Former industrial areas are repurposed to accommodate housing, commercial spaces, and creative industries. While this shift enhances urban vibrancy and economic diversification, it often results in the displacement of industrial activities, raising concerns about the long-term sustainability of local economies (Hoppenbrouwer & Louw, 2005). In this thesis, displacement refers to the process by which existing residents, businesses, or users of urban areas are forced to relocate, adapt, stay, or disappear as a result of urban redevelopment of the area. This can be direct through legal or spatial measures or indirect due to social shifts that can lead to exclusion.

1.1 Challenges

1.1.1 SPATIAL PLANNING

EIB (2019) states that there are major bottlenecks in business parks, port areas, and campuses. These areas face the biggest challenges when it comes to transitioning to a climate-neutral, circular, and nature-inclusive economy. The shift toward greater sustainability requires more physical space, approximately 700 hectares per year, which is roughly the size of Schiphol airport's terminal and surrounding areas (EIB, 2019).

Although some studies suggest that there has been an economic decline due to the rise of the knowledge-based society (Bell, 1973), others contradict these findings. They claim that there has not been a true decline, but rather a shift in focus. This shift has created new spatial demands. Research conducted by the EIB (2019), which explores the space demand for business parks and offices, makes it clear that more space is needed. They delve into many sectors and analyse two scenarios for each: a favourable and an unfavourable one. The total additional space demand from 2018-2030 is projected to be between 10% and 17% for business parks. For regular offices, the demand is slightly reduced, between 6% and 11%. Several sectors, in particular, require more space in business parks: chemical industries, metal and electrical engineering, wholesale trade, storage and transportation services, construction industries, retail, hospitality, and healthcare. Industries most likely to need less space include textile and clothing businesses, the steel industry, and other sectors (EIB 2019). These specific industries will need more or less space depending on the rising trends of sustainability and technological innovation.

Due to a more intensive and strict sustainability policy, changes are about to happen in the industry sector (EIB, 2019). While some businesses will increase their activity, others with high CO2 emissions will face higher costs to reduce their impact. When the Netherlands implements these stricter sustainability regulations, businesses might find it more cost-effective to relocate to countries with lower regulatory burdens regarding sustainability. The transition to a more sustainable world requires space for:

- Landing, distribution, conversion, and storage of energy (f.e. batteries, transformers, and wind parks)
- The renovations of buildings to be sustainable asks for a big increase in temporary working locations.
- The transition to a circular economy requires space and environmental capacity for raw material processing and storage, as well as for the reuse of goods.
- The digital transition requires space for the growth of e-commerce, logistics processes, and the development of smart industry.
- Strengthening the resilience of our economy (i.e., strategic autonomy) requires additional space, for example, to foster closer European cooperation on technology policy, such as the Netherlands' participation in the Chips Act.

Another trend is the ever-emerging technology. While this is not a new trend, the digitalisation and even the artificial intelligence and robotisation of the last couple of years are set to increase productivity.

Most of this space is needed in the western part of the Netherlands (EIB, 2019). This is the same area in which a lot of big industrial to mixed-use transformations are placed, as seen in past transformations, which will ultimately take away some of the space that was originally there for businesses.

The total space of industries is now 2,6% of the total area of the Netherlands. Taking into account all of the trends, development, and demands, that total should be at 3% in 2050 (Ministerie van Economische Zaken en Klimaat, 2023), which is about a 15% increase.

In addition to the overall stress of needing more space for industry in general, there are also industrial areas with specific challenges. Inner-city industrial areas are an example of this. Due to the housing demand, municipalities sometimes choose to transform industrial zones into new mixed-use areas. It has been shown that between 2016 and 2021, around 4600 hectares of inner-city business parks have vanished (Ministerie van Economische Zaken en Klimaat, 2023).

1.1.2 LEGAL

Besides the fact that there is not even enough space for businesses as we speak, the problem with introducing housing onto industrial estates lies with greater problems. The infrastructure that is needed for housing is not the same as the existing infrastructure. There are also other challenges, such as pollution, noise, and traffic (Tamback & Korthals Altes, 2008). Adapting housing to this is very expensive and takes time. The Dutch "City-and-Environment" approach provides flexible environmental regulations, enabling housing construction near industrial activities, provided that mitigation measures such as noise barriers and pollution control are implemented (Tamback & Korthals Altes, 2008), but as said, this is very expensive.

As a result, not all types of activities are equally compatible with residential use. Mixed-use development is often presented as a way to combine different urban functions, but in practice it is limited by concerns about nuisance, safety, and environmental impact. This means that mixed-use areas tend to accommodate functions that can meet residential standards, while more disruptive industrial activities remain difficult to integrate (Grant, 2002). Hoppenbrouwer and Louw (2005) note that mixed-use development does not have a single, fixed definition and that its application varies depending on scale, context, and planning objectives. They emphasise that mixed-use requires careful coordination between functions, as unmanaged conflicts can undermine development outcomes. Mixed-use is therefore described as a planning instrument rather than an end in itself. Hoppenbrouwer and Louw (2005) further observe that the economic activities present within residential or mixed-use areas are often small in scale and predominantly part of the commercial and service sector. They note that such services employ relatively few people and attract limited numbers of visitors. As a result, such developments tend to produce a limited form of mixed-use, in which housing is complemented by a small number of economic functions, rather than a fully integrated mix of urban activities.

Achieving a balance between business thriving and environmental sustainability requires strategic compromises between industry and housing, ensuring that both functions can coexist without significant conflicts. This balance, however, is not solely a spatial and environmental challenge; it is also a legal one. The broader legal framework determines what is permissible, under what conditions, and with which responsibilities for local governments and private actors. Particular attention is given to how legal frameworks interact with spatial planning and land policy in shaping transformation processes in this research. The legal frameworks navigate between enforcing environmental protection and enabling urban intensification. In a way, the legal instruments are not always neutral; they actively shape the urban landscape.

1.1.3 SOCIETAL

Next to the overall space demand and legal challenges that are faced when transforming former industrial areas, industrial retention is crucial for the thriving of the economy and the industrial sites, namely because they are employment hubs and their displacement can disrupt the business, which can lead to loss of essential production and logistics functions (Kostica, 2024). Beyond the economic factors, the displacement of businesses affects the local employment and social and spatial justice. Former urban redevelopment policies in the Netherlands had an increasing aim to integrate diverse land uses, yet the challenge of preserving industrial activity or relocating them in a proper way has been hugely unresolved. In cases such as Cruquius in Amsterdam and The Binckhorst in The Hague, industrial businesses might have faced pressures to relocate or adapt, often without clear long-term solutions (Ministerie van Economische Zaken en Klimaat, 2023).

1.2 Research Question

Research shows that industrial areas in the Netherlands are being transformed into mixed-use developments to accommodate housing and urban densification goals. Numerous studies have documented the economic, spatial, and environmental implications of this shift, as well as the growing demand for industrial space due to technological innovation, sustainability transitions, and logistical needs. However, there is limited insight into how these transformations affect existing businesses, particularly in terms of displacement, and how this process is shaped by the interplay of legal frameworks, social dynamics, and spatial planning decisions. This led to the main research question: *In what ways does the transformation of industrial areas into mixed-use developments in the Netherlands produce business displacement, and how is this shaped by social, spatial planning, and legal dynamics?*

This research aims to explore the processes through which and how industrial businesses are displaced during the redevelopment of industrial zones into mixed-use development in the Netherlands. It seeks to understand how this displacement is shaped by broader societal, spatial planning, and legal factors, to measure the impact on the existing economic activities of the area. The outcomes of the displacement can be categorised into four options: relocate, stay, adapt, or disappear. With relocation, the businesses take on an entirely different location to pursue their business. Adapt means that they can stay in the new mixed-use development, but in a different way than before. Disappear stands for the complete vanishing of a location for this business. Stay indicates no movement of the company. When this outcome took place, it can be concluded that no displacement was taking place for that business. This is gathered into a conceptual framework, explaining the base of the research and how the sub-questions are placed into the framework (Figure 1). By analysing literature, policy and legal frameworks, and case study locations, this study seeks to provide insights into balancing urban transformation with industrial retention. This can be researched through the LISA database, which can help understand the displacement happening. In doing so, it contributes to the broader discourse on sustainable urban development and economic resilience. The sub-questions to answer this main question are divided into five and are as follows:

- *What societal dynamics and theoretical perspectives explain the displacement of industrial businesses in mixed-use redevelopment?*
- *How have legal instruments influenced business displacement in transformation areas?*
- *How does transformation, uncertainty, planning policies, and land-use insecurity influence business decisions regarding investment, innovation, and location strategy in transformation areas?*
- *How have sectoral composition, employment levels, and business trajectories (staying, relocation, adaptation, disappearance) evolved during transformation, and where do displaced firms relocate?*
- *What lessons do the cases offer for balancing urban transformation with the retention of industrial activity in Dutch cities?*

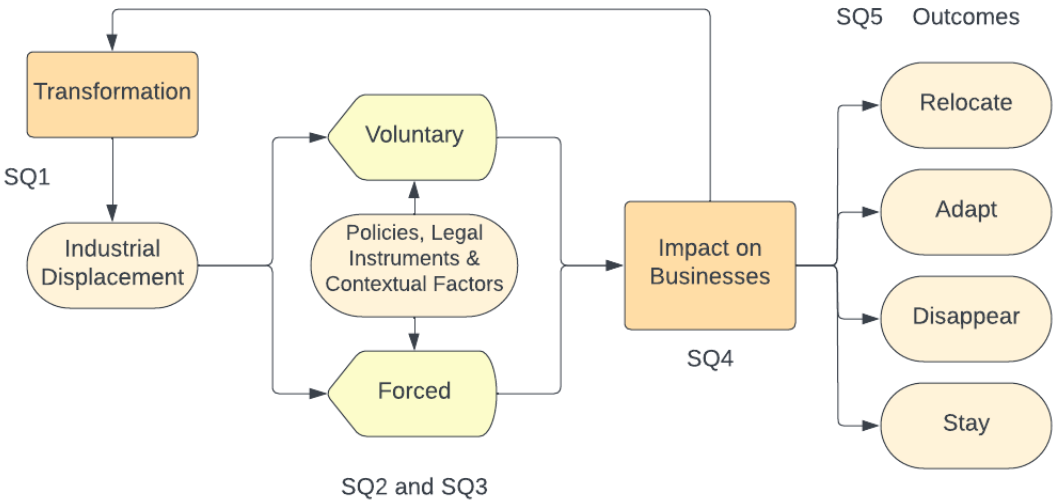

Figure 1: Conceptual Model

CHAPTER 2 – LITERATURE

The compact-city policy in the Netherlands aims to limit city expansion by encouraging densification within existing urban areas. In many previous studies, it was concluded that the post-war industrial estates have experienced economic decline, resulting in underutilised spaces (Tamback & Korthals Altes, 2008). Integrating housing into these areas seemed to work as an opportunity to enhance urban quality and stimulate investment; however, this transformation also introduces significant planning and environmental challenges, particularly regarding land-use conflicts, pollution mitigation, and infrastructure adaptation (Tamback & Korthals Altes, 2008). In the literature study, it is sought to explain how societal, spatial planning, and legal aspects have influenced the movements of businesses during transformation

2.1 Societal

Urban areas are continually shaped by the ever-evolving societal needs, values, and behaviours. In the Netherlands, the transition of former industrial areas into vibrant, mixed-use neighbourhoods is a prominent example of how social forces influence urban transformation. In this chapter, the societal shift through the years will be highlighted, and how this has influenced the current spatial planning and legal frameworks surrounding urban transformation.

2.1.1 POST-INDUSTRIAL SOCIETY

The concept of the post-industrial society, also known as the creative society (Andersson, 2023), has been described as a structural shift from manufacturing to services, knowledge, and innovation. It has been the successor of the industrial era. This transformation follows the decline of the industrial production and the rise of more knowledge-based economies (Bell, 1973). According to Andersson (2023), the ICT expansion might have been the biggest innovation to reshape our lives, together with the reduced time and costs of long-distance air transport. All of these changes from the industrial to the creative society are shown in Figure 2. These changes are momentous; consequently, their effects were not limited to economic impact but also put pressure on the spatial and social processes. This has caused processes like gentrification, land use change, and the rise of mixed-use development (Tallon, 2013). Understanding the post-industrial society as an academic theory is essential for analysing the redevelopment of former industrial areas and the displacement that plays a part in this.

Industrial Society	*Creative Society*
Transport networks	
Small capacity	Large capacity
Sparse and rigid	Dense and multi-layered
Large vehicles (trains, ships)	Small vehicles (cars, airplanes)
Monopolistic markets	Competitive markets
Communication networks	
Small capacity	Large capacity
National hierarchical structure	Global polycentric structure
Mostly material transmission	Mostly dematerialized transmission
National monopolies	Global competition
Science	
External to the production process	Part of the production process
Small university-educated minority	University-educated majority
Cultural values	
Moderate individualism	High individualism
Duty/materialism	Joy/postmaterialism
Dominant religion or ideology	Self-selected religion or ideology
Growth	Sustainability
Productivity (allocation of given resources)	Creativity (creation of new resources)
Institutions	
National	Multi-layered
One-size-fits-all	Inter-jurisdictional competition
Trust focus (low static transaction costs)	Openness focus (low dynamic transaction costs)

Figure 2: Differences between industrial and creative society (Andersson, 2023)

Cultural individualism is central during the rise of the post-industrial city (Andersson, 2023). Andersson (2023) argues that individualism is not just characteristic of the creative society but is also one of the main causes of its formation. Highly individualistic countries, such as the Netherlands, use policies that reflect these values. The autonomy, diversity, and innovation is reflected in planning and legal policies, which shifts them even further away from the industrial era as it was. In current transformation this cultural shift affects the industrial areas, since many of them are reimagined to accommodate more creative, flexible, knowledge-based activities rather than the more traditional manufacturing businesses. The emphasis on personal entrepreneurial freedom aligns with spatial planning models that promote mixed-use developments, co-working spaces, and live-work environments. As Andersson (2023) notes, societies with strong individualist traditions tend to promote openness and low dynamic transaction costs, which in turn accelerate urban redevelopment. While this fosters innovation, it also raises challenges around inclusivity and spatial justice in the post-industrial city.

On the contrary, Vogt (2016) states that the theories surrounding post-industrial society or creative society are more of a rigid ideology. There are a number of problems with the rigid belief system of those who idolise this post-industrial society. It makes it seem like those “blue collar” industrial jobs no longer exist, or are unimportant (Vogt, 2016). Furthermore, it has a one-sided focus on the creative or knowledge workers (Vogt, 2016). At last, it gives the idea that practical work is unintelligent or less valuable and just a hurdle in the way of “more important” businesses (Vogt, 2016).

Kovalchuck (2020) argues that the decline of the more traditional manufacturing sectors has left many industrial zones economically and socially vulnerable. This vulnerability, driven by automation, globalisation, and a knowledge-based economy, is precisely the reason for the transformation of these areas. During globalisation, heavy industries began to lose their competitiveness to other areas in the world (Van den Berghe, 2024). The social, economic, and political conditions prompted for redevelopment strategies to revitalise the space and attract new, innovation-driven activities. However, it is not a simple replacement job; the whole restructuring of the land was necessary for this to work. And as a result, legacy businesses faced increasing pressure to relocate as cities were pursuing higher-value land uses that include housing and newer technologies. Sectors like shipbuilding, mining, and chemical factories were affected the most. The economic pressure led to the closing of businesses, or they had to relocate abroad in response to the market shift (Van den Berghe, 2024). Osipov (2020) stated that there is a need for project-based adaptive models to manage these complex urban transformations. In the Netherlands, the authorities often operate under similar logics to balance interest; however, this can exclude industrial firms, particularly where land-use decisions prioritise housing or environmental factors over the continuity of the former businesses.

2.1.2 UNCERTAINTY AND INNOVATION

A phenomenon that we see in different economic scenarios that comes from the social domain is that when there is uncertainty, the innovation linked to economic activity is threatened (Paul Krugman, 2025). Even in the absence of concrete changes, the mere threat of transformation leads to hesitation. Businesses delay or cancel planned investments, fearing that they may not be able to recoup them if forced to relocate. This has a knock-on effect: less investment means less innovation, reduced competitiveness, and ultimately a self-fulfilling prophecy of decline.

This can be applied to transformation as well. When industrial zones are marked for potential transformation into residential or mixed-use areas, a period of prolonged uncertainty often follows. This uncertainty, whether businesses will have to relocate, whether zoning will change, or whether redevelopment is approaching, can have a profoundly negative impact on the economic vitality of these areas. All the more reason for parties to say that the industrial area is declining and that the transformation should be going forward, a spiral further accelerating the push toward redevelopment.

This pattern isn't isolated. A recent article in AD highlights how new uncertainties around nitrogen regulations in Amsterdam have now put billions of euros of planned investments at risk (van Zoelen, 2025). The central theme is clear: policies and governance as a social shift will lead to uncertainty and stall innovation and investment.

Urban transformation is often necessary and beneficial. But if not managed carefully, solely the anticipation of change can put the very economic foundations that make redevelopment possible at risk. A stable and transparent policy framework is therefore crucial, not only to ensure fair treatment of existing businesses but also to prevent the unintended consequence of decline through uncertainty.

2.1.3 CONCLUSION

The transformation of industrial areas into mixed-use developments in the Netherlands is deeply influenced by societal shifts, particularly the move toward a post-industrial, knowledge-based society. This change fosters innovation and reflects broader cultural values such as individualism, but it also leads to business displacement due to the devaluing of traditional industrial activities. The uncertainty caused by possible redevelopment can discourage businesses from investing or trying new things, which can lead to a downward spiral where the area continues to decline. These dynamics highlight the need for urban policies that balance progress with stability to ensure that transformation does not come at the expense of existing businesses.

2.2 Spatial Planning

Looking into how society and the social domain have shaped planning laws, the influence is of great significance, as seen in the former chapter. The spatial planning of an area forms one of the two main concepts in this thesis, together with the legal side. It is a dialogue between, on one side, the spatial planning and on the other, the legal influence, both influenced by societal pressures. In this chapter, the land-use conflicts and other spatial planning aspects will be discussed.

2.2.1 LAND-USE CONFLICT

Hutton (2004) writes about how inner-city areas, which were once dominated by industrial production, are being restructured into hubs of post-industrial economic activity. His work helps explain why and how traditional industrial land uses are being displaced by more flexible, higher-value land uses such as creative industries, technology firms, and residential developments, and fits into the concept of this thesis. Which will ultimately help us understand how it has impacted the said industrial land users. The paper is originally focused on major cities like Vancouver, San Francisco, and London. However, Hutton's (2004) framework is especially relevant for the Netherlands, where many inner-city industrial zones are undergoing similar transformations. It is described that these shifts are not accidental or organic; they go much deeper. They are embedded in broader urban-economic restructuring processes, where global economic changes meet local planning and land use policies, exactly the pinpoint of what this thesis is about.

One of the main key concepts is that there is a mismatch between the legacy industrial function and the new emerging urban economy. The lower yield, "older" industries are resulting in lower yields and have logistical constraints (Hutton, 2004). Cities strive to be innovative, and the tension between the available land and this need for innovation causes a land use conflict, where the spatial demands of new economy actors displace long-standing industrial uses, often with limited regard for the economic or social value these businesses still provide.

Hutton (2004) also emphasises that these transformations are not solely market-driven. Rather, urban planning plays an active role in shaping new urban forms through rezoning, land use deregulation, and promotional strategies. In the Dutch context, municipal governments often brand former industrial areas

as "creative districts" or "innovation hubs" (Kentie, 2018), reinforcing a narrative that favours post-industrial development over industrial preservation.

Much like Rent Gap Theory (Smith, 1979), Hutton's (2004) framework highlights that displacement is not just about land scarcity or functional decline; it is also about revaluation of space in accordance with new economic and political priorities. This is particularly important in the Netherlands, where dense urban areas face competing pressures: the need for housing (Rijksoverheid, 2025), climate-resilient design, and sustainable development, all of which often come at the expense of traditional business activity.

In the context of this thesis, Hutton's (2004) theory helps to explain why industrial businesses in inner-city areas face increasing pressure to relocate. These businesses are not only being priced out or zoned out but are also symbolically out of step with the aspirational image of the "new city." Even when multiple ministries put pressure on the fact that space is needed for these particular businesses (EIB, 2009; Ministerie van Economische Zaken en Klimaat, 2023). His work reveals that displacement is a by-product of an urban transition toward knowledge economies, and the industrial land is caught in this ideological and economic crossfire.

2.2.2 ECONOMIC GENTRIFICATION

Because of the higher returns from residential development, transformation to housing or mixed-use leads to an increase in land prices, making it no longer feasible to offer commercial spaces in these areas at affordable rental rates (Ministerie van Economische Zaken en Klimaat, 2023). You could describe this as a phenomenon of economic gentrification. Korthals Altes & Tambach (2009) question this as well: "The question remains whether such mixed-use areas simply represent a transitional phase towards complete gentrification and removal of all industry from the inner city or whether they are a more or less permanent addition to Dutch urban fabric." In an increasing number of (urban) regions, there is a growing shortage of sufficient available and affordable commercial space, and under pressure from other spatial developments, these shortages are at risk of worsening. Both inner-city industrial areas and locations with water-based industries are facing this pressure (Ministerie van Economische Zaken en Klimaat, 2023). Additionally, many regions lack suitable space to enable the redevelopment of industrial areas (due to a lack of 'flexible space').

Especially in cities, with the four major cities and their urban regions as extreme examples, industrial areas are reaching spatial limits. The physical space for businesses in these industrial zones is nearly exhausted, and industrial areas within the city are crucial for maintaining a proper work-life balance. Therefore, there is a strong need to maintain focus on these inner-city industrial areas, ensuring that economic activities are well-integrated with mixed functions and promoting a good work-life balance (Ministerie van Economische Zaken en Klimaat, 2023).

For rural areas and villages, the situation is more varied. There, too, space for economic activities, including industrial zones, is becoming scarcer. However, there is more physical space available to better align housing and employment needs. The National Program for Rural Areas (NPLG) addresses challenges related to water, nature, nitrogen, and climate, providing a combined approach for a healthy rural environment. The transition envisioned by the NPLG is likely to significantly change the traditional economic structures of rural areas. In addition to the transition of agriculture itself, new alternative economic activities may need to be developed to maintain the region's employment and income base, thereby sustaining broad prosperity in rural areas (Ministerie van Economische Zaken en Klimaat, 2023).

However, we see an increasing number of legal procedures of businesses against the newly planned housing (Ministerie van Economische Zaken en Klimaat, 2023). At the same time, it would be possible to add workspaces to existing and/or newly developed residential areas. From a business perspective, there is a demand for mixed cities with work opportunities nearby. For example, business complexes in city centres and the lower floors of new residential buildings offer opportunities for new live-work

combinations. However, in practice, we see that mixed-use development does not automatically result in sufficient scale or affordability (Ministerie van Economische Zaken en Klimaat, 2023). Many other researchers also see problems with the mixing of business and living. There are difficulties with noise, traffic, or operating hours (Grodach & Martin, 2020). When looking into existing mixed-use areas in which this is implemented, it is indicated that the economic mix is much weaker than imagined. This means that there are some small offices and businesses, but they did not add the vibrancy they were looking for (Hoppenbrouwer & Louw, 2005). Cities have a strong need to address this challenge together with the market and government in a concrete manner.

Some of the research argues that there needs to be more flexibility within zoning in general to make room for what is needed (Grodach & Martin, 2020; Hoppenbrouwer & Louw, 2005). When we have more flexibility, there are more possibilities which will lead to a more natural mixed-use kind of approach, without making it completely inaccessible for either industry by skyrocketing the pricing or for residential areas by making it unliveable in terms of health and noise, for example.

2.2.2.1 Rent Gap Theory

An additional theory that is going to be discussed is a useful theory to help explain the economic displacement of industrial functions. This theory is called the Rent Gap Theory and was introduced in 1979 by Neil Smith. The original purpose of it was to explain gentrification. Specifically, gentrification is based on older urban neighbourhoods that were redeveloped for higher-income groups who push out the poorer communities (Smith, 1979). However, it can also be applied to the transformation of industrial areas into residential or mixed-use developments.

The gentrification or “rent gap” arises when there is a difference between the current rental income of a place or property and the potential rental income that can be earned when the land or property is redeveloped (Smith, 1979). The larger this gap is, the more economic incentive it creates for developers and the municipality to redevelop this area (Smith, 1979). This is one of the incentives for the municipality and developers to push out the industrial, low-yield land use.

Ward (2021) builds on this idea by showing how governments and politicians are not just reacting to the market but are actively involved in creating conditions for financial gain through planning deregulation and flexible policies. In his case study of Antwerp, Ward (2021) explains how informal planning tools, like negotiated agreements, allow land to be financialised, turning it into a profit-making tool, while still maintaining the appearance of serving the public interest. This process supports a broader political strategy to keep both investors and the public satisfied, even when these goals conflict.

The free market will lead to the creation of high-margin investment products, even over suitable housing for the middle and lower classes (Ward, 2021). In the context of this thesis, the Rent Gap Theory will help explain why there is pressure on these inner-city industrial zones to redevelop. The increasing yields, political and social pressure on the housing and mixed-use development due to shortage, is high (Rijksoverheid, 2025), the potential rent value of industrial land far exceeds its current use, making redevelopment economically attractive. This theory shows that displacement is not just a result of planning or sustainability policy, but also a market-driven and politically supported logic where land is constantly re-evaluated for its financial potential. It helps us understand why spatial trends like industrial displacement occur and outlines the growing pressure on valuable land. However, it is not just driven by the economic incentive, but also by political and social rationales that contribute to the shift in land use.

2.2.3 CONCLUSION

Spatial planning plays a critical role in shaping the transformation of industrial areas in the Netherlands. Driven by economic pressures, land scarcity, and urban policy goals, planning decisions often favour high-value uses like housing and creative industries over traditional businesses. The result is a growing mismatch

between existing industrial functions and emerging spatial planning visions, which contribute to business displacement.

2.3 Legal

Urban development encounters complex issues, particularly regarding its legal, economic, and administrative sustainability, considering the risks to the environment and public health (Boeve & van Bueren, 2023). In this chapter, it will be about the legal aspects and barriers of industrial transformations. There are more sides of the story, firstly about the barriers for the developers and municipalities that they face when transforming. Secondly, about the rights and difficulties of the existing businesses that the municipality wants to transform, and finally, about the rights of current residents. Residents play a crucial role in shaping the legal framework, as many of the regulations are designed to protect their living environment and health.

In current transformation projects, significant attention is devoted to legal aspects. Such as zoning plans, fragmented ownership, noise standards, and environmental regulations (Verheul et al., 2019). Apart from the difficulty of these legal boundaries, the financial effects of this can be even bigger. When costs increase due to factors such as expropriation, remediation, site preparation, and potentially necessary additional environmental measures, the business cases for project developers and real estate investors are not always attractive (Verheul et al. 2019). A solution for the legal boundaries in terms of health would be the greening of heavy industry, which would make the area more liveable (Boeve & van Buere, 2023). This could be done by multiple legal instruments, for example, making the “omgevinsgsvergunning voor milieubelastende activiteiten” more strict.

There are different approaches and strategies of the municipality and developers when it comes to acquiring land. A summary of these instruments can be seen in Figure 3 and will be explained later in this chapter. While some municipalities plea for having one owner of the full area, it is often not possible, and fragmented ownership arises. Municipalities may prefer one owner so that they can have more power over the area and what will happen to it (Verheul et al. 2019). Municipalities often choose one or the other. They either want to have a massive influence over the project or decide they take a more relaxed approach. The middle ground between this is a Laissez-faire attitude, where they slowly acquire land piece by piece when it becomes available, and then they decide whether they would buy it or leave it. But the question is whether a successful integrated transformation is still possible when taking that attitude (Verheul et al. 2019). An option for working together with different parties, but holding on to the goal of transforming it into a cohesive whole, is a public-private partnership. While this limits the individual parties, it also shares the risk. All in all, there are a vast variety of options for the municipality to ensure their possible goal for a cohesive transformation are met.

Legal frameworks, such as the “Omgevingswet”, provide mechanisms for enforcement and correction when industries fail to meet sustainability standards or cause environmental harm. These may include measures such as stricter enforcement, modification of permit conditions, or ultimately the revocation of environmental permits (Boeve & van Bueren, 2023). However, decisions about relocating or closing businesses involve not only legal criteria but also economic and social factors. Local governments, developers, and stakeholders must navigate these considerations, balancing business interests with environmental and public health goals (Boeve & van Bueren, 2023). The evolving legal landscape may provide more flexibility in these decisions, but practical application remains uncertain. What is known is that there is a certain dependence on the relationship between the permit issuer and the permit holder, due to the information asymmetry between the two (Boeve & van Bueren, 2023).

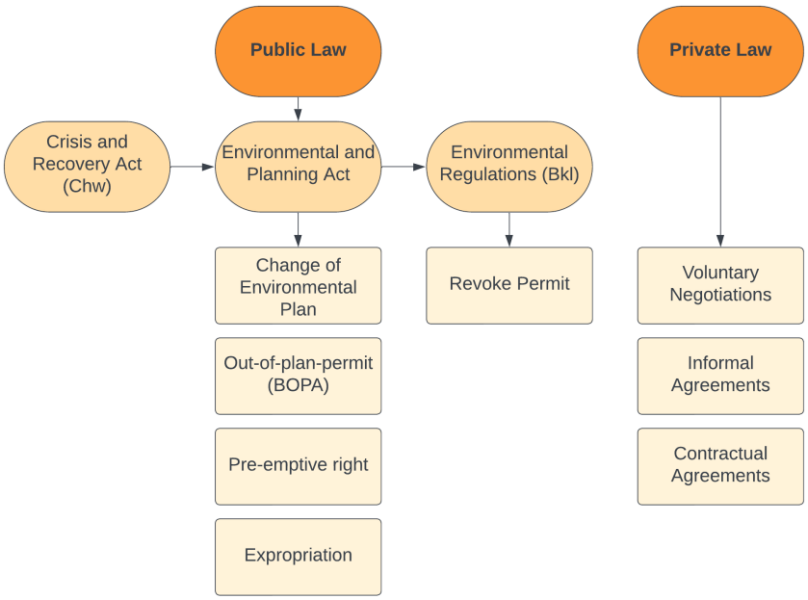

Figure 3: Instruments for Land Acquisitions

2.3.1 INSTRUMENTS UNDER THE ENVIRONMENTAL AND PLANNING ACT (OMGEVINGSWET)

In the context of urban transformation, the Dutch Environmental and Planning Act (Omgevingswet) offers municipalities and developers several legal tools to facilitate the relocation or removal of existing businesses. Frequently, area development decisions are taken prior to the adaptation of the public-law framework (Bregman et al., 2023). In the Netherlands, the "Omgevingswet" has been enforced since 1st of January 2024. This law relates to the physical living environment and all the activities that occur within that realm.

Rather than detailing all six instruments of the Act, it is more relevant to focus on those that directly impact spatial transformations involving existing businesses. Key among these is the environmental plan (het omgevingsplan), which replaces the former zoning planning (bestemmingsplan). This integral municipal document not only regulates land use but also incorporates rules on noise, air, water, and other environmental factors (Bregman et al., 2023). It is the central steering instrument for local governments to manage physical developments, and is essential for enabling or restricting activities such as business operations or relocations.

Another important tool is the environmental permit (omgevingsvergunning), which allows a party to obtain approval for one or more activities in the physical living environment through a single application (Bregman et al., 2023). This permit is granted by the municipality, based on the rules laid out in the environmental plan. Changes to permit conditions or revocation can be used strategically to create legal pressure for relocation.

Lastly, the project decision (projectbesluit) can be relevant in cases where a transformation serves a clear public interest, such as large-scale housing or infrastructure projects (Bregman et al., 2023). This decision enables governments to proceed even if the environmental plan has not yet been updated, making it a powerful tool when urgency or public need outweighs procedural delays.

These instruments are all grounded in the Environmental and Planning Act, which must comply with evolving European legislation, particularly in the areas of environment and sustainability (Bregman et al.,

2023). This creates an added layer of complexity and dynamism for municipalities navigating legal pathways to transformation.

2.3.1.1 Crisis and Recovery Act (Chw)

Before the implementation of the Environmental and Planning Act, the Crisis and Recovery Act played a pivotal role in the legal landscape of spatial planning. After the global financial crisis of 2008, the Netherlands needed something to accelerate the decision-making in development projects; this was done by streamlining legal procedures (Ministerie van Infrastructuur en Milieu, 2015). At first, it was brought into the world as a temporary measure; it had lasted for fourteen years and helped pave the way for the more comprehensive Environmental and Planning Act (Hobma (2023), as cited in Stadszaken (2023). Many of the major transformations in the Netherlands fall under the Crisis and Recovery Act, since it is quite abstract and therefore more flexible. They had to let go of some rules to accelerate construction (Stadszaken, 2023).

2.3.1.2 Environmental Regulations (Bkl)

Another aspect of the Dutch law around transformation lies within the environmental legislation. The laws are created to safeguard the public health, safety, and environmental quality. It may only be used to protect the environment. In the Netherlands, there are standards for, among others: noise, air quality, external safety, soil and smell; these are legally anchored and must be met before zoning changes or transformations can take place. These standards fall under the Environmental and Planning Act. They are specified under the “Besluit kwaliteit leefomgeving (Bkl)”. Municipalities can decide to form even stricter rules surrounding the environmental regulations that follow the Bkl, but also have additional standards. Permits should follow these guidelines; however, developers can always opt for an out-of-plan environmental permit (buitenplanse omgevingsplanactiviteit) when they do not follow the rules set by the Environmental and Planning Act.

One of the main instruments that can or have to be used during the transformation is the revocation of an environmental permit for a polluting activity. When a company has an environmental permit, it can be revoked on certain grounds of the Bkl. When the environmental regulations are not in line with the business's way of work, they cannot continue. The grounds of this are (iplo.nl, n.d.):

- Violation of assessment criteria (*Strijd met de beoordelingsregels*)
- Failure to make use of the environmental permit (*Niet gebruikmaken van de omgevingsvergunning*)
- At the request of the permit holder (*Op verzoek van de vergunninghouder*)
- Revocation of a related water activity permit (*Bij intrekken samenhangende wateractiviteit*)
- At the request of the consenting authority (*Op verzoek instemmingsorgaan*)
- Application of Best Available Techniques (BAT) not feasible (*Toepassen beste beschikbare technieken niet mogelijk*)
- Closure of a landfill site (*Gesloten stortplaats*)
- Inadequate waste management practices (*Doelmatig beheer afvalstoffen is onvoldoende*)
- Preventive measures required to protect public health (*Preventieve maatregelen ter bescherming van de gezondheid*)
- Revocation in the context of enforcement (*Intrekking in het kader van handhaving*)

This can be concluded with the fact that while the environmental permit can be revoked on many grounds (iplo.nl), it cannot be revoked simply because the municipality wants to transform an area. It can only be used for the, in the law stated, protection goals. Therefore, environmental regulations protect businesses from arbitrary permit revocations. This helps safeguard both environmental quality and the legal rights of businesses during urban redevelopment processes.

However, according to Article 8.9 of the Bkl (iplo.nl), when deciding whether a polluting activity causes too much harm to the environment, the government must also look at the environmental plan, environmental permits, and the water board. This means municipalities can argue that certain polluting businesses no longer fit within the environmental goals of the area and use this as a legal reason to tighten rules or stop those industries during redevelopment.

2.3.2 INSTRUMENTS FOR LAND ACQUISITIONS

Often, land will be sold through the parties, without municipal interference. There is no need for municipalities to intervene (Bregman et al., 2023). However, when the sales are not as wished for, there are certain tools that can be used by the municipality to get ahead of the market parties (Bregman et al., 2023). Also, for other stakeholders, certain instruments can be used to acquire land for new development. The four land acquisition instruments that are in the "Omgevingswet" will be explained, some of these can only be used by the municipality, and others can be used by multiple stakeholders. This information is important to see which ones of the rights are used when businesses and landowners are displaced.

2.3.2.1 Change of Environmental Plan

The lengthy procedure of changing the Environmental Plan is an option when municipalities are looking to transform an area from one function to another. In this adjustment, the municipality (and rarely the provincial government or national government) has the authority to change the plan according to new spatial planning goals, environmental policies, or societal needs. The adjustment of the plan has a lengthy procedure that requires public consultation, an environmental impact assessment (EIA), and a formal approval process (not always) (Bregman et al., 2023). This can take anywhere from 3 months up to a year, depending on the complexity (Bregman et al., 2023). After that, permits need to be granted, which takes even more time.

2.3.2.2 Out-of-plan Environmental Permit (BOPA)

The Environmental and Planning Act offers the opportunity to facilitate new developments that are in conflict with the Environmental Plan by granting them a BOPA. This is done to fasten the procedures. Normally, the Environmental Plan must change before giving them a permit, since the permit has to be in line with the Environmental Plan. When a BOPA is granted, it has to be for the greater good of the area. It has to be motivated that there is a balanced allocation of functions to locations. While the BOPA can deviate from the Environmental Plan, it does have to be in line with the Environmental and Planning Act and therefore the instruments that fall under that act, namely, the Environmental Vision and the Program. In this procedure, there are options for current landowners and other stakeholders to appeal.

2.3.2.3 Pre-emptive right

Then, there is a pre-emptive right, which is a passive instrument (Bregman et al., 2023). A pre-emptive right is a legal instrument that grants a municipality priority to acquire land before it can be sold to other parties. There are three main aims for this law: Not inflating prices, the municipal coordinating role, and increasing municipal insight into transactions (Bregman et al., 2023). The last aim can be explained because the owners of the land have the obligation to offer the land to the municipality first. This right can be used not only by the municipality, but also by the provinces and the national government (Bregman et al., 2023).

2.3.2.4 Expropriation

Expropriation is an active land acquisition instrument. This means that you can force the owner to disown their land. It is only applicable in extraordinary circumstances where it serves in the greater public interest (rechtspraak.nl). Expropriation involves a large number of procedural steps. There are two phases: the administrative phase and the judicial phase. The requirements for expropriation are: The expropriation order must be irrevocable; the spatial planning decision, for the implementation of which expropriation is

necessary, almost always the environmental plan in the case of area development, must be irrevocable; and the provisional compensation or the agreed compensation, which is recorded in an official report, must have been paid (Bregman et al., 2023). The height of the compensation differs per situation.

2.3.3 PROCEDURAL RULES FOR BUSINESSES

When the Environmental Plan is changed or a BOPA is granted for an area, the business does not automatically have to leave. There are different scenarios, but in all scenarios, they get compensated for their leaving. Before the new Environmental Plan comes into effect or BOPA is granted, they have the option to appeal to these plans and permits; this is one legal means for the business. After the plan or permits are official, the businesses can stay till the new use of the area starts. They will have to leave when their activities are inconsistent with the new Environmental Plan, but they will still get compensated for leaving.

The legal means the businesses can take against active land acquisition (expropriation), are limited. In the administrative phase of expropriation, they can object to it. This can take up to six weeks for the municipal council to decide (Bregman et al., 2023). During the judicial phase, they get another chance to object to the decision, in which they would have to wait up to 4 weeks again for a decision (Bregman et al., 2023). After this, the expropriation can still be cancelled when the judge judges that: it has not been prepared according to legal formal requirements, the expropriation interest is absent, the necessity is lacking, or the urgency is lacking (Bregman et al., 2023). When the judge has made their judgment, the businesses have another option to go into appeal, for at least six weeks (Bregman et al., 2023). This is only allowed when you have made your doubts clear in earlier phases. When, a year after the judgment, the municipality has still not made their compensation to the owner, their expropriation right expires (Bregman et al., 2023). All in all, there are three times the owner of the land can go into appeal/object to the municipality wanting to expropriate them, and after that, if the municipality does not comply with the compensation within a year, they cannot expropriate. To conclude this, there are options to appeal to the legal procedures that happen when transforming areas, however, often decisions are already made for the greater good and cannot be changed.

2.3.4 CONCLUSION

Legal frameworks play a central role in shaping industrial area transformations. While municipalities and developers have various legal tools under the Omgevingswet, such as zoning changes, BOPAs, and land acquisition instruments. Complex procedures, environmental standards, and fragmented ownership often slow progress. At the same time, existing businesses retain significant legal protection, including the right to appeal and compensation. Furthermore, the reliance on informal strategies, such as voluntary negotiations or strategic pressure, reveals a gap between the law on paper and practice on the ground. Although informal strategies can pressure businesses, the law ultimately seeks to balance transformation goals with fair treatment and legal safeguards. However, in practice, the power dynamics between authorities and businesses often determine outcomes more than the law itself.

CHAPTER 3 – RESEARCH METHODS

To build on the background knowledge that is shared in the previous chapter, the research methods will be explained in this chapter. This methodology acts as the foundation for both the theory and practice of the study, steering the process of answering the research question. The next chapter outlines the methodology, starting with an overview of the research design, then describing the data collection methods through literature review, data, and interviews, and finishing with an explanation of how the data will be analysed and managed.

3.1 Type of Study

The research is adopting an explorative approach using qualitative and quantitative research methods; it is a mixed-methods approach. The research is exploratory, aiming to identify patterns and address an open-ended question about what had happened to these businesses. The study is qualitative, relying on a case study, interviews, and literature review to explore the complexities and analyse the case. Quantitative methods are used in the data analysis of the LISA database and GIS mapping to track business movements.

Given that this topic has limited explanations in the existing literature, the research has two main goals. Firstly, it is to identify the current problem and evaluate the research at hand with its existing knowledge. Secondly, it will gather insights into the practice of transformation. It will help to understand how business movements occur when land is required for different purposes.

3.2 Methods and Techniques

To address the research question: *In what ways does the transformation of industrial areas into mixed-use developments in the Netherlands produce business displacement, and how is this shaped by social, spatial planning, and legal dynamics?* This study employs literature review, case study analysis, database research, GIS mapping, and interviews. These methods allow for a comprehensive understanding of the phenomenon from multiple perspectives.

3.3 Data Collection and Analysis

The primary unit of collection and analysis in this thesis is the individual businesses located within designated areas that transformed into mixed-use developments in the Netherlands. These individual units have a space in the greater case study location (a specific area).

3.3.1 LITERATURE

To understand the research gap and evaluate what is already known about the subject, a literature study was done. However, there is limited research on this topic. There is background research to go deeper into the need for businesses in cities, provide general context to urban redevelopment zoning and policies in the Netherlands, and the legal framework in which this all happens. The aim is to collect this knowledge and create a qualitative research that can be used to delve deeper into other research methods, such as the data analysis of the LISA database.

3.3.2 MULTI-CASE STUDY

As a part of the qualitative research, two industrial-to-mixed-use locations will be explored with a case study. This will mostly be based on qualitative research. The case study will function as the entry point for data collection from an existing database, which includes information from the year 1996 to 2022. The case study will be employed to gain a deeper understanding of specific redevelopment projects. It will contextualise the literature into real-world examples of industrial displacement.

Following Yin (2018), a multiple-case study design was chosen to strengthen the robustness of findings. The multi-case analysis applies a logic of replication rather than sampling: each case either confirms similar patterns or highlights the contrasts. Yin (2018) argues that a multiple-case design requires at least two cases; however, the exact number is based on complexity and outcome of the case studies. Cresswell (2002) suggests three to five cases, while Eisenhardt (1989) recommends four to ten cases. Therefore, taking into account the time of this master's thesis, two to six cases will be analysed to provide the optimal balance between depth and comparability. These cases will be researched based on the Yin (2018) multi-case research design method. In this model, first, the case selection and data collection protocol are set up. After that, all cases will be analysed individually and will have an individual report. These reports will be cross-case analysed to show the similarities and differences.

The decision of the case study is based on multiple factors. At first, a list of requirements is set up for the case study location. This emerges from the literature review, which identifies four possible outcomes for businesses (relocate, stay, adapt, and disappear) when an area transforms. To get the desired research outcomes, the following requirements were established to guide the identification of a suitable case study:

- **Fragmented ownership prior to redevelopment**
  The area must have exhibited a high degree of fragmented land ownership or lease before redevelopment commenced. This criterion ensures a focus on complex governance and coordination challenges typically present in urban transformation projects.
- **Functioning industrial use prior to transformation**
  The area should not have been a derelict or "dying" zone at the time of intervention. Instead, the transformation must have been proactive, targeting a still-functioning industrial area, thereby enabling analysis of conflict, negotiation, and displacement in active urban settings.
- **Development started or completed before 2022**
  The redevelopment project must have either started or been substantially completed before 2022. This criterion aligns with the temporal limits of the database used in the research, ensuring comprehensive and consistent data availability.
- **Geographic scale**
  The area should be of a scale that allows meaningful observation of redevelopment dynamics. Concrete, this would mean at least 30.000m2 of surface area.

3.3.2.1 Identification Process

The identification of suitable case studies was carried out through desk research, combining academic, policy, and grey literature. The process included:

- Scanning of official municipal and project websites (e.g., gemeente Amsterdam, gemeente Den Haag, gebiedsontwikkeling.nu, planviewer.nl) for documented redevelopment projects.
- Review of planning documents and zoning plans where available, to verify timelines, legal instruments, and project scope.
- Supplementary use of search engines to generate an initial longlist of industrial areas undergoing transformation.
- Collection of postcodes for shortlisted areas, enabling their integration into the LISA database for longitudinal economic and employment analysis through a postcode map.

3.3.2.2 Outcome

Through this process, two case study areas were identified that meet the established criteria:

Table 1: Case Study Data

Area	Municipality	Baseline Year	Postcodes
Cruquius	Amsterdam	2013	1019HT, 1019AT, 1019CD, 1019VM, 1019AJ, 1019VK, 1019VC, 1019VN, 1019VH, 1019VB, 1019VE, 1019AG, 1019VZ, 1019XZ, 1019VA, 1019AK, 1019XW, 1019XX, 1019XP, 1019VA, 1019VP,1019XN, 1019VR, 1019VS, 1019VT, 1019AL, 1019AN, 1019AR, 1019VX
Binckhorst	The Hague	2013	2516A, 2516B, 2516C, 2516D

Other areas were initially considered as potential case study locations; however, these were ultimately excluded based on several factors. The two alternative sites were Lloydkwartier in Rotterdam and Houthavens in Amsterdam. Lloydkwartier was omitted because its redevelopment dates back to before 1999, making it unsuitable for a realistic comparison with the more recent transformation areas included in the study. Houthavens was analysed using the database, but due to missing data and a lack of companies, the results would not have been reliable. Consequently, this area was also excluded from the final selection.

Figure 4: Map of Cruquius

Figure 5: Map of Binckhorst

Each case combines a history of industrial activity with fragmented ownership and active use at the time of redevelopment, while also being subject to public planning instruments. These cases will form the empirical basis for exploring patterns of industrial displacement and adaptation within the Dutch context.

3.3.2.3 Analytical Focus

The analytical focus of the case studies lies in tracing how industrial areas and their businesses have changed over time under conditions of redevelopment. A first dimension concerns the relocation patterns of businesses: existing firms will be followed across different years to determine whether they stayed in place, moved to nearby locations, relocated further away, or disappeared altogether. This is closely connected to a second line of inquiry, which looks at employment change. By examining shifts in the number of employees within firms, it becomes possible to identify whether businesses contracted, expanded, or ceased to exist as redevelopment progressed.

Another aspect of the analysis concerns the spatiality of relocation. Here, the proximity of new locations is studied to establish whether displaced companies tended to remain within the same urban region or moved outward to more peripheral zones. This spatial dimension is further complemented by an examination of clustering: the extent to which relocated firms regroup in new concentrations of activity, or whether redevelopment has the effect of dispersing formerly connected industrial networks.

In addition to these trajectories of individual firms, the overall business dynamics of the case study areas are also considered. This involves comparing the total inflow and outflow of companies over time, assessing how many new businesses entered and how many existing ones left, and thus establishing the net balance of economic activity within the redeveloping locations. Special attention is given to sectoral change, tracing how the industrial composition of the areas shifts. For example, the decline of traditional manufacturing or logistics functions and the emergence of service-oriented, creative, or residential-supporting activities.

Finally, although the application of public law instruments was not a criterion for selecting the cases, it represents an important part of the analysis. Each redevelopment process will be examined to determine which legal tools were mobilised, such as zoning changes, environmental plans, expropriation procedures,

or permit regimes, and how these instruments shaped the outcomes for businesses in terms of relocation, adaptation, staying, or disappearance.

3.3.3 LISA DATABASE

To examine business dynamics in the selected case study areas, the LISA database is used. This database contains longitudinal information on businesses and employment in the Netherlands between 1996 and 2022. The first step was to identify the relevant postcodes for each case study location. These postcodes were then used as filters to extract the corresponding business records from the database.

The extraction and restructuring of the data were carried out in Python. For each of the two case study locations (Binckhorst and Cruquius), five datasets were produced, resulting in a total of ten Excel files. Each dataset serves a distinct analytical purpose:

1. **Longitudinal business presence:** a dataset listing all businesses located within the relevant postcodes for each year from 1996 to 2022. This provides the baseline for tracking continuity and change in business activity.
2. **Business counts per year:** an aggregated dataset that records the number of active businesses in the area per year, enabling the analysis of growth and decline over time.
3. **Entry and exit (delta) dataset:** a dataset showing which businesses entered or exited the area in a given year, capturing annual inflow and outflow dynamics.
4. **Business type and employment:** a dataset that links each business to its SBI sector code and employment size for every year, allowing analysis of sectoral change and job creation or loss.
5. **Relocation trajectories:** a dataset starting from a selected baseline year (prior to mixed-use redevelopment), tracking the companies active at that point to determine whether they remained in place, relocated elsewhere in the Netherlands, or disappeared from the register altogether.

This structured coding process makes it possible to systematically analyse business relocation, adaptation, staying, and disappearance, as well as employment and sectoral change, across time and space. The excel files while be used to further analyse and create graphs. While the database cannot directly establish causality with redevelopment, it enables the identification of significant trends that shed light on industrial displacement processes.

3.3.4 GIS MAPPING

In addition to the database analysis, GIS mapping can be used to visualise the spatial changes that have happened. The software used will be QGIS. This will help illustrate how these industrial zones have evolved, where displaced businesses relocate, and whether new clusters of industrial activities emerge in alternative locations. The case studies chosen and employed for the LISA database analysis will also be used in the GIS mapping to frame the trends into visualisations. It can also show a comparative analysis of the transformed industrial site to the new functions.

3.3.5 INTERVIEWS

After researching which companies have been dislocated, moved, or experienced other scenarios, some of these will be asked for an interview to take a step in a new direction of what the actual impact was on these companies. How they have navigated through that time, positively or negatively. Another type of interview that can be held is with developers or municipalities of the case study areas. In those interviews, it will be more about their policies around existing businesses and how they handle the negotiations in that

case. This will create further depth to the research and a new perspective for somebody who might want to delve deeper into this research.

As part of the research, interview participants will be selected from the database used for analysis (LISA). From this dataset, businesses (or individuals representing them) will be chosen for interviews, based on the nature of their business movements in the four categories (relocate, adapt, stay, and disappear) discussed in the literature review. The selected municipalities or developers will be selected through those parties involved in the case study area. The number of interviews is limited due to time and scope constraints of a master's thesis. The aim is not representativeness, but depth of insight into the business outcomes identified in the literature. The individual(s) representing the businesses can be one or more persons who have been with the company during the transition period of the existing business in the transformation area to where they are currently. They must have insights into the overall well-being of the company and statistics; ideally, it would be the owner, CEO, or other person in charge of the business. For the municipalities or developers, it would ideally be some form of project manager or specific person for negotiations who were a part of the negotiations. The interviews will be semi-structured; this method will be used to create a balance between consistency and flexibility, which will allow for richer, more detailed data (Kallio et al., 2016). The defined framework ensures that all topics are discussed across the three interviews, making the results comparable.

The interviews will be held in real life or online (via Microsoft Teams), depending on the preference and travel time of both parties involved. The interviews will be recorded and transcribed. Any unnecessary personal data will be anonymised from the transcription before the analysis begins.

To analyse the interviews, insights will be collected. Key insights are systematically explored and will result in an interpretation. The interview data will also be used to verify and deepen the understanding of findings from other parts of the research, such as the quantitative analysis. In particular, it will help assess how business movements have affected the selected businesses and how municipalities and developers deal with existing businesses, and provide a more complete view of the relocation process.

3.4 Ethical Considerations and Data Management Plan

With research, the responsibility lies in addressing any ethical contestations in the collection and management of data. This not only ensures ethical treatment of participants but also contributes to the validity and reliability of the research findings. When research involves human subjects, the careful and responsible handling of their personal data is particularly crucial. Accordingly, this study adheres to the HREC (Human Research Ethics Committee) guidelines and data management guidelines, which are established by the TU Delft.

To ensure transparency and confidential handling of the participants' personal information, there are two main measures to mitigate any risk: obtaining consent through the informed consent form before the interviews are held, and anonymising any interview recording in the transcriptions.

Details of these measures are in the approval report, which was approved by the HREC committee. In addition to that, a data management plan (DMP) has been set up and received feedback from the data steward. In this plan, the collection, processing, storage, reusability, and ownership of data are stated, which are all in line with the FAIR principles: Findable, Accessible, Interoperable, and Reusable (Wilkinson et al., 2016).

CHAPTER 4 – RESULTS: MULTI-CASE STUDY

The following three chapters present the empirical results of this thesis. Each chapter corresponds to a distinct component of the mixed-methods design outlined in Chapter 3, together forming the foundation for answering the central research question: *In what ways does the transformation of industrial areas into mixed-use developments in the Netherlands produce business displacement, and how is this shaped by social, spatial planning, and legal dynamics?*

This chapter provides a detailed account of each of the two case study locations (Cruquius and Binckhorst). The analysis focuses on the historical development of the areas, the processes of transformation, and the specific patterns of business activity observed in each case. By presenting the cases individually, this chapter establishes the empirical foundation for subsequent cross-case comparison.

4.1 Cruquius

Cruquius is a peninsula within Amsterdam's ring with a long trading history. Once used by the VOC for spice storage, and later on used as an industrial zone. From 2007 on, developers started to buy plots within the area to redevelop into a residential, work, and leisure district (amvest.nl, n.d.).

Unlike many other redevelopment projects, the municipality did not create a master plan for this area. Instead, the responsibility lied in the hands of developers (amvest.nl, n.d.). The municipality did create a "spelregelkaart" in 2012. In this document, the most important ambitions of the municipality are stated (gebiedsontwikkeling.nu, 2025). From 2011 until now, the area has been in redevelopment. Most of the area has been completed, with only a few buildings and infrastructure left to be built. Cruquius is expected to be fully completed by 2030 (Amsterdam.nl, n.d.).

This governance model, with the addition of the "spelregelkaart," aligns with what Verheul et al. (2019) call a "laissez-faire" transformation strategy: the municipality has provided a broad framework but leaves the implementation to private parties. The private party acquires land piece by piece to gain most of the land. Which then reflects the post-industrial planning paradigm, described by Andersson (2023) and Hutton (2004): the government shifts from industrial regulation toward a more flexible and creative economy. By doing so, they can indirectly accelerate industrial displacement. In Cruquius, this shift from industrial city to creative city is embodied.

4.1.1 DEVELOPMENT OF EMPLOYMENT

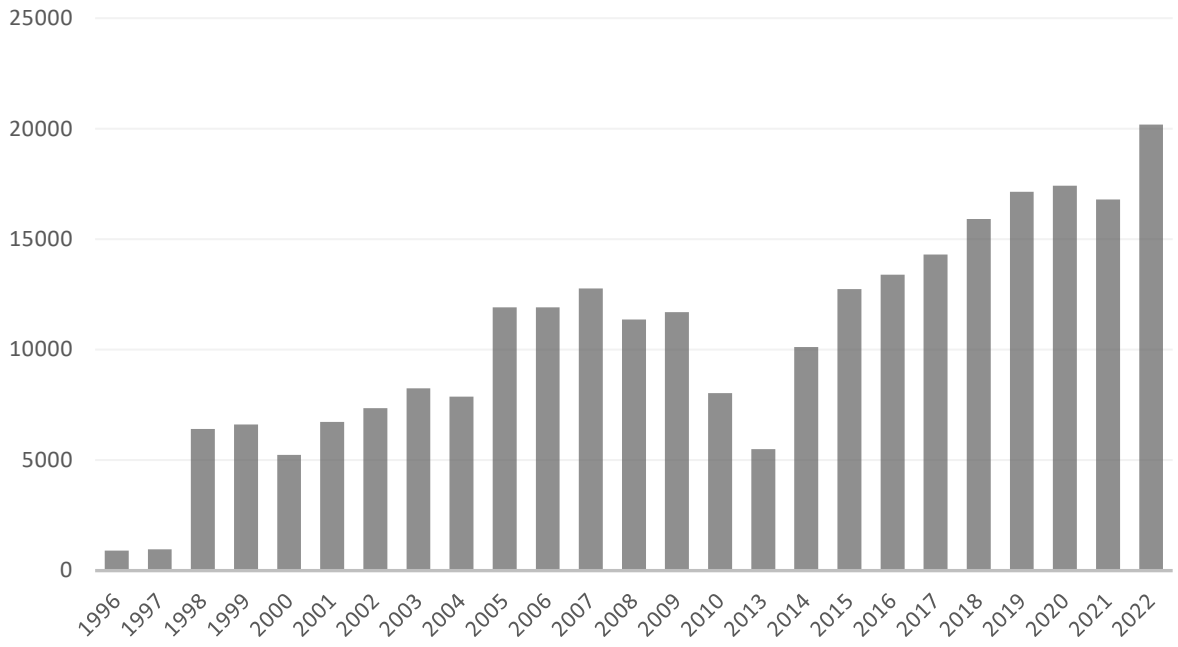

Figure 6: Number of jobs per year in Cruquius

In figure 6, the total number of jobs throughout the years is displayed for the postcodes of cruquius. In the graph, the years 2011 and 2012 are missing since this data does not exist in the database. The data shows a temporary decline in employment between 2010 and 2014, followed by a gradual recovery. This dip coincides with Amvest's land acquisitions and the publication of the 2012 spelregelkaart, signalling redevelopment intentions. According to Krugman (2025), uncertainty itself can stall investment and innovation. Businesses delay decisions when the future of their premises is unclear, producing a self-reinforcing cycle of decline that legitimises redevelopment. In this sense, the employment dip can be read not only as a local economic event but also as evidence of policy-induced uncertainty, a social mechanism that transforms anticipation into material change.

4.1.2 SECTORAL CHANGE

In the following figures, the sectoral divide of the area in 2013 and 2022 is shown. These figures are based on the number of jobs per sector. These figures can show the change in the largest sectors in the area. Public services and consultancy were the biggest contributors in 2013. In 2022, the communications sector and hotels, restaurants, and cafés took over as the most prominent businesses. Interesting is a similar share of manufacturing. The sectoral shift from consultancy and public services in 2013 to hospitality and communications in 2022 demonstrates economic gentrification (Korthals Altes & Tambach, 2008).

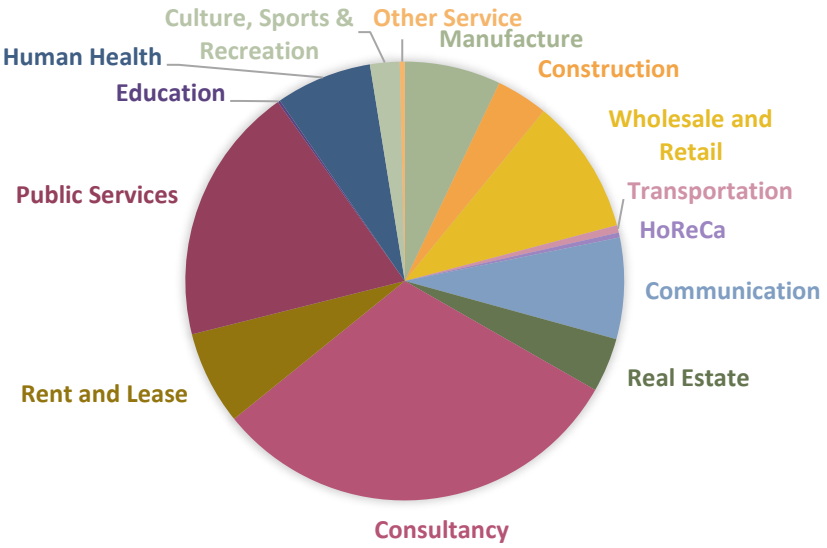

Figure 7: Sectoral Divide Cruquius 2013

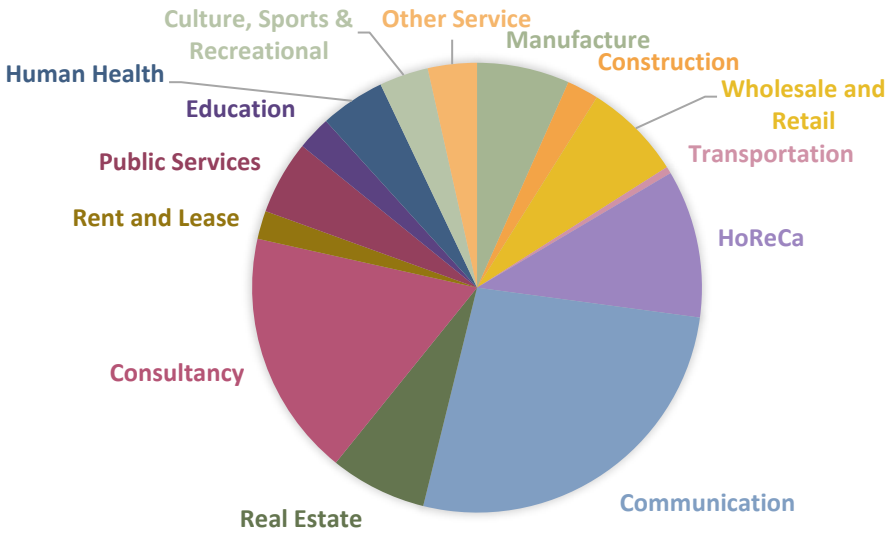

Figure 8: Sectoral Divide Cruquius 2022

4.1.2.1 Manufacturing Focus

To specifically go into the more traditional industries like manufacturing, the following graph is made. It shows the number of jobs in the manufacturing sector in Cruquius. The amount was quite stable from 1999 to 2009. After that followed a period of decline, which could be caused by the threat of the redevelopment and the developers who were buying the land. In 2018, the number of jobs in manufacturing rose again and stayed stable till 2022. These could be newer manufacturing businesses. The persistence of small manufacturing firms shows limited industrial adaptation rather than full disappearance. These remaining firms likely fall within environmental categories 1 and 2, consistent with the municipality's zoning restrictions (Kadastrale Kaart, 2020).

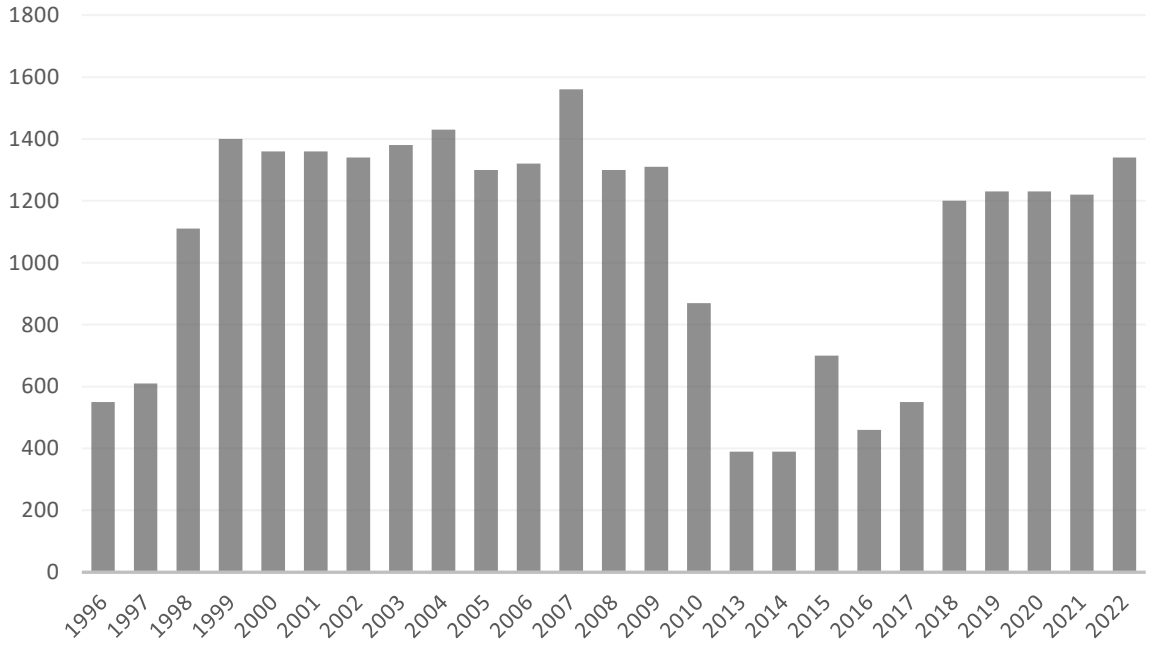

Figure 9: Manufacturing jobs per year in Cruquius

4.1.3 BUSINESS DYNAMICS AND TRAJECTORIES

Table 2: Business Dynamics Cruquius

	In	#	Out
1996	-	13	-
1997	0	13	0
1998	23	36	0
1999	3	37	2
2000	0	35	2
2001	15	50	0
2002	8	56	2
2003	7	61	2
2004	11	63	9
2005	20	75	8
2006	9	73	11
2007	23	88	8
2008	23	96	15
2009	31	117	10
2010	28	118	27
2011	-	-	-
2012	-	-	-
2013	52	100	70
2014	20	113	8
2015	16	123	5
2016	18	134	7
2017	28	147	15
2018	33	153	27
2019	71	210	14
2020	33	229	14
2021	46	245	30
2022	247	464	28

To understand the dynamics of the area, a summary of the total companies per year with inflow, outflow, and net change is shown in this table. The pattern shows quite little entries and exists till 2013. Since the data from 2011 and 2012 has not been available, this exit number shows how many of the companies that were there in 2010 have left since then in 2011, 2012, and 2013. Nevertheless, it shows a big turnover in different companies from that time.

To compare how many companies actually stay, relocate, adapt, or disappear, these companies are tracked from 2013 to 2022. The category adapt indicates that the company is still in the area, but has adapted to another location. The category stay means that it stayed at the same location. Relocate means it went to another location completely. Disappear means that the company is no longer registered in a location. This will most likely mean that the company went bankrupt or simply stopped. The analysed trajectories cover the periods 2006 to 2010 and 2013 to 2022. Data for the years 2011 and 2012 were excluded due to limitations in the database: these years contain missing records, and in 2012/2013 the unique company identifiers were changed, making it impossible to accurately track firms across this interval. Tracking of firms from 2006 to 2010 shows that nearly half remained in the area, 22 percent relocated, and 32 percent disappeared. Tracking of firms from 2013 to 2022 shows that roughly half remained in place, while 45 percent relocated and 8 percent ceased operations. This pattern indicates that, in the more recent period, relocation became the dominant outcome rather than outright business loss. Such a shift suggests a process of “managed displacement”, in which economic activities are not eliminated but redirected to other zones within or beyond the city (Grodach & Martin, 2020). In this sense, the redevelopment of Cruquius appears to have facilitated a controlled reorganisation of industrial functions, mitigating the total disappearance of firms while still transforming the area’s economic structure.

Table 3: Trajectory 2006-2010 Cruquius

Trajectory 2006-2010	**Number of Businesses**	**Percentage**
Stay	33	46%
Relocate	16	22%
Adapt	0	0%
Disappear	23	32%

Table 4: Trajectory 2013-2022 Cruquius

Trajectory 2013-2022	**Number of Businesses**	**Percentage**
Stay	46	46%
Relocate	45	45%
Adapt	1	1%
Disappear	8	8%

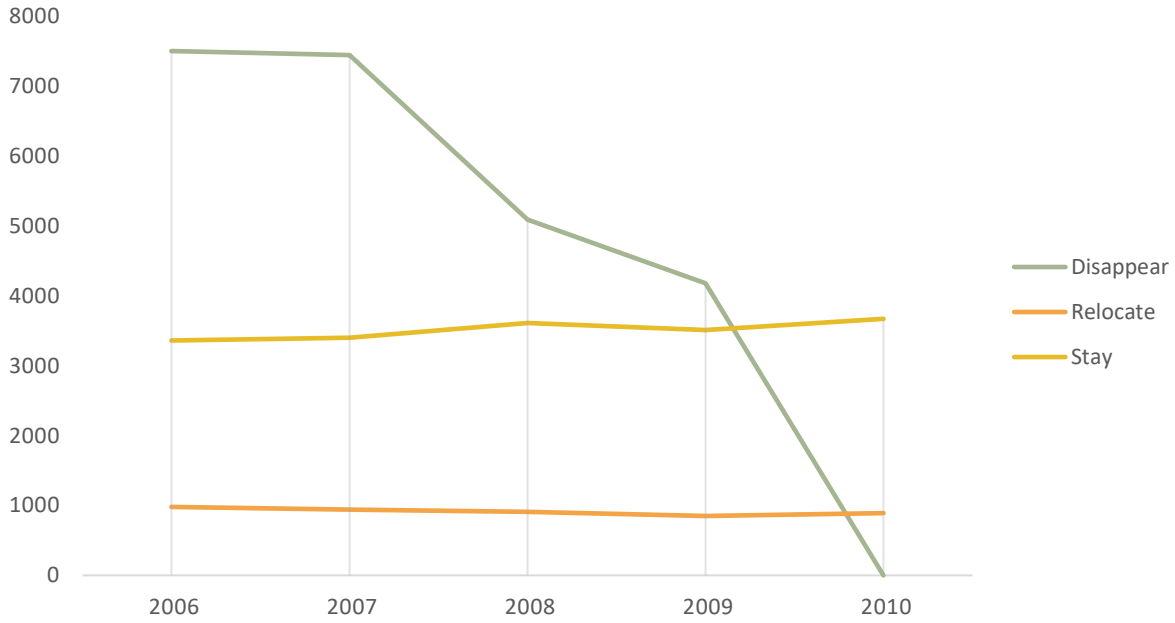

Figure 10: Number of jobs through the years per trajectory

The graph (Figure 10) shows the number of jobs per trajectory through the years. It shows a relatively stable but slowly upward employment trend throughout the trajectory “stay”. The trajectory “disappear” follows a decline all the way through. The trajectory “relocate” remains relatively stable throughout the years.

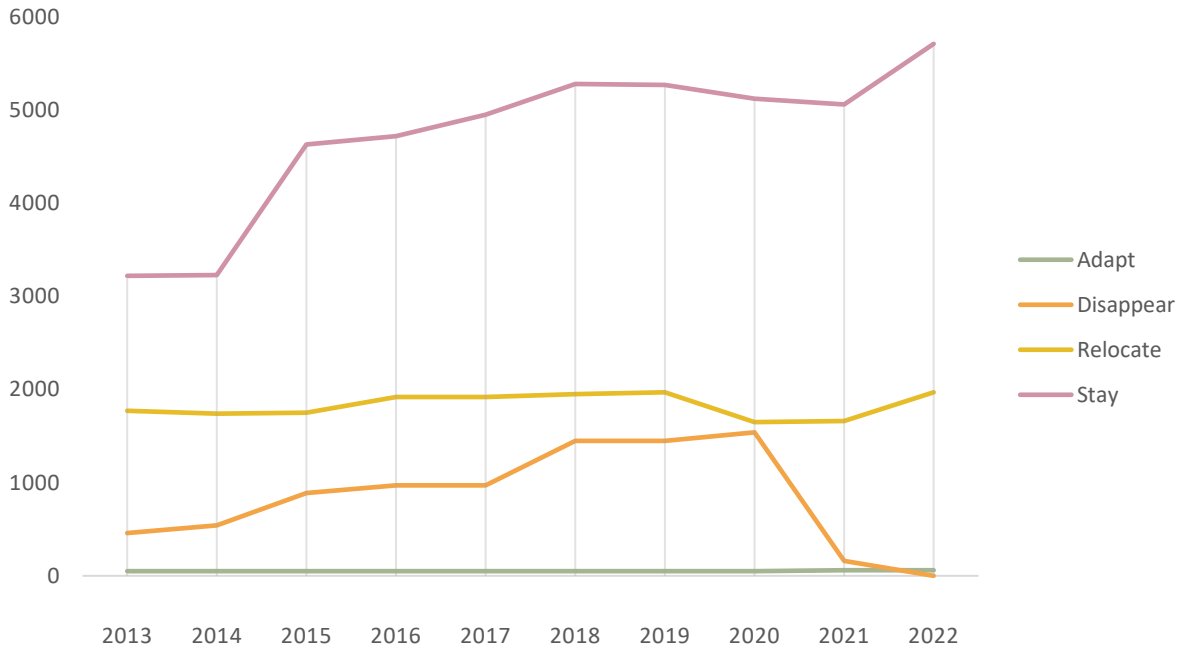

Figure 11: Number of jobs through the years per trajectory

The graph (Figure 11) shows a relatively stable and upward employment trend throughout the trajectory "stay". The trajectory "disappear" follows this upward trend till 2020, after that, the jobs are strongly declining. The trajectory "adapt" shows a small increase in the number of jobs through the years, and the trajectory "relocate" stays relatively stable throughout the years, with a minor decline and rise again from 2019 to 2022.

4.1.3.1 Spatial Relocation

The QGIS map (Figure 12) shows the origin of the companies in 2013, tracked in blue, and their location in 2022, in orange. There are no specific new clusters found for the Cruquius area. The absence of new clustering in GIS analysis suggests that these businesses were dispersed rather than re-concentrated, potentially weakening local industrial networks (Hutton, 2004).

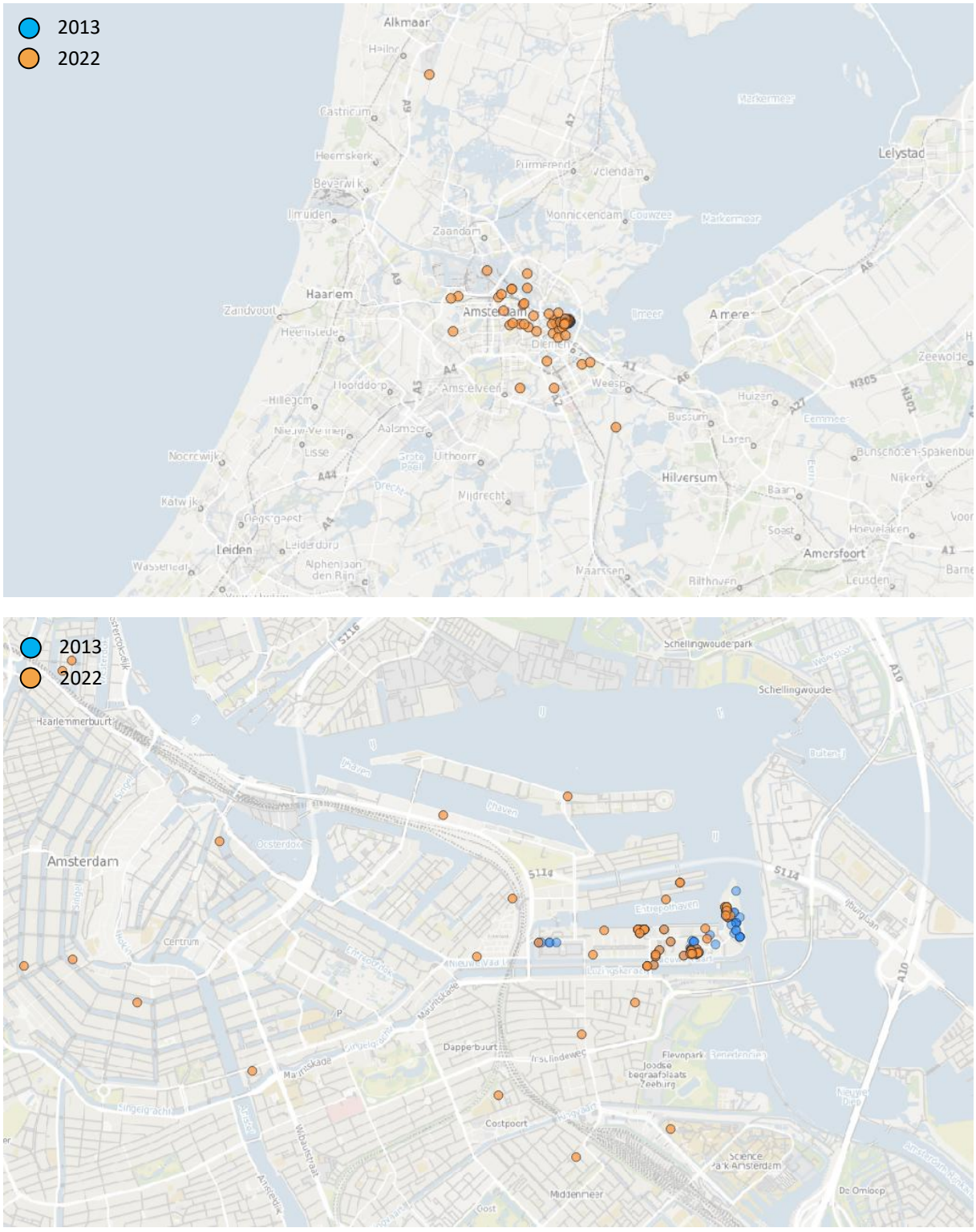

Figure 12: Spatial location of firms

4.1.4 LEGAL

To complement the collection of findings, a closer look was taken at a small selection of businesses that relocated during the redevelopment of Cruquius. These examples were chosen randomly from the LISA dataset in order to explore whether legal procedures may have contributed to their displacement.

To investigate such examples, information is gathered through Google searches, local and regional news articles, and municipal council records. In addition, public databases such as the Kadaster and the Raad van State are consulted to verify whether specific legal instruments, such as zoning changes, expropriation procedures, or environmental permits, played a role.

Company A had operated in Cruquius since the 1970s as a manufacturer within the heavy industrial category, functioning under a broad environmental permit that allowed extensive operational hours and emissions. The residential development of the other eastern docklands that expanded throughout the 1990s and 2000s, the firm had received complaints about noise and dust, despite complying with their permit.

For Cruquius itself, there were speculations of transformation but not an actual zoning plan. During this period, property developers approached Company A regarding a potential acquisition, but the firm resisted relocation. Eventually, as the leasehold period only had twelve years left and neighbouring plots were acquired by developers, its bargaining position weakened. Negotiations with the main developer (Amvest) and the municipality led to a financial agreement and relocation in 2014. The company found a new site.

This case exemplifies what Boeve & van Bueren (2023) term “juridische sturing zonder dwang”, legal steering without coercion. Although no formal expropriation took place, the combination of expiring leasehold, environmental pressure, and redevelopment incentives created an environment where relocation became inevitable. From a theoretical lens, this aligns with Grodach & Martin’s (2020) notion of managed displacement, where industry is not forcibly removed but structurally redirected, and Hutton’s (2004) concept of land-use conflict, industrial activity gradually rendered untenable by surrounding land-use change.

Company B’s departure followed the sale of its leasehold rights to Amvest (van der Sluijs, 2023). After this transaction, the company’s environmental permit (omgevingsvergunning voor milieubelastende activiteiten) was revoked. Under Dutch law, such permits can only be extended or revoked on specific legal grounds defined in the Besluit kwaliteit leefomgeving (Bkl). For example, if a company ceases operation or no longer makes use of its permit. Municipalities cannot revoke a valid permit solely because new environmental standards are introduced in the omgevingsplan. In this case, the revocation was legally possible only after the company had sold its leasehold and discontinued its operations, which made the existing permit void in practice.

While the sale itself was not a direct result of changing environmental regulations, it did remove a legal obstacle for the municipality to tighten environmental standards in the area afterward. Once the site was vacant, the municipality could adapt the omgevingsplan to limit future industrial activity to environmental categories 1 and 2, in line with nearby residential development. This sequence highlights how transformation processes can unfold through gradual and interdependent steps; first through voluntary land transactions, then through regulatory adjustments that consolidate the area’s shift toward mixed-use functions.

Such processes also raise financial and governance questions, as buying out or compensating for environmental rights can be costly. While there are no records of the amount of compensation the company has received for its lease rights, a notable example is the municipality of Rotterdam’s purchase of environmental rights around Feyenoord’s De Kuip stadium to enable housing construction, which involved substantial public expenditure, and costs around 12 million (Gebiedsontwikkeling.nu, 2023). The

case of Company B thus illustrates how legal, financial, and environmental instruments can interact subtly to facilitate urban transformation, even without formal expropriation or direct coercion.

Similar to Company B, Company C was a medium-sized manufacturing enterprise that sold its leasehold rights during the transformation process (van der Sluijs, 2023). After the sale, its environmental permit was revoked, as the company had ceased operations. While this revocation followed standard legal procedure, the sale indirectly enabled the municipality to tighten the environmental standards in the area afterward, restricting future activities to lighter industrial categories (1 and 2).

As with Company B, this sequence illustrates how the combination of voluntary land transactions and subsequent regulatory adaptation can gradually phase out heavier industry. From a spatial-planning perspective, the relocation of Company C aligns with Hutton's (2004) framework, in which industrial activity becomes socially and spatially untenable amid the broader drive toward mixed-use urban redevelopment.

In contrast, Company D's move appears voluntary and market-driven. The software firm required a larger and more modern office to accommodate expansion (Company D, 2017). It is unclear whether the rising land prices or other contextual factors had an influence on this move.

Although these four examples provide valuable insights, it is important to note that they represent only a small selection of all businesses that relocated from Cruquius. For many companies, publicly available information about the exact reasons for their relocation, such as negotiations, permit procedures, or financial pressures, cannot be fully traced online. Nonetheless, the identified cases reveal structural patterns that likely apply to a much larger group of firms affected by the area's transformation. The combination of expiring leaseholds, tightening environmental norms, and planning pressure creates conditions under which relocation becomes almost inevitable, even without formal coercion. This highlights a broader systemic issue: under the "Omgevingswet" framework, indirect and legally sanctioned forms of displacement can occur quietly and gradually, eroding industrial diversity over time. While each case has its specific circumstances, together they illustrate how post-industrial urban redevelopment, though often framed as sustainable and innovative, can place considerable strain on existing productive sectors and contribute to the steady disappearance of traditional industry from inner-city areas.

4.1.5 CONCLUSION

The Cruquius case illustrates how industrial transformation unfolds through gradual and indirect mechanisms. Employment data shows a temporary decline during the redevelopment phase, reflecting the uncertainty that often precedes a large urban project. Sectoral analysis reveals a clear shift in companies to hospitality and communication, which can signal economic gentrification. Although nearly half of the firms relocated, most continued operation elsewhere, suggesting semi-managed displacement rather than complete loss of industry.

Legally, the redevelopment relied on instruments such as zoning adjustments, environmental laws, and leasehold expiry. These measures narrowed the operational space for heavier industries and encouraged voluntary withdrawal or buy-outs.

Together, these findings show that Cruquius' laissez-faire, developer-led model exemplifies Hutton's (2004) concept of land-use conflict and Boeve & van Bueren's (2023) notion of legal steering without coercion. The transformation achieved urban renewal goals, but at the cost of industrial diversity. Cruquius thus represents a controlled yet systemic form of displacement, where policy flexibility and market dynamics collectively reshape the inner-city industrial landscape.

4.2 Binckhorst

The Binckhorst is a formal industrial area in The Hague, just outside of the city centre. Historically, it housed a diverse mix of manufacturing, logistics, and smaller industrial enterprises. Before that, in the end of the 19th century, it was a polder with a castle on it: Kasteel Binckhorst. The establishment of a gasworks in 1905 marked the beginning of the area's development into the industrial site it later became known as (indebuurt.nl, 2020).

From 2016 on, the industrial site has been slowly transformed into a modern, creative area where people live and work (denhaag.nl, n.d.). Unlike centrally planned redevelopments, the municipality explicitly opted for an organic transformation. A gradual, bottom-up process guided by planning rules but driven by market timing (Rooilijn, 2022). The organic approach demonstrates a deliberate avoidance of mass expropriation. Instead, the municipality relies on spatial-legal pressure to encourage voluntary relocation. This aligns with Verheul et al. (2019), who argue that Dutch municipalities increasingly employ "adaptive governance" to reduce financial risk and legal conflict. In 2018, the official environmental plan was adopted, and since then, construction has been ongoing in the Binckhorst (denhaag.nl, n.d.). The "Omgevingswet" (or former versions of it) allows firms to keep their existing rights if they comply with environmental rules (IPLO, n.d.), but nearby housing development gradually limits their ability to function. This mirrors Hutton's (2004) idea of land-use conflict, a slow transition in which industry becomes unsustainable rather than abruptly displaced.

4.2.1 DEVELOPMENT OF EMPLOYMENT

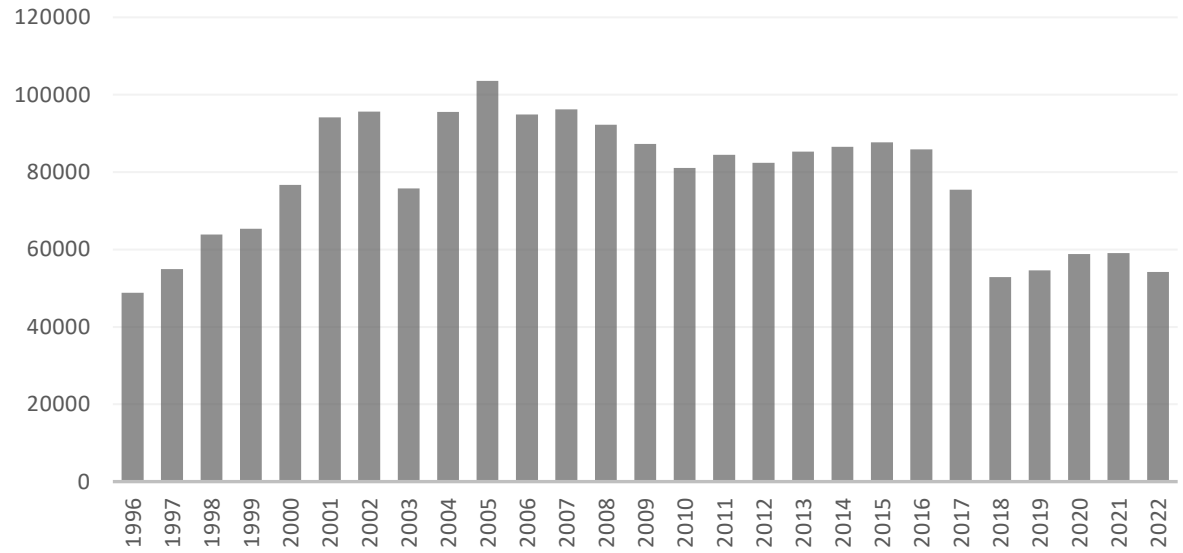

Figure 13: Number of jobs per year in Binckhorst

In figure 13, the total number of jobs throughout the years is displayed for the postcodes of the Binckhorst. The graph shows an increase in businesses from 1996 to 2001. Employment trends remained stable until 2018 and then declined, matching the moment the new environmental plan was adopted. This timing supports Krugman's (2025) argument that regulatory uncertainty influences business confidence and employment.

4.2.2 SECTORAL CHANGE

In the following figures, the sectoral divide of the area in 2013 and 2022 is shown. These figures are based on the number of jobs per sector. These figures can show the change in the largest sectors in the area. Communication was the biggest contributor in 2013, this is mostly due to the head office of KPN being located in the Binckhorst. They totalled half the jobs in 2013. In 2022, the sectoral composition of the area was highly diverse, with many different sectors represented and none clearly dominating. About half of the jobs are in wholesale and retail, communication, and consultancy. Interesting is a similar share hold of the more traditional businesses like manufacturing and mining, and quarrying.

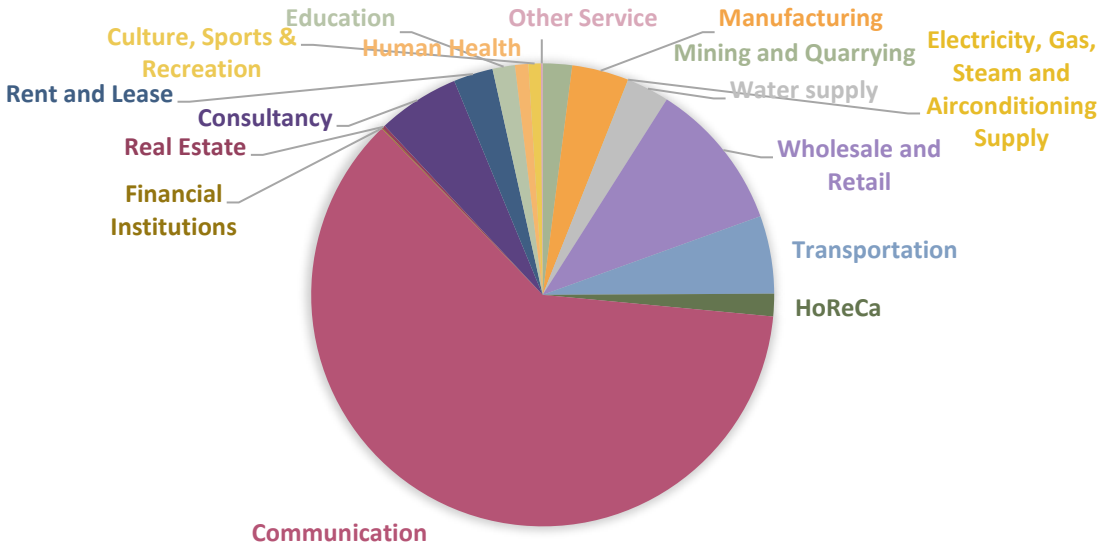

Figure 14: Sectoral Divide Binckhorst 2013

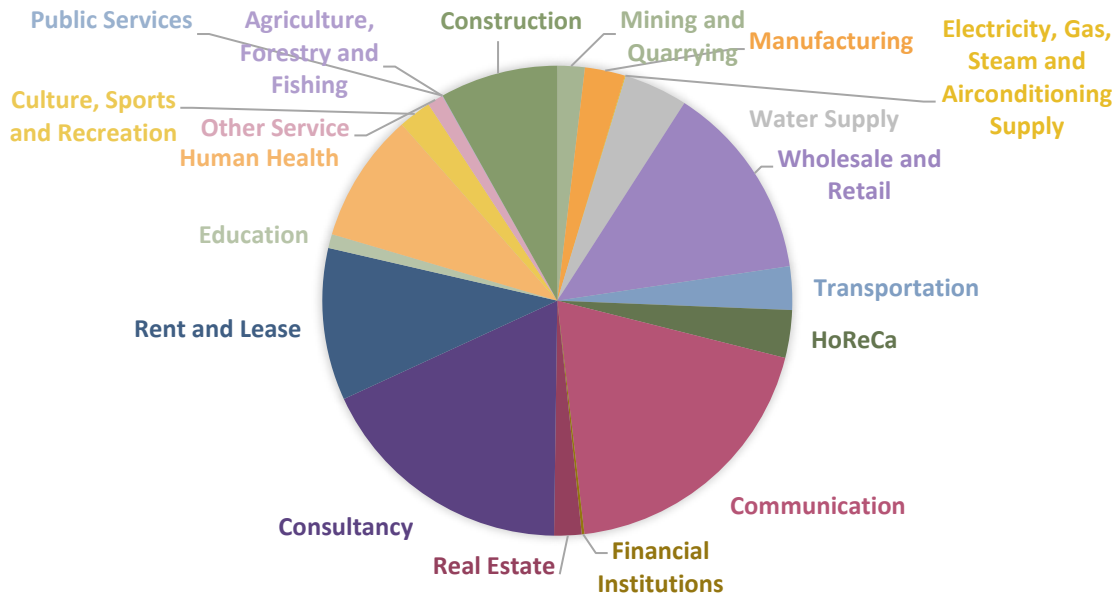

Figure 15: Sectoral Divide Binckhorst 2022

4.2.2.1 Manufacturing Focus

Figure 15 illustrates employment in the manufacturing sector within the Binckhorst. Between 1996 and 2003, the number of jobs remained relatively stable, followed by a period of consistent higher amounts of jobs until 2014. From 2015 onwards, however, manufacturing employment declined sharply, reaching its lowest levels since 1996 and remaining consistently low thereafter.

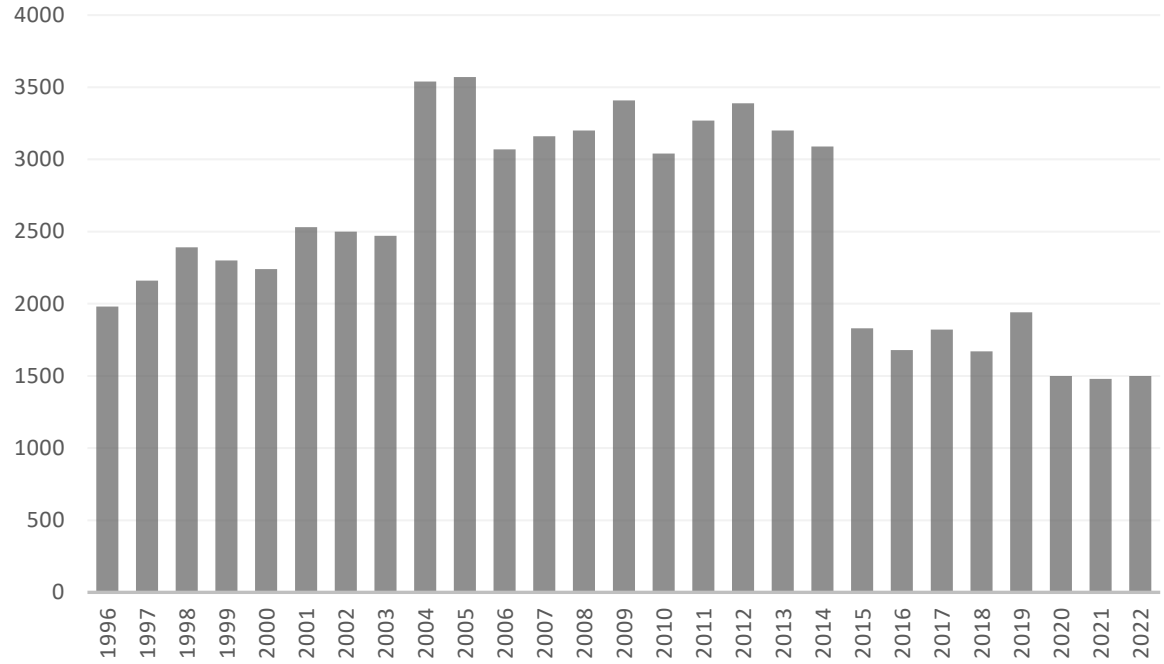

Figure 16: Manufacturing jobs per year in Binckhorst

4.2.3 BUSINESS DYNAMICS AND TRAJECTORIES

Table 5: Business Dynamics Binckhorst

	In	#	Out
1996	-	160	-
1997	19	179	0
1998	15	191	3
1999	13	198	6
2000	16	204	10
2001	18	206	16
2002	41	213	34
2003	27	229	11
2004	19	233	15
2005	27	243	17
2006	34	261	16
2007	39	286	14
2008	72	337	21
2009	98	385	50
2010	85	412	58
2011	90	479	23
2012	74	467	86
2013	116	468	115
2014	89	498	59
2015	115	535	78
2016	98	538	95
2017	141	602	77
2018	151	601	152
2019	178	686	93
2020	190	748	128
2021	201	833	116
2022	217	882	168

To understand the dynamics of the area, a summary of the total companies per year with inflow, outflow, and net change is shown in this table. The pattern shows quite little entries and exists till 2013. Another year with many exits was 2018, which is in line with the environmental plan that was made that year. The threat of that plan could have caused more companies to leave, or they could possibly be forced to leave. Over the years, the graphs show a steady incline throughout all the years. In 2022, there are more businesses than in all the years before that. However, as seen in Figure 12, the number of jobs has declined. The last couple of years of the data show a big turnover in the different companies.

To compare how many companies stay, relocate, adapt, or disappear, these companies are tracked from 2013 to 2022. The business-trajectory analysis shows that 54 percent of firms disappeared, 24 percent remained, and 18 percent relocated. The high disappearance rate contrasts sharply with Cruquius and reveals the limits of organic transformation. Although the policy sought to prevent forced displacement, it ultimately led to a slow decline in industrial diversity. According to Hutton (2004), this is a typical outcome in creative-economy transitions: long-standing industrial networks dissolve, replaced by fragmented service economies.

Table 6: Trajectory 2013-2022 Binckhorst

Trajectory 2013-2022	**Number of Businesses**	**Percentage**
Stay	111	24%
Relocate	85	18%
Adapt	19	4%
Disappear	251	54%

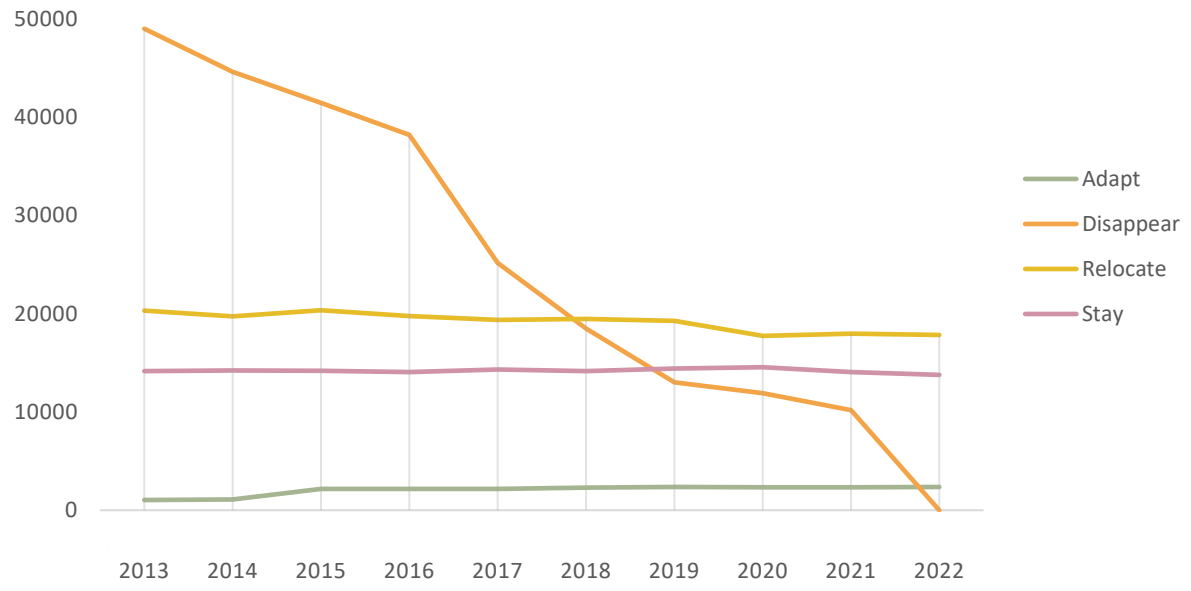

Figure 17: Number of jobs through the years per trajectory

The graph (Figure 17) shows a mostly consistent line for the trajectories “relocate” and “stay”, with a minor drop in the last years. The trajectory “disappear” shows a persistent decline. The years 2019 to 2021 show somewhat of a stagnation, which will ultimately lead to 0 jobs in 2022. The category adapt shows a small increase over the year. “Adapt” is the only trajectory that has more jobs in 2022 than in 2013; all others have fewer jobs.

4.2.3.1 Spatial Relocation

The QGIS map shows (Figure 18) the origin of the companies tracked in pink and their location in 2022 in yellow. There are a few new clusters in business parks found: two went to the business park Heron. Four to Plaspoelpolder. There are no other significant moves to other business parks. The absence of major new industrial clusters in GIS data confirms this dispersion effect. Most firms that relocated moved nearby, and some went to business parks such as Plaspoelpolder and Heron, suggesting functional relocation rather than complete sectoral exit.

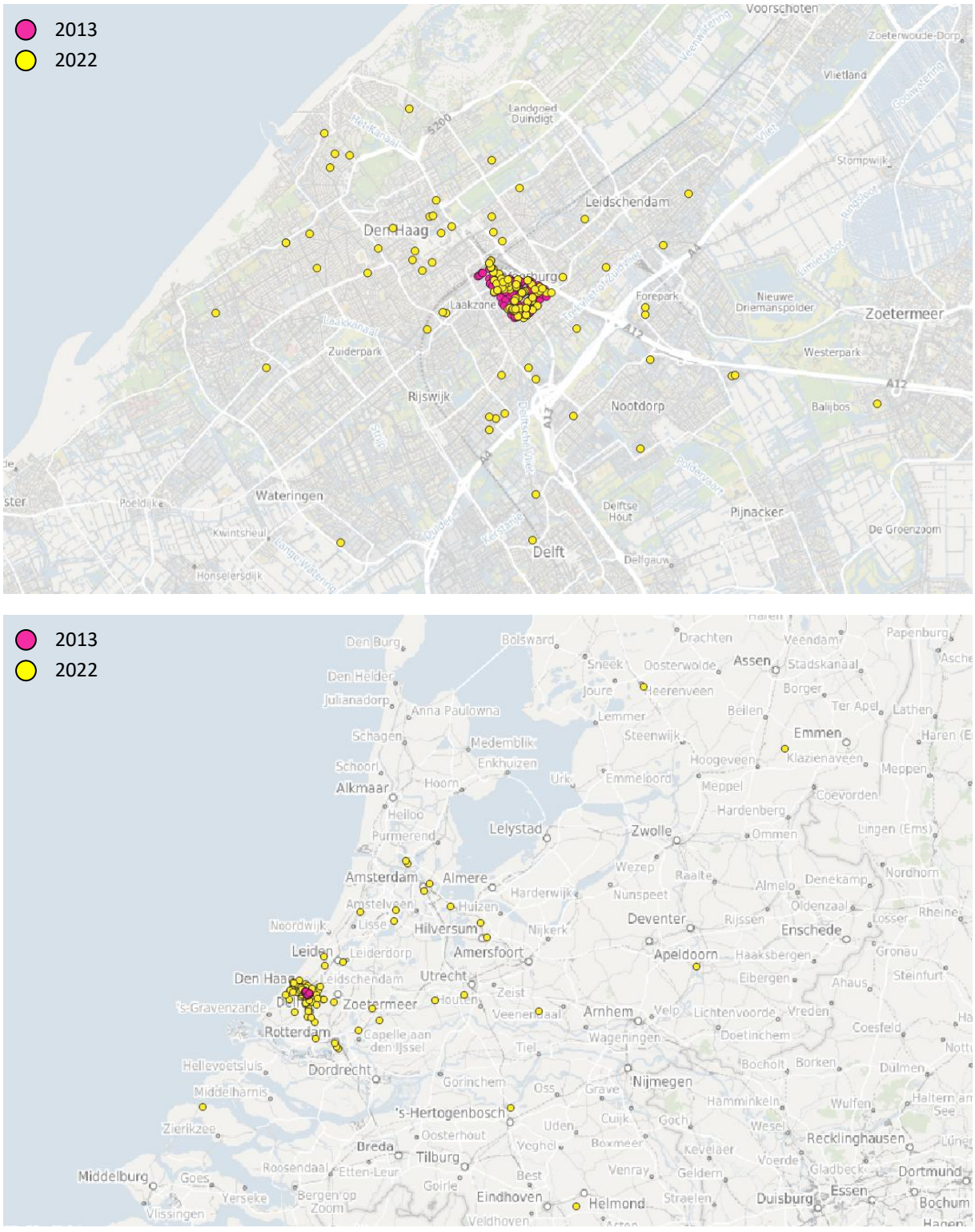

Figure 18: Spatial location of firms

4.2.4 LEGAL

Following the Cruquius case, a few individual examples from the Binckhorst provide further insight into how transformation processes affected existing firms. Three companies were examined using publicly available information from municipal documents, news articles, and databases such as the Raad van State and Kadaster. While the available data is limited, these cases reveal how planning instruments, environmental regulation, and uncertainty surrounding the “Omgevingsplan” (and earlier versions) shaped business outcomes.

Company E was a heavy-industry business that operated in the Binckhorst for decades and was ultimately bought out as part of the redevelopment process. The official reason for the buyout centred on environmental incompatibility: the odour in particular, and to give an impulse to the building of new residential units (Raadsinformatie Den Haag, 2020). Despite long-standing local operations, its activities became legally and spatially incompatible with the area’s new mixed-use vision. People called this a scandal (Haagse Stadspartij, 2021), since it had cost the government a total of 50 million to buy out two companies. They stated that such a large sum of money was better spent elsewhere and that this company could have kept the industrial character of the Binckhorst.

This outcome aligns with Hutton’s (2004) theory of land-use conflict, in which traditional industries become untenable once surrounded by residential or creative functions. Public reactions to the company’s closure highlighted a tension between the municipality’s stated ambition to preserve the industrial character of the Binckhorst and the reality of its transformation.

Company F filed a formal objection against the new zoning plan for the Binckhorst, arguing that the revised zoning made continued industrial operation impossible. The business eventually ceased activity and disappeared from the LISA register. While the outcome of the objection procedure is unclear, no evidence of renewed permits or relocation was found.

Company G also filed an objection against the zoning plan, but remains operational within the Binckhorst. However, its long-term prospects remain uncertain, as any future permit renewal will depend on stricter environmental norms and mixed-use zoning priorities. This case illustrates the temporary protection offered by the Omgevingswet (or earlier versions): businesses may legally remain as long as they comply with environmental conditions, yet they face growing spatial and social constraints.

Following the Cruquius case, a few individual examples from the Binckhorst provide further insight into how transformation processes affected existing firms. Three companies were examined using publicly available information from municipal documents, news articles, and databases such as the Raad van State and Kadaster. While available data are limited, these examples show how planning instruments, environmental regulation, and uncertainty surrounding the “Omgevingsplan” shaped different business outcomes, ranging from negotiated relocation to disappearance and reluctant adaptation.

4.2.5 CONCLUSION

The Binckhorst case demonstrates how an “organic” and adaptive transformation strategy can still lead to substantial industrial displacement. Although large-scale expropriation was deliberately avoided, the combination of new zoning regulations, environmental restrictions, and market valorisation gradually eroded the area’s industrial base. Employment figures show stability until 2018, followed by a decline coinciding with the adoption of the “bestemmingsplan”. Sectoral change reveals diversification but also the weakening of manufacturing and logistics, confirming a steady shift toward service-oriented activities and economic gentrification.

Business-trajectory analysis indicates that more than half of the firms disappeared entirely, while a smaller share relocated or adapted. The examined company cases illustrate different pathways of managed retreat: buyouts justified by environmental incompatibility and unsuccessful legal objections.

Ultimately, the Binckhorst transformation achieved redevelopment at the cost of industrial diversity. It underscores how adaptive governance and flexible planning under the “Omgevingswet” (or earlier versions) can unintentionally normalise industrial decline within post-industrial urban agendas.

CHAPTER 5 – RESULTS: INTERVIEWS

To complement the quantitative and spatial analysis presented in the previous chapter, a small number of semi-structured interviews were conducted to provide additional context on how the transformation process affected companies in the case study areas. The aim for these interviews is not representativeness, but to add qualitative depth to the empirical findings by exploring how actors directly involved in redevelopment interpret and experience such processes.

The interviews, therefore, serve a context-providing rather than an analytical purpose. They illustrate how redevelopment projects unfold from the perspective of key stakeholders and how planning, legal, and market-related factors interact in practice. Each interview targets a distinct actor group:

- a business that was relocated as a result of transformation;
- a business account manager from the municipality of The Hague.

5.1 Company A Perspective

The first interview was conducted with a representative of a long-established producer of construction materials that had been located in the Cruquius area from 1974 until its relocation in 2014. The firm, originally a family business, was active in the production of materials for both residential and commercial projects.

The conversation offers an in-depth look at how these industrial firms experience urban redevelopment and the often-uncertain processes that precede formal transformation. According to the interviewee, the first signals of change were indirect:

> *"We kept hearing nothing about a new zoning plan, and we already had a vague suspicion that they were busy with something else. And yes, then at some point someone is just standing in your hallway saying: I want to make an offer. And yes, then you can move out. That's how it actually starts."*

This uncoordinated approach created a period of insecurity for the business, as they were left unsure whether redevelopment would occur and on what terms. Before Amvest's involvement as the leading developer, multiple smaller developers approached companies individually, without clear coordination.

> *"In the beginning, it was quite vague, because it wasn't really clear what was going to happen. As soon as Amvest came into the picture, it was clear what was going to happen."*

Once Amvest was appointed as the main developer, communication improved, and the intentions became clear; however, the municipality was never really in the picture.

> *"We had more of the feeling that the municipality was pulling the strings in the background… they didn't really come to the foreground. They also didn't have the financial means at that time."*

This reflects a broader characteristic of the Cruquius redevelopment process: it was primarily developer-driven, with the public sector steering through frameworks. Which set out general spatial rules but left the detailed implementation to private parties.

A notable impact of the redevelopment plans was the company's changing investment strategy once relocation became likely. The interviewee explained that the period of uncertainty limited their willingness to make long-term commitments:

> *"At the beginning, of course, we still invested carefully, but later, when it became more and more clear that we were going to move, you simply don't invest that much anymore."*

Moreover, the interview highlights that redevelopment does not necessarily proceed through direct legal coercion, but rather through gradual forms of legal steering. The company's experience suggests that leasehold structures and environmental regulations can be used as indirect mechanisms to make the continuation of industrial activity increasingly difficult. As the interviewee explained:

> *"You start noticing more inspections, more environmental checks… pressure is being applied. And what if the leasehold expires? Then it's simply clean up and leave."*

As mentioned, the environmental regulatory instruments cannot be applied in support of area development, yet pressure is still being felt. Municipalities and environmental services will likely investigate whether standards are being exceeded and what the current conditions are in a somewhat neglected industrial area. The hesitation illustrates how ambiguous planning communication can directly influence economic activity within transformation areas. Firms anticipating displacement may postpone upgrades or maintenance, which in turn affects productivity and employment stability. In this case, the company kept operations running but adopted a cautious, short-term outlook:

> *"We wanted to continue anyway, so things went on reasonably until the very last moment."*

Such behaviour suggests a broader pattern that redevelopment areas often experience a gradual decline in reinvestment before the official transformation starts. For this firm, however, the ability to continue operating until the relocation agreement was final prevented more severe financial losses.

The company's relocation process began when negotiations with Amvest were initiated. The firm insisted on securing a new site that met its specific operational requirements: direct access to navigable water, sufficient quay length, and proximity to Amsterdam's construction market. These conditions reflect the dependence of production-related firms on spatial and logistical infrastructure, which is often difficult to reproduce outside established industrial zones.The interviewee recalled that while Amvest made some effort to assist in finding a new location, the results were limited:

> *"They did try, but not with the passion that we had given it. They came with options that were simply not possible."*

Eventually, the company took the initiative to locate a new site independently. The former leasehold rights were sold to Amvest, and the proceeds were used to finance the construction of the new facility elsewhere in Amsterdam. The transition occurred without any legal disputes, though the negotiations could sometimes be described as "hard against hard".

> *"They said things like: You want a Ferrari back for a Volkswagen Golf. But for us it was simple: you want us gone, so we want a turnkey production site so we can continue our business."*

The case highlights the tension between redevelopment objectives and the operational continuity of existing firms. The financial aspects were minor compared to the logistical coordination. The company could not interrupt its production, so the entire move was completed within three weeks during the construction holiday.

> *"On Friday afternoon, we brought all the trucks and equipment to the new site, installed everything within three weeks, and on Monday after the break, we started again, just at another location."*

In hindsight, the relocation turned out to be strategically beneficial. The company re-opened its new facility, and at the same time, there was a recovery of the Dutch construction sector after the financial crisis. This allowed for expansion of both production capacity and market reach.

Since then, the firm has grown from one location to eight across the Netherlands, including in Rotterdam, Haarlem, and Leeuwarden. However, the interviewee emphasised that this positive outcome was largely due to timing and market conditions rather than structural support for displaced businesses.

The respondent also commented on the broader trend of declining industrial presence within inner-city areas:

> *"I don't think heavy industry should be in inner-city areas anymore. You should move more towards the edges and industrial zones. If you live next to a production facility, you're not really happy."*

While acknowledging the spatial logic of urban transformation, especially regarding heavy industry, the interviewee also noted the long-term vulnerability of industrial firms that depend on scarce infrastructure such as water access. Even at their current location, similar pressures are expected to re-emerge:

> *"We moved in 2014, but now, hearing the new plans of the city, it's coming close again. Maybe in a few decades we'll have to move once more."*

This cyclical pattern, where transformation gradually pushes industry outward, mirrors the dynamics observed in other case study areas, such as Binckhorst. In both contexts, transformation entails not only physical redevelopment but also the reconfiguration of urban economies, in which production-based firms face continuous spatial displacement.

5.2 Municipality Perspective

The second interview, from the municipal perspective, provides insight into how the City of The Hague navigates the economic and spatial transformation of the Binckhorst, specifically within a sub-area. While this does not translate one-on-one to the full Binckhorst, lessons can be learned from it. The interviewed account manager focuses on facilitating the innovative and impact-driven business ecosystem. Unlike most account managers in the municipality, who operate on a sectoral basis, this role is geographically anchored in a single redevelopment area.

> *"I work for the Department of Economy within the Municipality of The Hague, and we mainly focus on facilitating existing businesses in the city: terrace policy, hospitality policy, the night culture vision, tourism, that kind of thing."*

> *"In principle, we don't have that many account managers like me who really steer in an area… mine is quite unique. Usually, we have an account manager for a sector."*

Their role emerged from the policy programme, which was set up to diversify the city's traditionally government-oriented economy and attract companies that contribute to social and environmental goals. The sub-area was seen as a fitting environment for this because of its rough industrial character and availability of older buildings that could be repurposed for new enterprises.

> *"We are quite a government city… so there was a need to also tap into a different economy. That's how the policy program started, a policy programme that focuses on companies working on a better world, derived from the Sustainable Development Goals."*

The municipality therefore sees transformation as a way to steer the local economy towards innovation and sustainability. However, this approach also indirectly contributes to the gradual displacement of traditional manufacturing and repair firms.

> *"In a densifying city, the pressure on space becomes large… the first to make way is the manufacturing industry."*

The account manager described how the early phase of the Binckhorst relied on invitation-based planning, where developers could initiate projects within a loose framework. While this approach helped to attract investment after the financial crisis, it also resulted in fragmented development and uncertainty for existing companies. The uncertainty is important to state, since this uncertainty has earlier been described as a real roadblock for investment in the companies.

> *"What happened was a sort of piecemeal development, you see it literally: there's a tower there, a tower there, a tower there, but there's zero coherence."*

> *"For existing companies, that was super unclear, what's happening, when, and where? When will I have to leave, or when will I be included in a plan?"*

Although the municipality had formally stated that it aimed to keep "as much existing business activity as possible," in practice, this was difficult to realise. Developers prioritised housing, while the city lacked the capacity and instruments to coordinate the relocation of firms.

> *"It's not the ambition to say it'll only be housing and everyone must clear off… but it's simply not feasible to bring back 100 percent of the companies that are there now."*

In response, the Intermunicipal Area Programme (IGP) was created to reintroduce a stronger form of public coordination and to finish areas in a more controlled sequence. They realised that they needed extra steering for well-organised areas.

> *"The lesson has been that it didn't work as envisioned. So now we're taking more control, we're going to finish areas. The sub-area will be one of the first areas to be completed."*

> *"We had to learn that the system of invitation planning just didn't work as envisioned. So now we're taking more control."*

Within the sub-area, certain buildings will remain business hubs, while outdated halls and small workshops will make way for new development. They stated that businesses have left the area, but not under which circumstances.

> *"Those tenants are now gone, leases terminated, and demolition will start next year."*

City-serving companies such as Renewi are being relocated to more peripheral sites to allow for mixed-use redevelopment, reflecting the city's pragmatic attempt to balance urban functions.

> *"Renewi will have to leave, but that hall will be preserved. They'll probably relocate near the ADO stadium, because you can't simply do without that kind of service."*

The interview also shows how the municipality wants its role shifted from direct planning to facilitation and coordination. Rather than enforcing strict spatial control, the focus lies on connecting actors and enabling development.

> *"From the municipality's perspective, you want to enable them as much as possible. What do you need that you can't manage yourself, but where the municipality might contribute? It's really about making connections and helping to achieve objectives together."*

At the same time, the municipality faces ongoing challenges in maintaining affordable workspace and a diverse business base. Despite formal requirements, most developers opt for more profitable housing or office functions.

> *"The requirement to create business space is not picked up nine times out of ten. Developers say: I can't make the business case work; it's much more lucrative to build housing."*

Looking back, the account manager sees both progress and persistent dilemmas. The transformation has brought new energy to the area, but also raised difficult questions about balance and long-term inclusivity.

> *"A success is that in what was at the time a bit of a hopeless situation, quite a few things have now been developed… for example, an innovative building with timber construction and business space in the plinth."*

> *"A challenge is: how do you retain sufficient space for businesses? Which businesses should that be? What is that mix? We really don't know yet."*

The municipal perspective shows that business displacement in the Binckhorst is not the outcome of direct policy, but rather of gradual prioritisation and lack of certainty. It also shows that there are plenty of discussions and agreements about keeping certain traditional businesses in the area, but no one dares to make the call and has the answers to this intricate question.

> *"I can be continuously debating with colleagues without disagreeing. And it also feels very unpleasant to keep trying to be right from your own business-park perspective, but you can't let it go either, so yes, it's really quite complicated."*

> *"Ask a developer, ask a resident, ask a company… everyone's right in their own way, and that makes it damned difficult to cooperate."*

The Hague has very limited urban space and multiple ambitions; the municipality tries to balance economic innovation with spatial and social responsibility, often navigating between what is desirable and what is simply feasible.

> *"You can't go into the sea, you can't go into Delft… you're completely boxed in. The growth ambition is so big, and you think: all that work then? That has to happen somewhere."*

5.3 Conclusion

The interviews in this chapter provide additional context to the quantitative and spatial findings by showing how transformation processes are experienced by different actors on the ground. Together, they reveal how redevelopment in Cruquius and the Binckhorst unfolds through a mix of market dynamics, planning frameworks, and gradual shifts in spatial priorities. For companies, this often translates into long periods of uncertainty, declining reinvestment, and eventual relocation. From the municipal perspective, the interviews show the difficulty of balancing innovation, densification, and the retention of productive functions in a constrained urban environment. While each actor positions themselves differently within the process, their experiences collectively illustrate the complex and often incremental nature of business displacement in Dutch mixed-use transformation areas.

CHAPTER 6 – RESULTS: CROSS-CASE ANALYSIS

Building on the individual case descriptions and the interviews, this chapter compares the two case studies: Cruquius (Amsterdam) and the Binckhorst (The Hague). This chapter analyses how societal, spatial planning, and legal dynamics collectively shape the displacement of industrial businesses in Dutch transformation areas. The previous chapters has presented each case individually, but this section synthesises their outcomes to reveal any overarching mechanisms that drive transformation across different governance models. The analysis will follow the structure of the theoretical framework. Reflecting the three interdependent dimensions: social, spatial planning, and legal.

Cruquius and the Binckhorst represent two contrasting yet complementary approaches to urban transformation. Cruquius embodies a laissez-faire redevelopment strategy, where the municipality delegated most initiative to a private developer (Amvest), who bought the plots one by one, and the municipality exercised limited spatial control (Verheul et al., 2019). Transformation proceeded through market-driven mechanisms such as voluntary land transactions and developer-led phasing. In contrast, the Binckhorst exemplifies a more public-steered governance model, which was structured under the environmental plan that aimed to balance industrial retention with gradual and organic urbanisation. Despite the differences, both areas share similar outcomes.

Central in this chapter is the understanding of how social, spatial planning, and legal mechanisms have interacted to produce the outcomes in staying, relocation, adaptation, and disappearance. Through this lens, the chapter can identify the underlying logic of displacement. A process that does not solely rely on one action, but is generated through multiple mechanisms.

6.1 Societal

6.1.1 POST-INDUSTRIAL TRANSITION

In both cases, the transformation of industrial areas is rooted in the broader societal narratives. The transition from an industrial to a post-industrial society (Bell, 1973; Andersson, 2023) has reframed these industrial functions as spatially and socially incompatible with the contemporary city. As Andersson (2023) describes, the creative society privileges individualism, innovation, and flexibility. Characteristics that align poorly with traditional manufacturing or logistics. This ideological shift is visible in how the projects are described by both municipalities and developers.

In Cruquius, the redevelopment was promoted as a creative waterfront district that would attract resident and entrepreneurs aligned with the knowledge economy (amvest.nl, n.d.). The actions taken to take into account the opinion of the existing industries in that area consisted of foundation with twelve companies. Amvest praises themselves for the mutual respect in creating this plan: “Vanaf het begin is Amvest gaan ‘programmeren’ met belanghebbende partijen. Zoals huidige en toekomstige bewoners, omwonenden, bedrijven en de gemeente. Door deze participatie zijn de bestemmingsplannen zonder zienswijzen geaccepteerd en kon de bouw snel beginnen. Kortom, een nieuwe manier van ontwikkelen gebaseerd op wederzijds respect.” (amvest.nl, n.d.). However, research in chapter 4 shows that industry has still been pushed out of the area. Industry, in this framing, represented a remnant of the past. Something to be transformed rather than preserved. The municipality’s “spelregelkaart” from 2012 reinforced this vision by emphasising liveability, public space, and mixed-use vibrancy, while offering limited provisions for industrial continuity. This aligns with Vogt’s (2016) critique of the “creative city” ideology: industrial labour is devalued and symbolically excluded from the urban future, even if still economically viable.

In Binckhorst, the municipality adopted the rhetoric of innovation and experimentation, positioning the area as an experiment of organic governance and transformation. Public discourse framed the transition not as the loss of industry but as its evolution towards a clean, liveable, and knowledge-based area. As Van

den Berghe (2024) argues, Dutch urban policies often equate industrial transformation with progress, implicitly marginalising low-yield or environmentally intensive industries. This was particularly evident in public reactions to the buyout of heavy industries such as Haagse Asfaltcentrale: while some citizens lamented the loss of productive heritage, others celebrated it as necessary for a “liveable” city (Haagse Stadspartij, 2022).

Across both sites, therefore, social discourse legitimised redevelopment by constructing industry as outdated and incompatible with modern urban identities. Industrial displacement thus begins not with expropriation or legal enforcement, but with the social redefinition of urban desirability.

6.1.2 UNCERTAINTY AND BUSINESS BEHAVIOUR

A second societal dynamic shaping displacement is uncertainty. Krugman’s (2025) economic theory of uncertainty described how anticipated change, even without format decision-making, can trigger hesitation, disinvestment, and decline. This concept applies directly to both transformation areas.

In Cruquius, the uncertainty surrounding the redevelopment in the early 2010uns coincided with a temporary decline in employment and business numbers. This reflects a pattern described by Osipov (2020): when transformation is expected, actors adjust behaviour in advance, accelerating the very decline that legitimises redevelopment. The eventual exodus of firms between 2010 and 2014, followed by a rise in creative and hospitality businesses, demonstrates how uncertainty can function as a social driver of displacement.

In the Binckhorst, uncertainty took a different form. The municipality's organic approach delayed clear decisions, fostering a prolonged state of uncertainty. Companies could stay “for now”, yet the environmental plan signalled inevitable change. The data shows a wait-and-see strategy, since there were no real plans of expropriation or active land acquisition at the beginning of the transformation. Eventually, the municipality and developers took a more aggressive approach by buying out certain companies under force. There has been some expropriation in the area related to the construction and expansion of the Rotterdamsebaan (Rechtbank Den Haag, 2017; 2020). However, these measures cannot be directly linked to the transformation of the Binckhorst, as they were undertaken primarily to improve the accessibility and traffic flow to and from The Hague (Gemeente Den Haag, 2021). More recently, the municipality has also proposed an Expropriation Plan Callistoweg, which concerns several plots at the eastern edge of the Binckhorst. According to the municipal council proposal, these expropriations are intended to facilitate the development of public infrastructure and urban renewal projects, ensuring that essential road connections and public utilities can be realised in accordance with the broader planning framework for the area (Gemeente Den Haag, 2022). The slow approach is consistent with Hutton’s (2004) observation that urban restructuring produces a slow erosion of industrial viability through uncertainty and inaction.

Thus, while Cruquius experienced short-term churn with a higher share of disappearances than relocations (2006–2010), Binckhorst experienced long-term erosion and disappearance. In the later Cruquius period (2013–2022), relocations became more prominent. In both cases, uncertainty undermined trust between businesses and public authorities, confirming that displacement is not only a spatial or legal process but a social one, embedded in expectations and perceptions.

6.1.3 EMPLOYMENT AND SOCIOECONOMIC OUTCOMES

Employment data reinforce these patterns and reveal a nuanced picture of transformation. In Cruquius, the number of jobs fell sharply between 2010 and 2014, coinciding with a major decline in manufacturing employment between 2010 and 2017. After this dip, employment levels gradually stabilised, with new activity concentrated in sectors such as hospitality, communication, and consultancy. While these changes are partly consistent with early-stage economic gentrification, a shift from productive to service-oriented activities, they appear equally driven by environmental and regulatory constraints that

made heavier industries unviable. The few remaining manufacturing firms were small-scale and low-impact, corresponding to environmental categories 1–2 under the current zoning framework. In this sense, Cruquius' transformation reflects a hybrid process: an environmentally conditioned economic shift, in which regulatory and market forces together reshaped the industrial base.

In the Binckhorst, overall employment remained relatively stable until 2018 but declined thereafter, despite an increase in the total number of registered firms. This pattern, more firms but fewer jobs, suggests a fragmentation of economic activity into smaller, often temporary or service-oriented enterprises. Manufacturing employment, which remained relatively strong until 2015, dropped sharply afterwards and has since stabilised at a lower level. This points to a partial economic gentrification effect. Yet, this process is closely intertwined with spatial and environmental incompatibility, rather than purely market-led upgrading.

In both cases, transformation processes show how economic restructuring and environmental regulation reinforce one another. Declining manufacturing employment and the rise of lighter service activities reflect both market revaluation and planning-driven filtering of industrial uses. The outcome is an environmentally selective urban economy: activities incompatible with new spatial and environmental standards are phased out, while adaptable sectors take their place. This represents a subtle but cumulative form of economic gentrification, less about social class replacement and more about functional and regulatory substitution within the urban economy.

6.1.4 SYNTHESIS

The societal comparison reveals that displacement begins in the social and regulatory domains, long before physical redevelopment occurs. In both Cruquius and Binckhorst, the rise of post-industrial values, the gradual marginalisation of manufacturing, and the embedding of environmental standards collectively shaped business behaviour. The pursuit of a "liveable," "sustainable," and "innovative" city functions as a form of soft power, transforming industrial areas through changing expectations and regulatory requirements rather than through direct enforcement. These processes validate Andersson's (2023) and Vogt's (2016) observations that post-industrial urbanism is both an ideological and structural realignment, where sustainability and creative-economy narratives legitimise the withdrawal of traditional industry. In this sense, Cruquius and Binckhorst demonstrate that economic and environmental displacement operate together: transformation is not merely an outcome of market preference but also of a policy environment that redefines what types of economic activity belong in the modern city.

6.2 Spatial Planning

6.2.1 LAND USE CONFLICT AND URBAN DENSIFICATION

Spatial planning translates these societal narratives into physical form. Both Cruquius and Binckhorst exemplify Hutton's (2004) concept of land-use conflict: the clash between low-yield industrial uses and high-value urban functions such as housing and creative industries. The Dutch compact city policy aimed at densifying within existing urban boundaries (Rijksoverheid, 2025) amplifies this conflict by prioritising residential and mixed-use development in centrally located industrial zones.

In Cruquius, this conflict had been resolved through market-led mechanisms. The municipality's limited steering role allowed developers to negotiate directly with businesses, often resulting in buy-outs or other voluntary negotiations of leaving. The spatial outcome of this area is a high-density residential area with lighter commercial uses. A clear sign of the post-industrial ideal. Yet this also erased most of the former industrial morphology. The flexible, piecemeal approach allowed rapid transformation but offered no spatial safeguards for industrial retention, which shows in the negotiations between a company and Amvest, in which they asked for a new location, but Amvest failed to provide.

In Binckhorst, spatial conflict was managed through public planning. Bestemmingsplan Binckhorst (2018) established a phased vision integrating housing, innovation, and residual industry. On paper, this plan sought coexistence; in practice, the gradual introduction of residential functions increased environmental sensitivity, constraining industrial operations. As Boeve and van Bueren (2023) observe, spatial planning decisions that balance multiple land uses often tilt toward the least restrictive, most publicly acceptable function, typically housing. The result is a slow but systematic exclusion of heavier industries, masked as coexistence.

In both cases, spatial planning thus mediates social values through zoning and design, transforming land-use conflict into a gradual reconfiguration of urban space.

6.2.2 ECONOMIC GENTRIFICATION AND THE RENT GAP

While there is no direct evidence of changing land values in the case data, the mechanisms described by Rent Gap Theory (Smith, 1979) still provide a useful lens to interpret how redevelopment pressures emerge. The concept of the rent gap, where the potential economic value of land under new use exceeds its current industrial yield, helps to explain why transformation continues even when policy ambitions call for a mixed-use balance. In both Cruquius and Binckhorst, redevelopment appears driven less by documented land-price increases and more by a perceived revaluation of space: a shift in how municipalities and market actors understand the “best use” of centrally located industrial land.

In Cruquius, private developers gradually acquired industrial plots and converted them into waterfront housing and commercial spaces. Even though no explicit data confirm a rise in land prices, the area’s transformation suggests that industrial land was valued more for its redevelopment potential than for its ongoing productive use. The developers have had money for the financial compensation of the companies, which can signal higher new land values. The municipality reinforced this dynamic by allowing a high degree of flexibility in land transactions and by not enforcing strict industrial-retention conditions. This reflects Ward’s (2021) idea of planning informalisation, where public authorities enable market-driven redevelopment under the guise of urban renewal and liveability.

In Binckhorst, the municipality itself played a more direct role in shaping these perceptions of value. Infrastructure improvements, public investments, and the adoption of the environmental plan collectively enhanced the area’s accessibility and attractiveness for mixed-use development. These interventions effectively reframed the industrial area as a future residential and innovation district, making continued heavy industrial use appear less compatible and less desirable. Over time, this policy-induced revaluation encouraged lighter, service-oriented activities to replace manufacturing, even without overt economic speculation.

Together, these cases suggest that the economic logic of transformation is driven not necessarily by measurable rent gaps but by functional and symbolic revaluation of urban land. The transition from industrial to mixed-use is sustained through expectations of higher future value, policy framing, and development incentives. Even without formal expropriation, this process makes industrial continuity increasingly untenable: as the definition of “highest and best use” shifts toward residential and creative functions, industrial actors lose both economic and political ground to remain in place.

6.2.3 SPATIAL RELOCATION AND INDUSTRIAL RETENTION

The LISA and GIS analyses provide insight into the spatial consequences of these transformations. In Cruquius, 2006–2010 shows a mixed outcome: 22% relocated, 32% disappeared, and the majority stayed. In the later period (2013–2022), patterns shift: 45% relocated and 8% disappeared. The earlier phase reflects substantial disappearances, but still substantially less than the Binckhorst, whereas the later phase indicates a more managed, relocation-led transition. Businesses that stayed did so within boundaries that maintain their connections with the job market. The limited disappearing firms imply that displacement

was largely anticipated and organised. This points to a form of managed spatial transition. The GIS mapping showed no new clustering: relocated firms dispersed across existing business parks. Furthermore, there are many signs that Amvest, the main developer, had the best interests in some of the older industrial uses of the land. While negotiations have not always led to perfect outcomes, they have shown in one case that they were willing to help. Therefore, this signals that they might have done this to other companies and managed to keep the industrial displacement or disappearance smaller.

In Binckhorst, the picture is more severe. Over half of the firms disappeared entirely, with only limited relocation to nearby parks such as Plaspoelpolder and Heron. The trajectory patterns in the Binckhorst illustrate how spatial and economic restructuring are closely intertwined. The gradual disappearance of jobs over time in the different trajectories, apart from the adapt trajectory, signals not only employment loss but also erosion of the area's industrial function. Some firms succeeded in a proper adaptation or relocation. The decline in manufacturing jobs after 2015 indicates that these relocations did not sustain equivalent productive capacity. Spatial dispersion fragmented industrial networks that once benefited from proximity to the city's logistical and labour markets. The organic transformation approach, though intended to avoid forced displacement, thus produced diffuse and uncoordinated relocation outcomes.

Comparatively, Cruquius achieved managed relocation, while Binckhorst experienced unmanaged attrition. The former reflects a developer-coordinated phasing aligned with market timing; the latter, a public-led but spatially unanchored process that allowed industrial decline through neglect. Both reveal the absence of a coherent regional industrial-retention strategy, a gap between spatial planning and economic policy.

6.2.4 SYNTHESIS

Spatial planning emerges as the operational channel through which social preferences and economic incentives materialise. Whether guided by private initiative or public governance, both cases demonstrate that densification and housing goals systematically outweigh industrial continuity. The compact-city model, while sustainable in land-use efficiency, inevitably accelerates industrial displacement from urban cores. Displacement, therefore, is embedded not just in policy failure but in the logic choices of spatial planning for urban quality and residential transformation. The loss of industrial diversity becomes the spatial price of urban liveability.

6.3 Legal

6.3.1 USE OF LEGAL INSTRUMENTS

The legal frameworks in both cases provided the institutional instruments for transformation. Under the Omgevingswet (and former versions), municipalities can employ a range of instruments: environmental plan changes, permits, and land-acquisition tools, to steer development (Bregman et al., 2023). In practice, however, the legal instruments were used, but not always to coerce but to enable gradual change.

In Cruquius, transformation relied on these legal tools: zoning revisions that limited allowable activities to environmental categories 1 and 2, the expiration of leaseholds, and voluntary land sales to developers. No expropriation or pre-emptive rights were invoked as far as known, reflecting a strategy of "juridische sturing zonder dwang" (Boeve & van Bueren, 2023). The municipality (public party) was not actively involved in this redevelopment and therefore those tools under the Environmental and Planning Act cannot be used. Legal flexibility created conditions where continued industrial operation became increasingly unviable but not formally prohibited. Companies such as the long-standing manufacturer "Company A" relocated under negotiated agreements rather than compulsion, a clear example of law functioning as gentle persuasion.

In Binckhorst, legal steering was more formalised and closely tied to the Bestemmingsplan Binckhorst (2018). This plan redefined zoning boundaries to allow mixed-use development while progressively

restricting heavy industrial activities incompatible with nearby housing and office functions. The municipality's approach relied less on project-based permits and more on the flexible structure of the bestemmingsplan itself, which served as a continuous legal framework guiding transformation.

Selective buyouts of environmentally intensive firms were often motivated by the aim to improve environmental quality and public health under the Besluit kwaliteit leefomgeving (Bkl) (or former versions). In practice, these interventions were not direct consequences of stricter environmental regulations but rather preceded them; once companies had left or sold their leasehold rights, municipalities could subsequently tighten environmental standards in the area. The main environmental concern is typically related to odour and air emissions, which are limited by the potential for nearby housing. By removing these high-impact activities, redevelopment was made legally and spatially feasible.

This sequence illustrates how environmental regulation and spatial transformation can reinforce each other: measures initially framed as improving liveability also create the regulatory and physical conditions for mixed-use redevelopment. In this way, legal instruments under the Omgevingswet (or former versions) serve multiple, interconnected policy objectives, simultaneously safeguarding environmental quality and facilitating urban transformation.

6.3.2 FORMAL VS INFORMAL

A key distinction between the two cases lies in the balance between formal and informal legal mechanisms. Cruquius demonstrates an informal legal environment: municipal non-intervention allowed private actors to navigate redevelopment through contracts and leasehold negotiations. The absence of formal compulsion does not imply neutrality. As Ward (2021) argues, informal planning can be a powerful governance strategy, allowing economic transformation while maintaining the appearance of voluntariness.

Binckhorst, by contrast, employed what could be termed strategic legalism: the municipality used the flexibility of the Omgevingswet (or former versions) to incrementally align the legal framework with its redevelopment goals. Through phased zoning updates, the area's legal definition evolved until heavier industries no longer fit. This gradual legal adjustment enabled transformation without triggering the social or financial controversy associated with direct expropriation.

In both cases, the legal system acted less as a set of constraints and more as a tool of coordination between public ambition and market operation. The distinction between formal and informal blurred, reflecting a hybrid mode of governance characteristic of Dutch urban transformation.

6.3.3 SYNTHESIS

Legally, both cases exemplify how transformation operates through enabling law rather than coercive enforcement. The Omgevingswet's (or former versions) integrated framework supports adaptability and local discretion, but this very flexibility weakens the predictability and protection of industrial users. Legal pressure manifests through environmental compatibility, zoning adjustments, and negotiated contracts, a subtle but effective mechanism of displacement. In this sense, the law functions not as a mediator between conflicting interests but as a facilitator of urban transition, institutionalising the social and spatial revaluation of industrial land.

6.4 Comparative Matrix

To synthesise the findings from both case studies, a comparative matrix was developed to summarise the key differences and similarities between Cruquius and Binckhorst. This structured comparison serves as a bridge between the empirical results and the theoretical framework, clarifying how concepts such as land-use conflict, economic gentrification, and legal steering manifest in practice.

Table 7: Comparative Matrix

Dimension	**Cruquius (Amsterdam)**	**Binckhorst (The Hague)**	**Interpretation**
Governance Model	Laissez-faire, develop-led with limited municipal control	Public-led municipality-steered "organic transformation"	Contrasts with bottom-up private control with adaptive public governance
Transformation Strategy	Gradual, market-driven redevelopment guided by the "spelregelkaart"	Phases, regulatory transformation through legal instruments	Both gradual, but Cruquius relied more on market mechanisms, Binckhorst on legal adaptation
Business Outcomes	46% stayed, 45% relocated, 8% disappeared in 2013-2022. Shows more managed displacement	24% stayed, 18% relocated, 54% disappeared. Traditional business reduction.	Cruquius retained more businesses, even in 2006–2010, when disappearances peaked at 33% compared to 54% in the Binckhorst.
Societal Framing	Promoted as creative waterfront living, the industry more outdated	Marketed as an innovation hub, the industry was supposed to be maintained, but not possible	Both reflect more post-industrial ideology, marginalising manufacturing
Uncertainty & Timing	Sharp uncertainty period, causing a short-term decline, which ended with a growth of jobs	Long-term uncertainty, which led to job loss (in manufacturing) which has not yet recovered	Cruquius came out stronger in terms of the number of jobs; Binckhorst came out weaker
Spatial Planning Tools	Flexible zoning, voluntary land sales, and high private autonomy	Stricter zoning, a phased mixed-use plan, led by infrastructure adjustments	Market-led vs regulatory-led spatial change
Industrial Retention	Minimal, relocation encouraged and facilitated	Some local relocation, but overall dispersal	Both lost their clustered capacity, ultimately weakening industrial networks
Legal Instruments	Leasehold expiry, environmental permit revoked, buy-outs	Omgevingsplan, environmental permit, buy-outs, expropriation plans	More informal pressure vs formal legal pressure
Compensation and Negotiations	Negotiated agreements between developers and firms	Negotiated agreements between developers and municipalities with firms	Different negotiators, similar outcomes
Type of Displacement	Managed Displacement, actions taken against industrial loss	Non-managed displacement, structural erosion	Highlights how legal and spatial formality can shape displacement trajectory

The matrix summarises the main differences and similarities between Cruquius and Binckhorst across social, spatial, and legal dimensions. While both transformations resulted in industrial displacement, Cruquius followed a market-led path of managed relocation, whereas Binckhorst evolved through a public-governed, regulatory framework that gradually eroded industrial presence. This comparison underscores that different governance models can produce similar outcomes through distinct mechanisms. Informal market pressure versus formal legal adaptation.

CHAPTER 7 – DISCUSSION

This chapter discusses how the transformation of industrial areas into mixed-use developments in the Netherlands produces business displacement, and how this process is shaped by social, spatial-planning, and legal dynamics. Drawing on the comparative analysis of Cruquius and the Binckhorst, it connects the empirical finding to the theoretical framework outlined earlier in this thesis. The aim of this discussion is not to restate the results, but to interpret their broader significance for urban planning theory and practice.

The analysis for both cases reveals that business displacement in Dutch transformation areas rarely occurs through overt coercion, such as expropriation or formal zoning bans. Instead, it is the outcome of a gradual and institutionalised mechanism embedded in planning, environmental, and governance systems. While these tools may seem "softer" in form, they still produced profoundly "hard" outcomes; quietly restructuring entire economic landscapes under the disguise of flexibility and creative improvement. These mechanisms combine to form a process of managed displacement, where industrial activity is restructured legally, economically, and symbolically under the guise of sustainability, liveability, and innovation.

This discussion is organised in three parts. The first interprets the results in light of existing literature and the conceptual framework. The second validates the results by reflecting on their representativeness and consistency with external sources. The final section translates the findings into concrete policy recommendations, proposing strategies to better balance urban growth with industrial retention in future transformation projects.

7.1 Interpretation

The comparative findings indicate that displacement is not an isolated incident but a systemic process embedded in Dutch urban governance. In Cruquius, a developer-led transformation under minimal municipal steering achieved a rapid transition from industrial to residential uses through voluntary buyouts. In the Binckhorst, a publicly steered, organic redevelopment sought the coexistence of housing and industry, yet ultimately produced different outcomes through legal and environmental restrictions.

The fact that both cases led to similar outcomes, even though they were managed in very different ways, shows that a deeper structural pattern is at work. Both cases reflect what can be described as a post-industrial planning paradigm, in which the ideals of creativity, sustainability, and liveability shape both legal instruments and planning priorities. As Andersson (2023) and Vogt (2016) argue, the cultural enhancement of knowledge-based and creative sectors has redefined what is considered "appropriate" urban land use. Within this framework, traditional manufacturing becomes perceived as incompatible with the modern sustainable city, even when economically viable.

Many municipalities and even national policymakers publicly emphasise the importance of maintaining a "productive city" (Interview Municipality, 2025; Ministerie van Economische Zaken en Klimaat, 2023) and protecting urban manufacturing. In practice, however, their spatial and regulatory choices often undermine these principles. Through transformation projects, manufacturing activity is not necessarily removed entirely but is reshaped, reduced in scale, or relocated to peripheral zones where it loses its urban connection. At the same time, manufacturing firms themselves face increasing challenges: to achieve sustainability goals, they require both physical space and substantial financial resources to invest in cleaner production, energy efficiency, and circular business models. Currently, however, most public and private investment in transformation areas is directed toward land acquisition and residential development, not toward supporting sustainable industrial adaptation.

This contradiction is further intensified by the acute housing shortage in the Netherlands. Municipalities face strong political and societal pressure to prioritise housing production, and transformation areas, which are often centrally located and well-connected, represent some of the few places where large-scale new

housing can still be realised within the city. Consequently, the need for homes increasingly outweighs the ambition to retain urban industry, leading to planning outcomes that, while justified as sustainable or mixed-use, in practice continue to marginalise manufacturing functions.

Legal and planning tools thus operate not neutrally but normatively. Instruments under the Environmental and Planning Act, including the environmental plan and permits, are designed to safeguard the environment, yet they can also be used strategically to phase out industries that no longer align with the city's vision. The Cruquius's company cases illustrate this mechanism: once firms sold their leaseholds, the municipality could revoke their environmental permits in that place, and revise zoning plans to restrict future industrial activity. The Binckhorst's buyout of the Haagse Asfaltcentrale follows the same logic. This illustrates the fine line between the formal legal intent of planning instruments and their practical implementation, where tools designed to safeguard environmental quality also function as mechanisms for steering spatial change. While planning law must, by necessity, be capable of facilitating urban transformation, its application in this context reflects an active political choice to phase out heavy industry in favour of housing development. When this choice is enacted indirectly through environmental and planning instruments rather than though explicit expropriation, the transformation appears solely technical and procedural, even though its outcomes are deeply political and social. This indirect use of legal tools further complicates accountability for industrial displacement.

Another important interpretation concerns the role of uncertainty in shaping business behaviour. Both cases demonstrate that the mere anticipation of transformation can trigger stagnation and decline. As Krugman (2025) notes, uncertainty suppresses investment and innovation. In Cruquius, employment dropped between 2010 and 2014, when there was active land acquisition and redevelopment, reflecting a period when companies hesitated to invest due to unclear municipal direction, validated in the interview with Company A, where they clearly state their hesitation about investment in different phases of the redevelopment. In the Binckhorst, the municipality's deliberately "organic" approach prolonged this uncertainty for years, leading to gradual attrition rather than coordinated relocation. While both transformations are still ongoing after 2022, Cruquius has shown that their employment levels are up again, while the Binckhorst remained low. Uncertainty thus operates as an informal planning instrument. It allows transformation to unfold without confrontation, as businesses voluntarily reduce activity or relocate in anticipation of future change. This mechanism, while administratively convenient, blurs accountability. At the same time, this raises the question of whether the uncertainty observed in both cases should be understood as an objective condition or subjective experience. While uncertainty is often framed as a market response to incomplete or inconsistent policy signals, the findings suggest that it is partly actively produced through planning practices rather than merely perceived by businesses. In both Cruquius and the Binckhorst, uncertainty did not stem from a lack of information alone, but from deliberate municipal strategies characterised by flexibility, open-ended timelines, and the postponement of binding decisions. From this perspective, uncertainty functions as an objective structural condition embedded in governance arrangements. The interviews demonstrate that investment hesitation was not triggered by explicit prohibitions, but by anticipatory reasoning under conditions of prolonged ambiguity. Uncertainty thus operates at the intersection of objective policy design and subjective economic response. By maintaining indeterminacy, municipalities indirectly shape behaviour without issuing coercive measures, reinforcing uncertainty as a governing tool rather than a neutral by-product of transition. This further complicates accountability, as the consequences of decline and displacement emerge through rational individual decisions made under structurally induced ambiguity rather than through direct state intervention. No single actor forces displacement, yet the cumulative result is the same: the disappearance of industry from the inner city, creating these harsh results of displacement. The findings therefore confirm Osipov's (2020) notion of adaptive governance through erosion, where prolonged inaction and flexibility become powerful drivers of structural change.

Both cases extend classical gentrification theory by revealing a process of regulatory gentrification. Instead of residents being displaced by rising rents, businesses are also displaced by evolving legal and environmental standards. The "rent gap" is thus not merely financial but regulatory: the difference between the current legal permissions and the potential land value unlocked by new regulations and zoning, made possible by the voluntary sell-outs of companies. In Cruquius, this rent gap widened as environmental norms were tightened after land changed, due to buyouts, enabling developers to capture new value through residential redevelopment. In the Binckhorst, new environmental standards served as the justification for buyouts and zoning restrictions. While these measures are formally aimed at protecting public health, the findings indicate that they may simultaneously exert pressure on industrial activities in support of area-development aims, as Company A described during the interview. Although they do not directly lead to the revoking of permits, as they are not legitimised to, they may influence the (un) certainty these companies feel and thereby shape the longer-term possibilities for transformation. This suggests that Dutch urban transformation can be understood not only through market dynamics, but also through gradual institutional shifts in how certain areas are valued. In this sense, environmental and legal frameworks, though designed to meet the objectives formally established in the law, may (un)intentionally support a move toward post-industrial uses without explicitly disfavouring existing productive functions.

The Dutch compact-city model intensifies the spatial tension between housing demand and productive land use. Both Cruquius and the Binckhorst demonstrate that compact-city ambitions inherently favour high-value residential and service functions over industrial continuity. Theoretically, these projects are framed as mixed-use; in practice, however, they represent a form of functional filtering, where only non-disruptive, light industrial activities (environmental categories 1–2) remain. This phenomenon echoes Hutton's (2004) concept of land-use conflict and Smith's (1979) rent gap theory. As centrally located industrial land gains symbolic and economic value for residential redevelopment, its existing productive functions are increasingly displaced. The LISA data confirms this: in Cruquius, 46% of firms stayed between 2006-2010 and 2013-2022, while in the Binckhorst, only 24% remained. These shifts signal a revaluation of land not only through market dynamics but through planning discourse, where industrial activity is recast as spatially inefficient and environmentally incompatible. The contradiction becomes particularly visible in the rhetoric of mixed-use. While Cruquius was praised as a "creative waterfront" and the Binckhorst as an "innovation district", both ultimately replaced productive employment with symbolic economies based on consumption, communication, and leisure. As Grodach and Martin (2020) argue, such transformations often yield a fragile economic mix that lacks the embeddedness and multiplier effects of genuine manufacturing.

Despite the persistent framing of Cruquius and the Binckhort as "mixed-use", the findings strongly suggest that true spatial co-location of housing and industrial activity is largely unfeasible. All interviewed stakeholders emphasised that large forms of production and manufacturing cannot coexist with housing due to noise, logistics, safety requirements and infrastructure conflicts. Even when their environmental permit allows for it, Company A still had complaints about their business activities from adjacent east-dock islands, highlighting the inherent incompatibility and foreshadowing the challenges future residents would pose. This pattern reflects the conceptual limits of mixed-use identified in the literature, where mixing functions is understood as a selective and context-dependent process rather than as unrestricted integration. While some economic activities may remain within residential or mixed-use environments, these are typically limited to small-scale, low-impact, and service-oriented functions that can conform to residential standards. As a result, "mixing" becomes a rhetorical device rather than a functional reality: it produces adjacency, not integration. In this sense, "true" mixed-use functions as a planning myth. While it suggests the coexistence of housing and industry, in practice it results in housing-led environments with only a limited range of compatible economic activities. The empirical cases therefore show that, within the compact-city paradigm, this planning myth structurally limits industrial viability, making genuine mixed-use between productive industry and housing largely unattainable.

7.2 Validation

The patterns identified across Cruquius and the Binckhorst align with established theoretical frameworks and recent empirical studies. Hutton's (2004) analysis of the post-industrial city describes how former manufacturing zones in Vancouver and London were rebranded into creative districts, precisely the trajectory observed in Amsterdam and The Hague. Similarly, the economic gentrification by Korthals Altes and Tambach (2008) finds resonance in the displacement of industrial tenants as land values rise. Furthermore, the distinction between formal and informal legal mechanisms, observed in this research, builds directly on Ward's (2021) discussion of planning informalisation, in which governments steer redevelopment indirectly through negotiated agreement and "soft" legal measures. The findings therefore reinforce, rather than contradict, the broader academic understanding of post-industrial transformation processes.

The mixed-methods design also strengthens the reliability of the results. The LISA database provided longitudinal evidence of business trajectories, demonstrating clear patterns of relocation, adaptation, and disappearance. These quantitative findings were corroborated by qualitative interviews, which offered detailed insights into negotiation processes, perceptions of uncertainty, and the practical effects of environmental regulation. For example, the Cruquius company interview confirmed that investment decisions were indeed postponed once redevelopment rumours began, validating the statistical decline in employment observed in the data. Similarly, in the Binckhorst, municipal documents confirmed that environmental incompatibility was the official justification for selective buyouts. The convergence of multiple data sources strengthens the credibility of the interpretation that displacement was legally and institutionally managed rather than spontaneous. The comparative logic of this study enhances validity. The recurrence of similar mechanisms across two contrasting governance models; private-led and public-led, suggests that these dynamics are structural rather than incidental. Given the prevalence of similar redevelopment projects across Dutch cities (e.g., Haven-Stad in Amsterdam, Merwe-Vierhavens in Rotterdam), the findings likely apply more broadly within the national planning context.

7.3 Policy Recommendations

The findings of this research highlight that the challenge of transformation lies not only in spatial design or legal regulation, but in the way stakeholders negotiate competing values. The housing needs, environmental health, and economic continuity. Future transformation policy should therefore move beyond a one-dimensional focus on densification and profit and adopt a multi-stakeholder approach that treats industrial businesses as more active partners in urban change rather than temporary obstacles. Municipalities often frame transformation primarily as a housing or sustainability task, but this overlooks the complexity of the urban ecosystem. Local businesses, developers, residents, environmental groups, and regional authorities all operate within the same space but with diverging interests and time horizons. A more inclusive governance approach would explicitly recognise these conflicting stakes and create structured platforms for dialogue and negotiation early in the planning process. Doing so would not only improve the legitimacy of transformation but also lead to more balanced outcomes that consider the long-term value of employment, local production, and economic diversity alongside housing provision.

Interviews and case evidence reveal that many firms feel uncertain and excluded from planning discussions that directly affect their future. Even when municipalities stress that companies are "allowed to stay for now," they often fail to provide clarity about when or under what conditions relocation will become necessary. This ambiguity undermines trust and leads to premature decline. Municipalities should therefore handle industrial actors more carefully, offering transparency, predictability, and tailored support. This could include clear phasing strategies, relocation roadmaps, and financial or procedural assistance for small and medium-sized enterprises that lack the capacity to navigate complex planning transitions. Rather than letting businesses disappear through attrition, authorities could actively manage

relocation as a collective process, ensuring that firms are offered viable alternatives within the same metropolitan region.

Relocation should be understood as an integral part of transformation policy, not as an afterthought. This requires coordinated action between municipalities, provinces, and regional development agencies to identify suitable industrial sites and to maintain the functional connectivity between old and new locations. Providing shared relocation facilities or temporary industrial zones during redevelopment could reduce the economic and social disruption associated with transformation. Such strategies would allow industrial firms to adapt and modernise, while freeing up space for housing in a more orderly and equitable way. They would also prevent the complete erosion of the urban manufacturing base, ensuring that productive activities remain part of the metropolitan economy.

The pressure to deliver new housing will remain acute in the coming years in the Netherlands, however, this urgency should not justify the neglect of other urban functions. A balanced approach recognised that the economic and social value of local production, employment, craftmanship, circularity, and material services, which the municipalities say they want to keep so desperately in the cities, cannot be replaced by housing. National and regional governments could play a stronger role by setting guidelines for the retention and relocation of these businesses. This would ensure that decisions about land use transformation do not fall entirely to local market dynamics or short-term political priorities.

Finally, successful transformation depends on trust between all involved actors. Municipalities should adopt a governance culture based on openness and continuity rather than case-by-case negotiation. Transparent communication about timelines, compensation, and responsibilities can prevent conflict and enable smoother transitions. By embedding these practices in policy, transformation can evolve from a process of gradual exclusion into one of managed inclusion, where all stakeholders: residents, developers, and businesses all participate in shaping the future city.

7.4 Conclusion

The transformation of industrial areas in the Netherlands shows a clear paradox. While cities often talk about sustainability, creativity, and inclusion, transformation in practice still leads to the slow disappearance of industry. In both Cruquius and the Binckhorst, this happened not through force but through gradual policy choices that prioritised housing and liveability over productive space. These processes may look flexible and fair, but they quietly reshape the economic base of cities. A truly sustainable city, however, also needs room for making and working. The challenge now is to guide transformation more carefully so that it becomes not a story of displacement, but one of renewal and balance.

CHAPTER 8 – CONCLUSION

Urban transformation in the Netherlands represents one of the most revealing intersections between spatial planning, law, and societal change. The redevelopment of inner-city industrial zones such as Cruquius and the Binckhorst shows how ambitions for housing, sustainability, and urban quality are negotiated against the realities of existing production landscapes. The findings from this research illustrate that business displacement in these contexts is not an isolated or incidental event, but rather a structural by-product of broader institutional and cultural shifts. This conclusion is structured around the five-sub questions and ends by answering the main research question, all based on the results of the prior chapters.

SQ1: What societal dynamics and theoretical perspectives explain the displacement of industrial businesses in mixed-use redevelopment?

The findings demonstrate that business displacement is strongly rooted in broader societal transitions. Dutch cities have increasingly embraced a post-industrial development paradigm, shaped by the rise of knowledge-based economies, creativity, sustainability, and urban liveability. As theorised by Bell (1973) and later expanded by Andersson (2023), the post-industrial city shifts its focus from manufacturing and logistics to innovation, services, and cultural industries. This shift affects not only economic structures but also societal values, which in turn influence planning and legal frameworks.

In both Cruquius and the Binckhorst, spatial visions promoted creative, mixed-use, or innovation-oriented identities. Industrial activities, particularly heavier categories, were no longer seen as appropriate or desirable land uses. Actors across government and development sectors framed these areas as places for "new beginnings", modernisation, sustainability, and densification. Such narratives implicitly marginalised traditional manufacturing and repair firms, even before any legal or spatial decisions were made.

Another key societal driver identified in the study is uncertainty. As Krugman (2025) argues, uncertainty alone can stall investment and trigger economic decline. Both case studies demonstrate that long periods of unclear communication, ambiguous plans, and shifting municipal strategies triggered pre-emptive cautious behaviour among businesses. Firms reduced investment and prepared for possible relocation, long before any formal planning decision forced them to act. This self-reinforcing cycle here, uncertainty leads to decline, and decline strengthens the case for transformation, which emerged as a central societal mechanism behind displacement.

Together, these findings demonstrate that societal dynamics create the foundations for displacement. Industrial activities become misaligned with urban aspirations, while uncertainty erodes their resilience. This societal force forms the backdrop against which planning and legal processes operate.

SQ2: How have legal instruments influenced businesses displacement in transformation areas?

The case studies how legal instruments shape displacement not through direct coercion but through gradual, structured, and subtle forms of legal steering. Under both earlier legislation and the newly implemented Omgevingswet, municipalities possess a broad set of tools: environmental plans, permits, BOPA's, and land acquisition instruments that collectively determine what activities are permissible, under what conditions, and with what protections.

In Cruquius, no formal expropriation occurred due to the lack of municipal steering. Instead, displacement unfolded through expiring leaseholds, strategic negotiations, environmental inspections, and zoning updates that limited future industrial categories. Once companies voluntarily sold their leasehold rights, environmental permits were legally revoked because the activity ceased. Only then could zoning be tightened and redevelopment accelerated. This sequence illustrates what can be described as legal steering without formal coercion.

In the Binckhorst, the “bestemmingsplan” played a more explicit regulatory role. Environmental norms under the Bkl (or previous versions) limited the compatibility of heavy industry with new residential functions. Selective buyouts, such as that of the asphalt plant, were justified on environmental and public-health grounds. Although the municipality did not employ mass expropriation, but only selective plans for expropriations, the legal environment created mounting operational constraints for traditional industry.

Across both cases, the legal framework acted neither as a purely protective nor a purely restrictive force. Rather, it enabled municipalities and developers to facilitate change incrementally, making industrial continuity formally possible but practically challenging. This legal subtlety is one of the defining characteristics of industrial displacement in Dutch transformation areas.

SQ3: How does transformation, uncertainty, planning policies, and land-use insecurity influence business decisions regarding investment, innovation, and location strategy in transformation areas?

The research consistently shows that uncertainty is one of the strongest indirect drivers of displacement. Businesses in both transformation areas reported lowering investments, holding off innovations, and adopting short-term planning horizons once redevelopment became foreseeable. Uncertainty took different forms in each case:

In Cruquius, the early absence of clear municipal direction and uncoordinated developer activity created confusion about timing and implications. Interviews revealed that businesses halted long-term investments and adopted a cautious strategy once it became clear that redevelopment was likely.

In the Binckhorst, the municipality’s deliberately “organic” approach prolonged uncertainty for years. The lack of clear phasing, combined with shifting policy priorities, left companies unsure whether they would eventually have to leave, and under what terms.

In both contexts, uncertainty acted as a silent planning instrument. It reduced reinvestment and productivity, ultimately weakening the industrial base and making relocation or closure more likely. Once transformational momentum grew, businesses found themselves with fewer options and weaker financial positions from which to negotiate.

Land-use insecurity played an equally strong role. The knowledge that future zoning would prioritise residential developments or restrict industrial categories led companies to assume their long-term presence was no longer viable. Interviews confirm that businesses strategically relocated early, often before any legal obligation required them to do so.

In effect, planning policies do not merely create physical change; they shape business decision-making long before demolition or construction begins. Uncertainty and land-use insecurity function as anticipatory forces, reshaping the economic landscape from within.

SQ4: How have sectoral composition, employment levels, and business trajectories (staying, relocation, adaptation, disappearance) evolved during transformation, and where do displaced firms relocate?

The LISA and GIS analyses reveal clear patterns of economic restructuring across both case studies. Cruquius experienced a temporary decline in employment (2010–2014), followed by a recovery driven by hospitality, communication, and consultancy. Manufacturing declined sharply but did not disappear entirely, while the Binckhorst maintained stable employment until 2018, but then declined. Sectoral diversity increased, but manufacturing and logistics lost significant ground after 2015. In both cases, sectoral shifts point to economic gentrification: a gradual replacement of productive, space-dependent industries with lighter, service-oriented activities.

The business trajectories for the case study areas are as follows:

In Cruquius:

Trajectory 2006-2010	**Number of Businesses**	**Percentage**
Stay	33	46%
Relocate	16	22%
Adapt	0	0%
Disappear	23	32%

Trajectory 2013-2022	**Number of Businesses**	**Percentage**
Stay	46	46%
Relocate	45	45%
Adapt	1	1%
Disappear	8	8%

This reflects *managed displacement*: many firms continued elsewhere.

In the Binckhorst:

Trajectory 2013-2022	**Number of Businesses**	**Percentage**
Stay	111	24%
Relocate	85	18%
Adapt	19	4%
Disappear	251	54%

This reflects *attritional displacement*: disappearance significantly outweighed relocation.

Spatial data in GIS results show that Cruquius firms are dispersed across the region with no significant new clustering, but remain close to or in Amsterdam. In the Binckhorst firms relocated throughout the country, a few in established business parks (Heron, Plaspoelpolder), but many did not reappear anywhere in the Netherlands.

These patterns confirm that transformation reconfigures not only the land but also the economic geography of cities. Industrial clusters dissolve, and productive networks fragment, particularly under public-led or long-term organic redevelopment.

SQ5: What lessons do the cases offer for balancing urban transformation with the retention of industrial activity in Dutch cities?

The cases provide several key lessons:

1. Transformation inevitably favours housing unless explicit industrial-retention strategies are implemented; stated ambitions to preserve productive functions rarely translate into concrete governance tools.
2. Uncertainty is a powerful but risky planning device, which can offer flexibility; while it allows change without conflict, it erodes industrial ecosystems and undermines trust.
3. Relocation must be treated as a structured policy task; without coordinated regional strategies, displaced firms disperse or disappear.

4. Environmental regulation requires careful application; it plays an essential role in protecting public health, but without parallel support for industrial adaptation, it may indirectly contribute to pressures that affect the long-term position of existing industries in transformation areas.

5. Mixed-use rhetoric often masks functional filtering; true coexistence is rarely feasible and requires spatial design, investment in logistics, and regulatory clarity, not only zoning flexibility.

Both Cruquius and the Binckhorst demonstrate that industrial displacement is not accidental but emerges through the interaction of housing policy, environmental norms, market incentives, and governance choices. More balanced transformation requires early certainty, coordinated relocation pathways, and recognition of the economic and social value of urban manufacturing.

MQ: In what ways does the transformation of industrial areas into mixed-use developments in the Netherlands produce business displacement, and how is this shaped by social, spatial-planning, and legal dynamics?

This thesis concludes that business displacement in Dutch transformation areas is structural, gradual, and institutionally embedded. It arises through:

- Societal dynamics that reframe industry as incompatible with post-industrial urban ideals.
- Spatial-planning decisions that prioritise housing and mixed-use functions over traditional industrial activities.
- Spatial-planning practices that frame “mixed-use” development as functional coexistence, while in practice treating it as a selective and housing-led filtering mechanism that limits industrial viability.
- Legal frameworks that influence transformation processes (in)directly, such as via environmental norms, zoning flexibility, and negotiated land transitions.
- Uncertainty and land-use insecurity, which reshape business decisions before any formal action occurs.

Displacement is therefore not primarily a result of direct expropriation or formal prohibition. Instead, it unfolds through managed, anticipatory, and often indirect mechanisms that collectively favour urban liveability and densification while marginalising industrial activities.

In essence, the transformation of industrial areas into mixed-use districts produces displacement through a combination of cultural expectations, spatial prioritisation, legal enablement, and strategic uncertainty. Together, these forces quietly restructure the economic base of Dutch cities, replacing traditional urban industry with lighter, service-oriented sectors aligned with contemporary urban visions. A process that unfolds largely without deliberate intent from any individual actor.

CHAPTER 9 – LIMITATIONS & FURTHER RESEARCH

This final chapter outlines the main limitations of the research and reflects on how these may have influenced the results. It also proposes directions for further research to strengthen and expand the understanding of business displacement in Dutch transformation areas.

9.1 Limitations

While this research provides valuable insights into the mechanisms of business displacement within Dutch transformation areas, several limitations must be acknowledged. These relate primarily to the quality and accessibility of data, methodological constraints, and the temporal scope of the study.

First, a key limitation concerns the LISA database. In 2013, all business identification numbers (Kvk vestigingsnummers) were changed, which caused a break in the continuity of the dataset. As a result, it was not possible to reliably track businesses across the 2013 boundary. For this reason, the analysis of business trajectories was limited to the period from 2013 onwards. Consequently, the findings cannot fully capture the business movements that occurred before this year. Additionally, gaps in the LISA data for Amsterdam in 2011 and 2012 created discontinuities in the Cruquius dataset, leading to missing years in several graphs and analyses. Although these gaps do not fundamentally alter the observed trends, they do reduce the temporal precision of the analysis. Furthermore, while the LISA and GIS analyses reveal clear temporal correlations between redevelopment phases and business movement, they cannot conclusively establish causality. Broader economic factors such as national market fluctuations, sectoral change, or the general post-crisis recovery may also have influenced business relocations and closures. The results should therefore be interpreted as indicative rather than strictly causal.

A related limitation lies in the availability of land transaction data. For the Binckhorst, limited public information on property sales made it difficult to determine the exact onset of transformation activities. The year 2013 was chosen as a baseline for comparison, yet it may not fully represent the true starting point of redevelopment. This uncertainty may slightly distort the interpretation of when and how displacement began in this area. In contrast, this issue was mitigated in Cruquius, since the developer helped me get data on the land transactions, which also showed acquisition from 2006 on. Therefore, the business trajectories of 2006-2010 were obtained, allowing a more robust temporal comparison.

Furthermore, another limitation of this study is that the LISA employment database only records firm activity within the Netherlands. Firms that relocate abroad are therefore counted as having disappeared rather than as having moved. This means that declines in firm numbers and employment may be overstated, as some firms may have continued operating outside the Netherlands. However, because it is unclear how many firms actually relocated abroad, this limitation mainly adds uncertainty to the results rather than a clear distortion, and it affects both case studies in the same way and there not distorting the cross case results.

Another significant limitation concerns the accessibility of legal and procedural data. Some legal documents, environmental permits, and negotiation records are not publicly available or are difficult to trace. As a result, only a selection of well-documented cases could be included in the legal analysis. Furthermore, numerous land transactions and buyouts occur through private negotiations, instead of through public/administrative law. This lack of transparency limits the ability to fully reconstruct the processes that led to business displacement. In Cruquius, this gap was partly addressed through interviews, which helped reconstruct informal dynamics and negotiations that were otherwise invisible. However, for the Binckhorst, such qualitative insights were more limited due to the absence of willing participants.

It should also be noted that the legal framework surrounding spatial transformation, particularly the Omgevingswet, closely builds on earlier legislation such as the former Wet ruimtelijke ordening and the

Crisis- en herstelwet. While the fundamental legal principles remain largely consistent, the exact interpretation and application of these instruments may shift over time. As the Omgevingswet was only implemented in 2024, some legal mechanisms discussed in relation to the case studies, most of which took place before its enforcement, operate under previous but comparable frameworks. This temporal overlap means that certain legal interpretations in this thesis should be read within the context of the transitional phase between these legislative systems.

The interview component of this research also faced challenges. Due to the sensitive nature of business displacement and private negotiations, it was difficult to identify and secure interview participants. Some potential respondents declined participation or limited the information to things they were "allowed" to say. One interview with the developer involved in Cruquius was ultimately withdrawn, as they did not want to consent, illustrating the hesitancy of certain actors to be formally included in research on ongoing or commercially sensitive processes. Moreover, interviews rely on self-reported experiences, which introduces potential subjectivity and biases. Respondents may consciously or unconsciously portray events in a way that reflects personal or institutional interests. While the triangulation with other data sources helped mitigate this issue, it remains an inherent limitation of qualitative research.

The ongoing nature of both transformation projects also imposes interpretive constraints. Neither Cruquius nor the Binckhorst has reached full completion. As a result, the outcomes observed in this research represent a moment in an evolving process rather than its final state. Business displacement patterns may therefore continue to change as redevelopment progresses. Comparisons between the two cases should thus be interpreted with caution: the Binckhorst, being less advanced, naturally shows different outcomes than the nearly completed Cruquius.

Finally, this study is spatially and contextually limited to two Dutch cases. Although Cruquius and the Binckhorst offer contrasting governance models and are therefore valuable for comparative analysis, their findings cannot be automatically generalised to all transformation areas in the Netherlands. Further research could expand the sample to include additional cases, enabling stronger comparative conclusions across different urban and regional contexts.

In conclusion, while these limitations restrict the temporal and analytical depth of the research, they do not undermine its core findings. The combination of quantitative, qualitative, and legal analyses still offers a robust and multi-dimensional understanding of how business displacement unfolds within Dutch transformation areas.

9.2 Further Research

Future research could build on this thesis in several directions. First, extending the timeframe and case studies of the LISA database and improving the consistency of business identifiers would allow for a more accurate longitudinal analysis of transformation processes before and after 2013. Second, systematic access to land transaction and permit data would enable a clearer link between legal instruments, ownership changes, and business movement.

Additionally, further studies could explore the informal negotiation dynamics that shape transformation outcomes. Many of the most decisive moments in redevelopment happen behind closed doors, and in-depth qualitative research could help uncover how private agreements, leasehold structures, and environmental norms interact in practice.

Finally, as both Cruquius and the Binckhorst continue to evolve, long-term follow-up studies would be valuable to assess the lasting economic and social impacts of displacement. Expanding the scope to include other transformation areas, could provide a broader comparative framework and contribute to developing more balanced strategies for urban transformation and industrial retention in the Netherlands.

CHAPTER 10 – REFLECTION

Looking back on the graduation process so far, I can clearly see how my initial methodological choices, early planning, and the continuous feedback from my supervisors have collectively shaped the trajectory of this research. When I began this thesis within the theme of area development, I knew I wanted to engage with complex transformation areas, and I was particularly fascinated by what existed before redevelopment took place. Through several conversations with different supervisors from the theme group, and especially with Karel, the contours of this thesis gradually emerged. Because the graduation project required two main disciplinary perspectives, Karel and I agreed that incorporating the legal dimension would provide a valuable and often overlooked angle. After meeting with Ruda, the supervisory team was complete, and the research direction was solidified. After meeting with them both when selecting the supervisors, I found they both had their own expertise and way of guiding me, which led to a solid collaboration. They have really brought structure and knowledge to my thesis that I could not have done on my own. I chose a mixed-methods approach because the topic of industrial displacement sits at the intersection of spatial planning, legal frameworks, and economic behaviour. Now, at this stage of the project, I can evaluate how this approach worked in practice, what I learned from it, and how it has influenced the final months of my graduation period.

Choosing a mixed-methods approach ultimately worked well, though not always in the way I had expected. The LISA database offered a clear, empirical foundation and produced insights into business trajectories that are generally invisible in planning documentation. The ability to track staying, relocation, adaptation, and disappearance over time became crucial for understanding displacement not as a singular event, but as a multi-layered process. Yet, while quantitative data revealed patterns, it could not tell me why these patterns occurred. The legal and qualitative components of the research were therefore essential to contextualise the numbers. At the same time, the limitations of the data pushed me to adapt. I initially planned a longer historical analysis, but the 2013 change in KVK identifiers made it impossible to track firms through that boundary. Missing data in Amsterdam for 2011 and 2012 added further restrictions. These issues did not undermine the research, but they forced me to rethink the temporal structure and remain flexible, something I had underestimated when drafting my study plan. The process taught me to see data not as a neutral, complete representation of reality, but as something that is shaped by changes and constraints.

The recommendations I formulated towards the end of the thesis were directly shaped by the patterns I observed in the research, particularly the role of uncertainty and informal legal steering. Conversely, drafting these recommendations forced me to sharpen my understanding of which mechanisms were structural and which were incidental, leading me to revisit and refine parts of the analysis, especially in the cross-case comparison.

I also realised how my own assumptions about “good spatial planning” influence interpretation. At the beginning of the project, I saw displacement primarily as something to map and explain. Over time, I became more aware of the ethical dimensions: whose interests are prioritised, who benefits from transformation, and who silently absorbs the consequences. This awareness has changed not only my thesis but also how I see future planning practice.

The academic value of this research lies in revealing industrial displacement as a systemic, institutionalised process rather than an unfortunate byproduct of transformation. Its societal value lies in highlighting that productive urban functions such as manufacturing, logistics, and repair, remain essential for circularity and local employment, even if they are increasingly pushed aside. The findings also carry ethical weight: displacement is not simply spatial but affects livelihoods and contributes to a less diverse urban economy.

Throughout the process, the feedback from my supervisors helped me refine both the structure of the thesis and my own analytical perspective. In the beginning, I tended to describe findings rather than interpret them. During the project, I received feedback to integrate theory more directly into the results instead of allowing them to stand apart. This changed how I approached the cross-case analysis and the final discussions and conclusions majorly.

Working on this thesis has been a learning process in several ways. I learned to handle complex datasets, to reconstruct processes from fragmented information, and to navigate the blurry divide between formal and informal planning instruments and legal practices. Furthermore, the aspect of planning has never been so important. Relying mostly on myself to set deadlines, follow them, and check all of the work has been an experience. Naturally, being a pretty well-organised person, this was not inherently hard for me, but having this much “alone” time to actually carry out all the work that needed to be done was a challenge. It has really pushed me to follow my own structures and schedule more than ever, since no one was checking if I did the work week by week. Had I not been working this consistently on the thesis, it would not have been nearly the same quality as it is now.

Although this thesis focuses on two Dutch transformation areas, the underlying mechanisms identified, such as uncertainty, legal steering, and the prioritisation of housing over industry, are not unique to these cases. These dynamics are present in many urban redevelopment contexts across the Netherlands and therefore make the findings transferable to similar projects in cities facing comparable spatial, legal, and societal pressures.

My research topic aligns closely with the core of the Management in the Built Environment track and the broader Master's Architecture, Urbanism, and Building Sciences. It examines the intersection between legal frameworks, planning strategies, and decision-making, all essential elements of managing complex urban transformations. By integrating spatial, societal, and managerial dimensions, the thesis contributes to a broader understanding of how sustainable urban development is shaped through the interplay of governance, market forces, and long-term spatial ambitions.

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APPENDIX A: PYTHON CODE

```
import os
import pyreadr
import pandas as pd

startjaar = 2013
gebied = "binckhorst"

cruquius_postcodes = [
    "1019HT", "1019AT", "1019CD", "1019VM", "1019AJ", "1019VK",
"1019VC",
    "1019VN", "1019VH", "1019VB", "1019VE", "1019AG", "1019VZ",
"1019XZ",
    "1019VA", "1019AK", "1019XW", "1019XX", "1019XP", "1019VA",
"1019VP",
    "1019XN", "1019VR", "1019VS", "1019VT", "1019AL", "1019AN",
"1019AR",
    "1019VX"]

binckhorst_postcodes = ["2516A", "2516B", "2516C", "2516D"]

postcode_list = binckhorst_postcodes

if gebied == "binckhorst":
    postcode_list = binckhorst_postcodes

if gebied == "cruquius":
    postcode_list = cruquius_postcodes

folder_path = "bronbestanden"

rds_files = [os.path.join(folder_path, f) for f in
os.listdir(folder_path) if f.endswith(".rds")]

dfs = []
for file in rds_files:
    print("Bezig met jaar "+os.path.basename(file)[:4])
    result = pyreadr.read_r(file)   # returns dict {object_name :
pandas_df}
    df = list(result.values())[0]   # extract the dataframe
    df["POSTCODE"] = df["POSTCODE"].astype(str)

    if gebied == "binckhorst":
        df_filtered =
```

```
df[df["POSTCODE"].str.startswith(tuple(postcode_list))].copy()
    else:
        df_filtered = df[df["POSTCODE"].isin(postcode_list)].copy()

    df_filtered = df_filtered[df_filtered['KVKDOSNR'].notna() &
(df_filtered['KVKDOSNR'].str.strip() != '')]
    df_filtered = df_filtered[df_filtered['KVKVESTNR'].notna() &
(df_filtered['KVKVESTNR'].str.strip() != '')]

    if not df_filtered.empty:
        year = os.path.basename(file)[:4]
        df_filtered["jaar"] = year
        dfs.append(df_filtered)

big_df = pd.concat(dfs, ignore_index=True) if dfs else pd.DataFrame()

big_df['UUID_bedrijf'] = big_df['KVKDOSNR'].astype(str) + '_' +
big_df['KVKVESTNR'].astype(str)

print(big_df.shape)
big_df.head()

big_df.to_csv(gebied+".csv", index=False)

df = pd.read_csv(gebied+".csv")

print(df.columns)

cols_for_presence = ['KVKDOSNR', 'jaar']
df_presence = df[cols_for_presence].copy()
df_presence['presence'] = 1

company_year_matrix = df_presence.pivot_table(
    index='KVKDOSNR',
    columns='jaar',
    values='presence',
    fill_value=0,
    aggfunc='max'
)

static_cols = ['KVKDOSNR', 'NAAM', 'STRAAT', 'HUISNR', 'POSTCODE',
'KVKVESTNR']  # add other static columns you want
company_static =
df[static_cols].drop_duplicates(subset='KVKDOSNR').set_index('KVKDOSNR'
)
```

```
final_df = company_static.join(company_year_matrix, how='left')

final_df.reset_index(inplace=True)

final_df.to_csv(gebied+"_sankey_dataset.csv", index=False)

static_cols = ['KVKDOSNR', 'KVKVESTNR', 'NAAM', 'STRAAT', 'HUISNR',
'POSTCODE']
year_cols = sorted([col for col in final_df.columns if isinstance(col,
int)])

year_data = final_df[year_cols]

delta_data = year_data.diff(axis=1)

delta_df = pd.concat([final_df[static_cols], delta_data], axis=1)

delta_df = delta_df[static_cols + year_cols]

delta_df.to_csv(gebied+"_sankey_dataset_deltas.csv", index=False)

df = pd.read_csv(gebied+".csv")

df.columns

df = df[['KVKDOSNR', 'KVKVESTNR', 'NAAM', 'AFDELING', 'SBI08_3',
'SBI08_4',
       'SBI08', 'BANEN', 'jaar']]

df.to_csv(gebied+"_sbi_banen.csv", index=False)
df = pd.read_csv(gebied+".csv")

df = df[df['jaar'] == startjaar]

df['KVKDOSNR'] = df['KVKDOSNR'].astype(str)
df['KVKVESTNR'] = df['KVKVESTNR'].astype(str)

df = df[df['KVKDOSNR'].notna() & (df['KVKDOSNR'].str.strip() != '')]
df = df[df['KVKVESTNR'].notna() & (df['KVKVESTNR'].str.strip() != '')]

df = df[['UUID_bedrijf', 'NAAM', 'POSTCODE', 'BANEN', 'XCOORD' ,
'YCOORD']]

folder_path = "bronbestanden"

bedrijven_list = df['UUID_bedrijf'].tolist()
```

```
rds_files = [os.path.join(folder_path, f) for f in
os.listdir(folder_path) if f.endswith(".rds")]

dfs = []
for file in rds_files:
    print("Bezig met jaar "+os.path.basename(file)[:4])
    result = pyreadr.read_r(file)   # returns dict {object_name :
pandas_df}
    df = list(result.values())[0]   # extract the dataframe

    df["KVKDOSNR"] = df["KVKDOSNR"].astype(str)

    df['UUID_bedrijf'] = df['KVKDOSNR'].astype(str) + '_' +
df['KVKVESTNR'].astype(str)

    df_filtered = df[df["UUID_bedrijf"].isin(bedrijven_list)].copy()

    if not df_filtered.empty:
        year = os.path.basename(file)[:4]
        df_filtered["jaar"] = year
        dfs.append(df_filtered)

big_df = pd.concat(dfs, ignore_index=True) if dfs else pd.DataFrame()

big_df = big_df[big_df['jaar'].astype(int) >= startjaar]

big_df.to_csv(gebied+"_bedrijven_over_tijd.csv", index=False)

df = pd.read_csv(gebied+"_bedrijven_over_tijd.csv")

pivoted = df.pivot_table(
    index='UUID_bedrijf',
    columns='jaar',
    values=['POSTCODE', 'STRAAT', 'HUISNR', 'BANEN', 'XCOORD',
"YCOORD"],
    aggfunc='first'
)
pivoted.columns = [f"{year}_{col}" for col, year in pivoted.columns]

pivoted = pivoted.reset_index()

static_cols = df[['UUID_bedrijf',
'NAAM']].drop_duplicates(subset='UUID_bedrijf')

pivoted = static_cols.merge(pivoted, on='UUID_bedrijf', how='right')
```

```
static_cols_list = ['NAAM', 'UUID_bedrijf']

dynamic_cols = [c for c in pivoted.columns if c not in static_cols]

dynamic_cols_sorted = sorted(
    dynamic_cols,
    key=lambda x: (int(x.split('_')[0]), x.split('_')[1])

cols_order = static_cols_list + dynamic_cols_sorted
pivoted = pivoted[cols_order]
pivoted.to_csv(gebied+"_bedrijven_over_tijd_pivoted.csv", index=False)
```

APPENDIX B: INTERVIEW PROTOCOL(S)

English: Interview Protocol Company: The Impact of Urban Transformation on Businesses In the Netherlands

1. Purpose of the Interview

The purpose of this interview is to understand how urban transformation processes affect businesses located in former industrial areas. The aim is to explore how companies experience relocation, adaptation, or closure during transformation projects, and how social, spatial planning, and legal dynamics shape these outcomes. The interview will help connect the theoretical insights on industrial displacement with real-life business experiences in one of the case study contexts.

2. Interview Setup

- **Format**: Semi-structured interview (with both open-ended and specific questions)
- **Mode**: In person or virtual (Microsoft Teams)
- **Duration**: Approximately 45 minutes
- **Participant Requirements:** Interviewees must have experience with a business that was affected by or involved in the transformation of an industrial area in the Netherlands (e.g., relocated, adapted, or closed operations).
- **Recording & Confidentiality:** Interviews will be recorded, transcribed, and anonymised. Data will be used solely for academic purposes within this TU Delft master's thesis. After transcription, audio files will be deleted.

3. Interview questions

Start recording now.

Introduction (5 minutes):

- Greet the participant and thank them for their time.
- Introduce yourself: name, age, and purpose of research
- Briefly explain the purpose of the interview and the general structure.
- Reiterate that participation is voluntary and that they can skip any question they don't feel comfortable answering.
- State that the data used from this interview will be recorded, transcribed, and anonymised to be further used in the study from the TU Delft. After the research is done, all the recordings will be deleted.
- Ask them if they have any questions before the interview starts

General Questions

- Can you briefly introduce yourself and your relation to the company?

- What kind of business activities does your company engage in?
- How long have you operated in the area that underwent transformation?

Experience of Transformation

- How did you first hear about the plans for redevelopment?
- At what point did you start to realise that redevelopment might affect your business, and how did that change your plans or investments?
- What did you think about the communication of the municipality, developers, or other stakeholders about the change?

Spatial and Planning Aspects

- From your perspective, did the transformation improve or worsen the area?
- How did you find a new location to operate your business in? Was there any help?
- Were there any spatial challenges with the change, such as affordability in this or a new area?
- Was there any positive or negative feedback from employees to the company for this change?

Legal Aspects

- Did environmental or planning regulations play a role in your relocation or adaptation?
- Were you in negotiations with another party (example: municipality or developer)?
- Did you feel you had any real influence in decisions affecting your business during the process?
- Were there any legal procedures or compensation arrangements involved?
- What was the decision in the end, and were you given any other compensation?

Broader Impacts and Reflection

- How has the transformation influenced your company's long-term strategy or investments?
- What were the main challenges and opportunities that arose from this process?
- Do you feel industrial activities still (should) have a place in inner-city areas like this one?
- If you could give any advice to municipalities or developers managing such transformations with companies, what would you recommend?

Closing the Interview (5 minutes):

- Thank the participant for their time and valuable insights.
- Inform them when they can expect the study results to be available.
- Remind them that they can reach out for any follow-up questions.
- Ask if they have any questions or if there's anything they'd like to add.

Stop recording

English: Interview Protocol Municipality: The Impact of Urban Transformation on Businesses In the Netherlands

1. Purpose of the Interview

The purpose of this interview is to understand how the municipality, specifically through the role of the business account manager, facilitates and manages the transformation of the Binckhorst area. The aim is to explore how local governance seeks to balance industrial retention, entrepreneurship, and spatial transformation, and how social, spatial planning, and legal frameworks shape business dynamics and relocation processes.

2. Interview Setup

- **Format:** Semi-structured interview (open and specific questions)
- **Mode:** In person or virtual (Microsoft Teams)
- **Duration:** Approximately 45 minutes
- **Participant Requirements:** Interviewees should be directly involved in the redevelopment of one of the case study areas.
- **Recording & Confidentiality:** Interviews will be recorded, transcribed, and anonymised. Data will be used solely for academic purposes within this TU Delft master's thesis. Audio files will be deleted after transcription.

3. Interview Questions

Start recording now.

Introduction (5 minutes)

- Greet the participant and thank them for their time.
- Introduce yourself: name, age, and purpose of research
- Briefly explain the purpose of the interview and the general structure.
- Reiterate that participation is voluntary and that they can skip any question they don't feel comfortable answering.
- State that the data used from this interview will be recorded, transcribed, and anonymised to be further used in the study from the TU Delft. After the research is done, all the recordings will be deleted.
- Ask them if they have any questions before the interview starts

General Background

- Could you briefly introduce yourself and describe your role?
- What are the main goals and responsibilities of your position within the municipality?
- What kind of stakeholders do you typically work with?
- How do you coordinate between the different stakeholders?
- How does your work relate to the ongoing transformation of the Binckhorst area?

Governance and Transformation Process

- How would you describe the municipality's approach to the transformation of the Binckhorst, especially in relation to businesses already active in the area?
- The transformation is often described as "organic." What does that mean in practice from your perspective?
- What are the main challenges in balancing new developments (housing, creative industries) with existing businesses and employment functions?

Interaction with Businesses

- Do you support existing companies that wish to stay, relocate, or adapt within the Binckhorst?
- Are there specific examples where you successfully helped a company find a new space or solution?
- What types of businesses are you currently trying to attract to the sub-area, and how do these fit within the transformation vision?
- How do you deal with conflicts or resistance from existing businesses that do not fit within the new vision or environmental standards?

Legal and Spatial Frameworks

- How do legal instruments under the *Omgevingswet* (e.g., *omgevingsplan*, *BOPA*, or environmental permits) influence your work with companies?
- Do you collaborate with the legal or spatial planning departments? How does that work?
- Have you experienced situations where legal or environmental regulations conflicted with economic or business goals in the area?
- Are there formal compensation or relocation arrangements for businesses that are affected by redevelopment?

Economic and Societal Dimension

- The sub-area aims to attract start-ups, scale-ups, and creative entrepreneurs. How do you ensure that this transition remains inclusive and doesn't simply replace traditional industries with higher-value activities?
- How do you see the changing identity of the Binckhorst, from an industrial area to a mixed-use and innovative hub, affecting the local business ecosystem?
- What trends do you observe in terms of business types, employment, and investment since the start of the transformation?

Reflection and Future Outlook

- Looking back, what do you see as the biggest successes and challenges of the transformation so far?
- What lessons have you learned from managing business relations during such a complex, long-term transformation?
- How do you see the role of industrial or productive functions in future urban development in The Hague?
- If you could advise other municipalities or policy-makers working on similar transformations, what would you recommend?

Closing (5 minutes)

- Thank the participant for their time and insights.
- Mention when and how the research results will be available.
- Offer the opportunity for any final remarks or questions.

Stop recording.

English: Interview Protocol Developer: The Impact of Urban Transformation on Businesses In the Netherlands

1. Purpose of the Interview

The purpose of this interview is to understand how private developers perceive and manage urban transformation processes in former industrial areas. The aim is to explore how redevelopment decisions are made, how developers interact with existing businesses, and how social, legal, and planning frameworks shape their strategies. The interview will complement the business perspectives by providing insights into how redevelopment is organised and negotiated from the developer's side.

2. Interview Setup

- **Format:** Semi-structured interview (open and specific questions)
- **Mode:** In person or virtual (Microsoft Teams)
- **Duration:** Approximately 45 minutes
- **Participant Requirements:** Interviewees should be directly involved in the redevelopment of one of the case study areas or comparable transformation projects in the Netherlands.
- **Recording & Confidentiality:** Interviews will be recorded, transcribed, and anonymised. Data will be used solely for academic purposes within this TU Delft master's thesis. Audio files will be deleted after transcription.

3. Interview Questions

Start recording now.

Introduction (5 minutes)

- Greet the participant and thank them for their time.
- Introduce yourself: name, age, and purpose of research
- Briefly explain the purpose of the interview and the general structure.
- Reiterate that participation is voluntary and that they can skip any question they don't feel comfortable answering.
- State that the data used from this interview will be recorded, transcribed, and anonymised to be further used in the study from the TU Delft. After the research is done, all the recordings will be deleted.
- Ask them if they have any questions before the interview starts

General Background

- Can you briefly introduce yourself and your role within the company?
- What kind of projects does your company typically develop?
- How long have you been involved in the redevelopment of this particular area?

Planning and Development Process

- How did your company become involved in the redevelopment of this area?
- What were the main objectives or ambitions for this transformation project?
- How did the collaboration with the municipality or other public partners function?
- How were decisions about land use and programming (housing, business, mixed-use) made?
- What were the main spatial or design challenges in transforming the former industrial area?

Interaction with Existing Businesses

- How did you approach communication with existing businesses in the area?
- Were there any efforts made to retain or accommodate certain companies?
- How did you deal with conflicts or resistance from local businesses?
- In your view, what factors influenced whether companies could stay, relocate, or had to close?

Legal and Financial Aspects

- What role did legal instruments (e.g., zoning changes, land acquisition, agreements) play in the redevelopment?
- Were there any compensation arrangements made for affected businesses?
- Did you help certain businesses relocate, and how successful was that in your eyes?
- How do you view the balance between private and public responsibilities in such processes?

Reflection and Broader Perspective

- Looking back, what were the main challenges and successes of this redevelopment?
- How do you evaluate the social or economic impact of the transformation on the local area?
- Do you think industrial activities can still have a place in inner-city redevelopment areas?
- What lessons would you share with other developers or municipalities undertaking similar projects?

Closing (5 minutes)

- Thank the participant for their time and insights.
- Mention when and how the research results will be available.
- Offer the opportunity for any final remarks or questions.

Stop recording.

APPENDIX C: INFORMED CONSENT

Opening Statement

You are being invited to participate in a research study titled The impact of transformation on businesses, balancing urban growth and industrial retention in the Netherlands. This study is being done by Britt Koekkoek from the TU Delft.

The purpose of this research study is to identify patterns of dislocations and assess which role spatial planning and legal practices play in industrial retention. By connecting theory with practice, this research contributes to the broader discourse on sustainable urban development and offers tools for mitigating unintended consequences of transformation. It seeks to preserve essential economic functions in cities while accommodating the urgent need for spatial change. To conduct this research, interviews are needed, which will be recorded and transcribed, and will take you approximately 60 minutes to complete. The data will be used for a master's thesis, which will later be shared in the TU Delft repository. We will be asking you to answer questions about the process and impact on businesses of the transformation in your (former) business location.

As with any online activity, the risk of a breach is always possible. To the best of our ability, your answers in this study will remain confidential. We will minimize any risks by anonymising as much as possible in the interview transcriptions.

Your participation in this study is entirely voluntary, and you can withdraw at any time. You are free to omit any questions. When you want to remove an answer from the interview, that is possible at any time, till **the 14th of November.** After that date, the interview outcomes will have been processed in the research.

Explicit Consent points

PLEASE TICK THE APPROPRIATE BOXES	Yes	No
A: GENERAL AGREEMENT – RESEARCH GOALS, PARTICPANT TASKS AND VOLUNTARY PARTICIPATION		
1. I have read and understood the opening statement, or it has been read to me. I have been able to ask questions about the study, and my questions have been answered to my satisfaction.	☐	☐
2. I consent voluntarily to be a participant in this study and understand that I can refuse to answer questions, and I can withdraw from the study at any time, without having to give a reason.	☐	☐
3. I understand that taking part in the study involves: a recorded and transcribed interview	☐	☐
4. I understand that the study will end in January 2026	☐	☐
B: POTENTIAL RISKS OF PARTICIPATING (INCLUDING DATA PROTECTION)		
5. I understand that taking part in the study also involves collecting specific personally identifiable information (PII): full name, email, phone number, company you were/are employed at, and associated personally identifiable research data (PIRD), in the form of non-anonymised interview recording and anonymised interview transcripts, with the potential risk of my identity being revealed.	☐	☐
6. I understand that some of this PIRD is considered sensitive data within GDPR legislation, specifically the views on legislation of urban transformation	☐	☐
7. I understand that the following steps will be taken to minimise the threat of a data breach, and protect my identity in the event of such a breach: most data will be anonymised, and all data is securely stored in the TU Delft drive, where there is only access by the researchers.	☐	☐
8. I understand that personal information collected about me that can identify me, such as my name, will not be shared beyond the study team.	☐	☐
9. I understand that the (identifiable) personal data I provide will be destroyed after the research is done in January 2026.	☐	☐

PLEASE TICK THE APPROPRIATE BOXES	Yes	No
C: RESEARCH PUBLICATION, DISSEMINATION, AND APPLICATION		
10. I understand that after the research study, the de-identified information I provide will be used for analysis in the research paper.	☐	☐
13. I agree that my responses, views, or other input can be quoted anonymously in research outputs	☐	☐
D: (LONGTERM) DATA STORAGE, ACCESS, AND REUSE		
16. I give permission for the de-identified interview transcripts that I provide to be archived in the TU Delft repository so it can be used for future research and learning.	☐	☐
17. I understand that access to this repository is open.	☐	☐

Signatures

_____ _____ _____

Name of participant [printed] Signature Date

I, as a researcher, have accurately read out the information sheet to the potential participant and, to the best of my ability, ensured that the participant understands what they are freely consenting.

_____ _____ _____

Researcher name [printed] Signature Date

Study contact details for further information: Britt Koekkoek, bkoekkoek@tudelft.nl