Risks and success factors in transforming urban areas

- A management Framework

Sophia Geiger

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COLOPHONE

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- A Management Framework

Student name:	Sophia Geiger
Student number:	4712889
Email:	Sophia-geiger@web.de
University:	Delft University of Technology
Faculty:	Architecture and the Built Environment
Address:	Julianalaan 134, 2628 BL Delft
Department:	Management in the Built Environment
Date:	28 June 2019
1st mentor:	Drs. Philip Koppels
2nd mentor:	Dr. Karel Van den Berghe
3rd mentor:	Dr. Ilir Nase
External examiner:	Ir. Robert Nottrot

PREFACE

In your hands you hold the result of my graduation research which marks the end of my master studies at the TU Delft. Ever since starting my Bachelor of Architecture I have believed that architecture and urbanism is more than just aesthetics. The built environment both reflects and shapes the behaviour of society and social interactions; places have the power to influence people. However, the design is solely the solution to a defined task and part of a much larger mission: the management of the built environment. This is the rational side of architecture and has become my passion.

This graduation report presents the results of a one year's research on the transformation of obsolete, monofunctional office areas into mixed-use urban areas. One of the biggest challenges resulting from urbanisation is densifying and intensifying our cities. Rather than taking over more and more space, existing structures must be re-developed and prepared for a prosperous future. Particularly monofunctional office districts have become vacant and thus obsolete. Transforming these structures into vibrant, lively mixed-use neighbourhoods for living, working and recreation is a mammoth task.

With this research I aimed to understand the process of transformation in all facets. My particular interest lies on risks and success factors since these factors can determine success or failure of the whole project. Risks are characterized by uncertainty and success is an ambiguous concept – this seemingly intangibility makes the task of defining them so intriguing. I hope that my report can offer new insight, helps professionals to better manage risks in the process and to achieve successful outcomes. Preparing our cities for the future can only be achieved collectively.

Looking back on this period I can say that it was an intense, educational and exciting time. Through this research I had the opportunity to meet interesting and inspiring people without whom my graduation thesis wouldn´t be what it is now. First of all, I want to thank my mentors Philip Koppels and Karel Van den Berghe for your time, your feedback and support. I always experienced our meetings as motivating, inspirational and enjoyable. Furthermore, I want to thank Ilir Nase who supported me during the last stretch. In addition, I would like to thank all the people I have spoken to this last year for taking your time for interviews, to fill in questionnaires and to provide me with necessary information. Furthermore, I want to thank my family and friends for all your loving support and for making my time here in Delft so unforgettable. I wouldn´t be where I am now without my parents, my fantastic sisters and my boyfriend. I hope you have as much fun reading as I had with writing this report.

It's done!

Sophia Geiger

Delft, 28 June 2019

MANAGEMENT SUMMARY

RISKS AND SUCCESS FACTORS IN TRANSFORMING URBAN AREAS – A MANAGEMENT FRAMEWORK

Abstract

Monofunctional office areas in the Netherlands have been facing difficulties in recent decades. Obsolescence of buildings causes financial, social and environmental problems for owners, users, municipalities and society. As most office buildings are located in monofunctional urban areas, the problem of obsolescence becomes a structural one on an area level and solutions on a building level are insufficient. This requires a generic solution by transforming the area into a mixed-use location which is more liveable, self-sufficient and future-proof. Urban area transformation is a highly complex process that involves multiple actors, multiple projects and specific risks. This research aims to identify and analyse inherent risks in addition with factors that promote success. The research design is qualitative, based on case studies, semi-structured expert interviews and a questionnaire. The first outcome is an extended risk register that is combined with a success factor register, which increases awareness and can be used as a checklist to manage risks and achieve success factors. Secondly, a framework is designed that can be applied as a tool to manage risks and success factors within the process of transforming urban areas. Finally, general advice is given in form of developers and policy recommendations. Those outcomes help professionals in the field to reduce uncertainty and to successfully transform urban areas, and thus fight obsolescence.

Keywords – Monofunctional office area, obsolescence, structural office vacancy, urban area development, area transformation process, mixed-use area

Introduction

Office vacancy has been a problem for decades in the Netherlands. Although the average percentage fell from as high as 17.5% in 2015 to just below 10% in the last quarter of 2018, there are still huge regional differences with the currently highest number of 25% in Capelle aan den Ijssel (Cushman & Wakefield, 2018a). Particularly those buildings that have been vacant for three years or longer have a decreasing chance of being rented and thus become obsolete.

Most structurally vacant buildings can be found in monofunctional areas in the outskirt of cities. These locations are typically characterized by a focus on car accessibility, dead ground floors, a bad image and no coherent urban design. The demand for offices in these areas has been declining, buildings become vacant and affected areas become obsolete. This causes a direct and indirect loss of value for investors but also deterioration, segregation and a growing risk of crimes. Therefore, the issue of obsolescence becomes a structural problem on an area level. Moreover, new policies on energy standards have been introduced which require an energy label of at least C for office buildings by 2023. Currently most buildings do not fulfil the requirements or do not yet have a registered label at all. This puts additional pressure on the real estate office market. To break the downward spiral, solutions on a building level such as transformations towards another function are insufficient. A sustainable solution is thus the transformation of the whole area towards a mixed-use area which is considered future-proof, more adaptable and liveable.

Urban area transformations are complex processes that involve multiple actors, multiple projects and a high level of risks. In order to decrease uncertainty, more knowledge is needed about which risks can influence the process and how. Moreover, certain factors promote success that can help to reduce risks and reach objectives. Since little research has been conducted on that matter thus far, this research aims to identify and analyse risks and success factors that influence the process of urban area transformations. Finally, a framework is created as a tool to manage these factors in an area-approach. This answers the main research question:

"Which risks and success factors influence the process of urban area transformations from monofunctional to mixed-use areas and how can they be managed?"

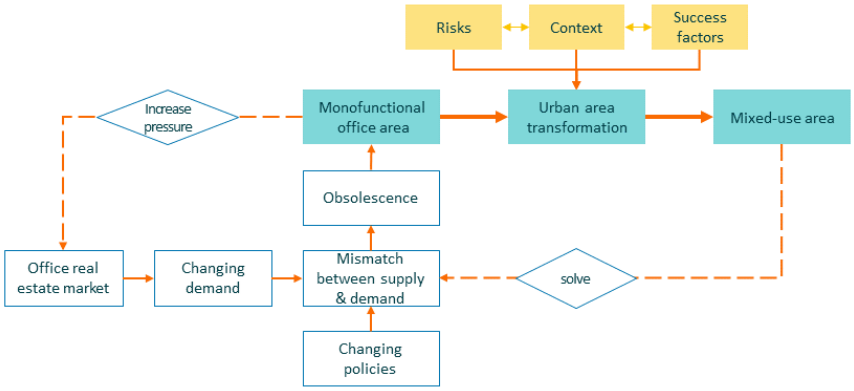


Figure 1 Conceptual model (own ill.)

Research approach

A qualitative research design was chosen, with an empirical part and an operational part. Desk research explores theories regarding urban area transformations, the context variables, risks and success factors. Consecutively, field research is executed by means of two case-studies. Experts involved in these cases are interviewed to identify risks and success factors. A cross-case comparison is used to analyse the obtained data. Reflecting on the insight gained, a quantitative questionnaire is used to further analyse risks and to test hypotheses. Finally, conclusions are drawn and the results are delivered: an extended risk register & a success factors register, a newly developed framework, and advice given.

Theoretical framework

Urban area transformations are complex processes and fall under the umbrella term 'urban area development'. In recent years a power shift occurred in urban developments: municipalities switched from an active to a facilitating role and market parties obtained increasing power (Heurkens, 2012). The previously prevailing integrated approach became increasingly replaced by organic approaches. The 4Ps model by Bueren et al. (2016) emphasizes four elements that are central for urban development management and are used as the context variables for this research: *the process*, *the place* which are monofunctional areas, *the product* which are mixed-use areas, and *the person*s.

Above those context-specific aspects, risks can significantly influence the process. Risks are defined as a situation that can cause a threat or opportunity in consequence of uncertainty. Risk management is a method to cope with risks, reduce their impact and/or probability and to maximize opportunities. The traditional risk management consists of four parts: (1) establishing the context, (2) risk assessment which includes risk identification, risk analysis and risk evaluation, (3) risk response and (4) risk review. On the other side, certain factors can promote success of a project, which are called success factors. These can be categorized regarding their level of directability in (1) context variables, (2) veto criteria and (3) critical success factors. It can be concluded that it is crucial for achieving a successful project to manage both risks and success factors.

Empirical research

Two cases are selected for empirical research: Binckhorst and Strijp-S. The first case is being developed as an organic approach, is characterized by highly fragmented ownership and is currently in an early stage of the process. In contrast to that, Strijp-S is being developed within an integrated approach by a PPP and roughly half of the program is already realized. Interviews with 13 experts that are involved in these developments were conducted to identify risks and success factors that are inherent in each case. As conclusions drawn from this empirical research, 8 hypotheses are generated which relate to risks, success factors and development approaches.

Data analysis

The data gathered through the previous within-case analyses is compared in a cross-case analysis. First, it is crucial to establish the contextual comparability of both cases before combining all risks and success factors in a second step. This resulted in a preliminary risk register and a comprehensive overview of success factors. For the further analysis of risks and to test hypotheses, a questionnaire is used with two groups. The first group being the previously interviewed experts and the second group being a broader pool of experts with 67 obtained responses. The outcomes provide a quantitative analysis of risks regarding their probability and impact.

- The biggest potential impact has the risk 'natural disasters'
- The highest probability has the risk 'increase of construction prices'
- The overall biggest risk (calculated as probability times impact) is the 'increase of construction prices'

Results

The analyses showed that each risk can be linked to success factors, as strategies to deal with risks. Responding to this finding, an extended risk register is created which is related to a success factor register. These registers include all findings from previous analyses. They can be used as checklists to manage risks and to achieve success and moreover increase awareness about these factors. In further analysis patterns about the relationship between risks and success factors are detected:

- The higher the potential impact of a risk is, the more likely it depends on success factors that *cannot* be directed by individual actors.
- The less a risk can be diversified within the area, the more likely it depends on success factors that *cannot* be directed by individual actors.

The second result is the newly developed Risk and Success Factor Management (RSFM) Framework. This tool can be applied in area-approaches to manage risks, to optimize opportunities and to achieve success. It is iterative, integrated and customizable to any specific case. The RSFM Framework differs from traditional risk management as it supports diversification of risks within the area which helps to obtain an efficient portfolio with an optimal risk-return-tradeoff. Furthermore, it acknowledges the importance of success factors for dealing with risks and thus incorporates success factor assessment as an integral part.

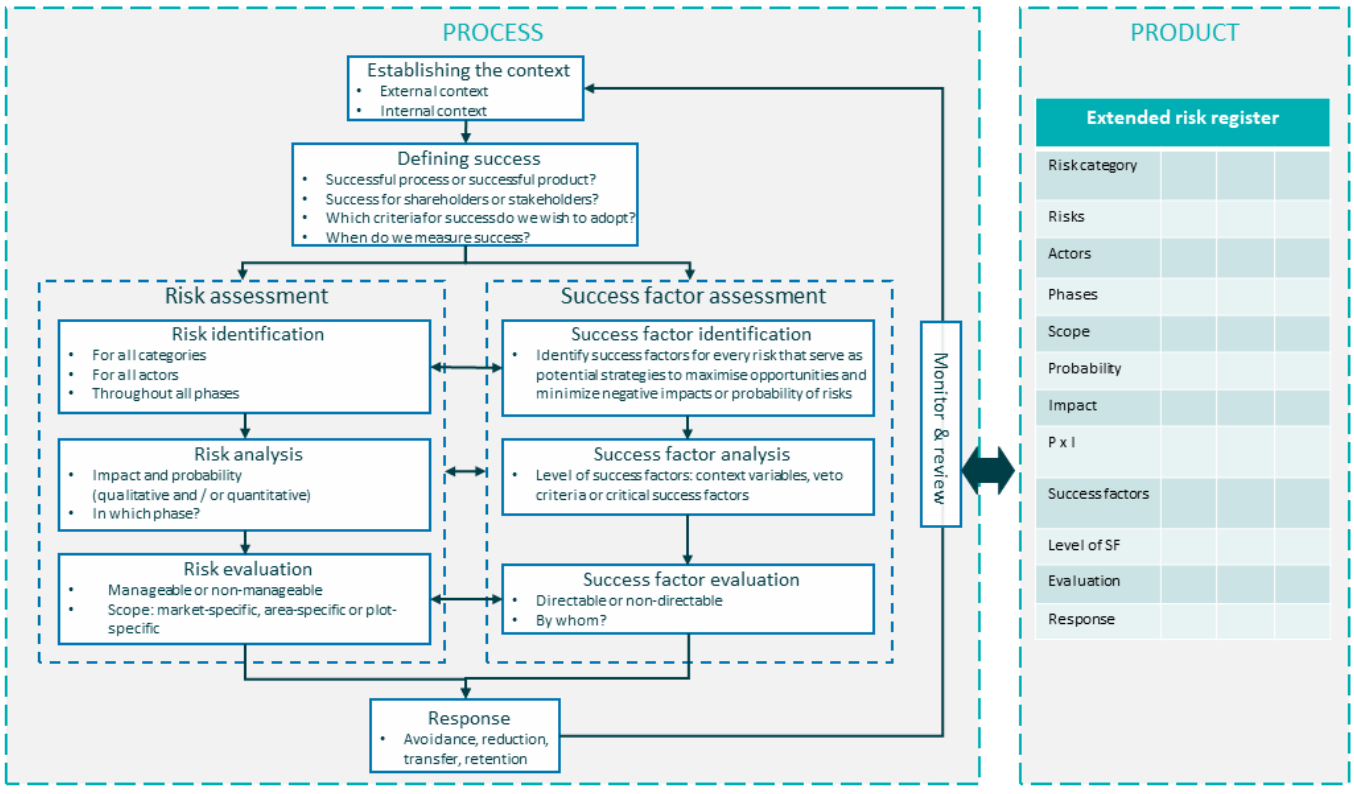


Figure 2 Risk and Success Factor Management Framework (own ill.)

The process starts with the establishment of the context and the case-specific definition of success. Consecutively, the main part consists of the risk assessment in combination with the success factor assessment. Finally, the response for each risk can be planned and executed. The process is continuously repeated by monitoring and reviewing changes. During the process, an extended risk register is produced as a product which contains all relevant information and offers a clear overview.

The last result are lessons learned from this research and defined as developers recommendations and policy recommendation. These advices should help developers and municipalities in future area transformations to establish good organisational structures and the right framework to achieve successful processes and products.

Developers recommendations:

1. When operating in an area with highly fragmented ownership, be aware of an increased risk of speculations, opportunists and free-riders. Avoid speculative behaviour as it increases the risk of obtaining an unfeasible business case.
2. Prefer to operate in situations with a limited number of actors to make the process less complex. Aim for a balanced mix of actors within the project and use each other's strengths and expertise to reduce risk.
3. Establish informal collaboration and communication via networks amongst actors to make the process less risky. Informal collaboration proved to be more effective to reduce risks than formal collaboration.

Policy recommendation:

4. When initiating an area transformation, carefully consider which approach should be chosen. The organisational structure and the type of development approach depends strongly on the current economy. Organic approaches and private sector-led developments are better suite during economic recession and for large-scaled areas with highly fragmented ownerships. Integrated development approaches and private-public partnerships enable to share financial risks and to reduce organisational complexity due to limited ownership.

Moreover, specific advice is given for the development of Binckhorst, which is based on the lessons learned from Strijp-S. Since Strijp-S is currently in a further stage and is considered a successful project, Binckhorst can benefit from those experiences. Nonetheless, this advice must be taken with caution due to the contextual differences. Finally, due to the high attention for the pilot land use plan use for Binckhorst, feedback is provided about it. This can be valuable insight to improve the *Omgevingsplan* approach in future developments.

Conclusion

This research adds theoretical and practical knowledge to the discipline of transforming urban area developments. The results can be used by actors who are involved in such projects, particularly municipalities, area managers, developers and urban planners, to increase awareness, to better manage and diversify risks and to achieve a successful process and product. It is recommended to test the RSFM Framework in practice to further improve potential weaknesses. Furthermore, it is recommended for future research to conduct more case studies with different characteristics to enrich the results gained. Executing post hoc analyses with the cases Binckhorst and Strijp-S can provide valuable insight to evaluate the actual influence of risks and success factors.

READING GUIDE

This report is structured in seven chapters. In the following, the content of each chapter is briefly described to enable an easy navigation through the report. Every chapter ends with a summary where the most important findings are summarized and conclusions are drawn.

CAUSE

Chapter 1

The first chapter provides background knowledge of the topic. First, my motivation for choosing this topic is explained, followed by the problem statement and the problem analysis. This leads to the research goal, the main research questions and the final deliverables. Concludingly, the societal and scientific relevance are given.

Chapter 2

The second chapter describes the research approach with the research design and the methods to be used. The central methods, case studies and the Delphi technique, are explained in more detail.

COPE

Chapter 3

This part provides the theoretical framework. All relevant, concepts and their relations are explained in detail based on literature research and pertinent theories.

Chapter 4

The empirical research is based on two case studies which are introduced and analysed in this part. This is done as a within-case analysis based on background research and interviews held with experts. This is the first Delphi round.

Chapter 5

All findings from the previous chapter are used for a cross-case analysis. The resulting outcomes are tested and validated in the second Delphi round in form of a questionnaire.

DELIVER

Chapter 6

This part summarizes the results of the research. An overview of all identified and analysed risks and success factors is given in form of an extended risk register in combination with a success factor register. The newly designed framework as a tool to manage these factors is presented and finally, general advice is given for future projects.

Chapter 7

The last chapter rounds up this report with a conclusion and discussion, recommendations for further research and a reflection on the scientific and personal development throughout this master thesis.

LIST OF FIGURES AND TABLES

Figures

Tables

TABLE OF CONTENT

Introduction

1 INTRODUCTION

This research focuses on the process of transforming obsolete monofunctional office areas into mixed-use areas. The first chapter provides background information about this topic. First, the choice for this topic is addressed followed by the problem statement and the problem analysis. This explains the necessity for this research and why area transformations are highly challenging. Consecutively, the goal of this research is stated, the main research questions and the final deliverables. Concludingly, the societal and scientific relevance are given.

1.1 MOTIVATION

The current office market in the Netherlands faces severe challenges. There seemingly is a contradiction between the shortage of office space on the one hand and the tremendously high percentage of vacancy on the other hand. While new buildings have still been built, existing ones do not fulfil users' requirements anymore and have become obsolete. Although the current supply is expected to cover the demand until 2030, qualitative requirements have been changing: The demand of monofunctional office locations close to highways and with a focus on car accessibility is decreasing. However, most supply is situated in these areas (Provincie Zuid Holland, 2018). This caused structural vacancy with percentages of vacant office space as high as 19,6% in Amsterdam and even 22,6% in Rotterdam in 2015 (PBL, 2017). However, the problem is much more complex: While in recent years the average vacancy numbers dropped to just below 10% and at the end of 2018, there are still large regional differences with the currently highest number of 25,5% in Capelle aan den IJssel (Figure 1) (Cushman & Wakefield, 2018a). This is considerably above the normal vacancy rate which is around 3 - 6%. Moreover, a new policy on energy labels for offices was introduced which requires a minimum EPC of C. This puts additional pressure on the office market as office buildings are threatened to become illegal and can no longer be used.

With this research I want to explore the causes and ways to cope with the problem of obsolete monofunctional office locations. I want to use the opportunity to explore the chosen topic, understand those complex relations and become an expert in the field. The focus on area transformation has been chosen due to the little knowledge that exists about it thus far and the high significance for the current real estate market.

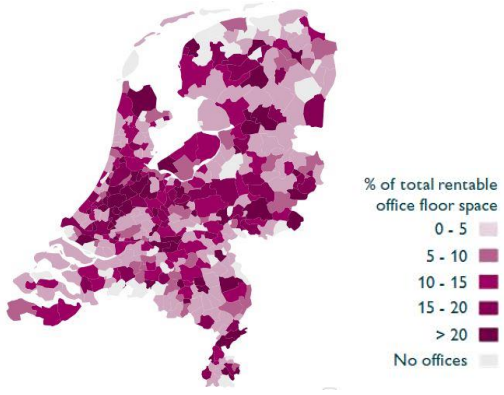


Figure 2 Regional office vacancy (PBL, 2017)

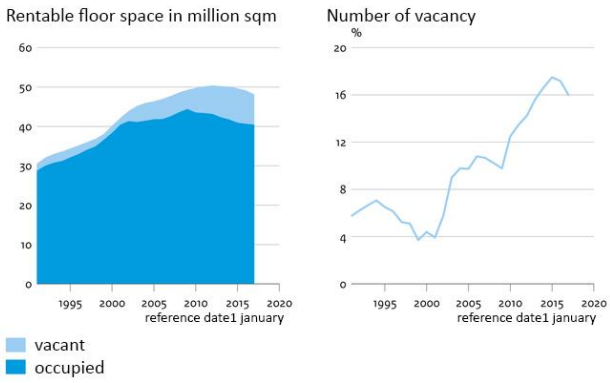


Figure 1 Office vacancy and occupation (PBL, 2017)

1.2 PROBLEM STATEMENT

Owner-investors of buildings face problems when their property becomes obsolete and their main objective — to generate revenues from their investment — may not be fulfilled anymore. There are several options how to deal with the problem. The buildings can be adopted, within-use or across-use, demolished and rebuilt, sold or the owner can wait for better times, which includes rent reduction or incentives (Remøy, 2010). The options selling and waiting are not sufficient in the long-term as the building itself will not be altered. The current

oversupply of office space in combination with the undersupply of housing makes transformation from offices into housing seemingly the most obvious solution.

However, transformation from office to another function such as housing is only possible if certain requirements are fulfilled. As a rule it can be said that office buildings are unsuitable to be transformed into housing if they are located in monofunctional areas (Geraedts et al., 2017; Remøy & Van der Voordt, 2014). In such cases area transformations from monofunctional to mixed-use urban areas are necessary. These are more liveable, future-proof, and contribute to a strong and better image of the whole city (Geraedts & Van der Voordt, 2003). The market demand also demonstrates preference for locations that offer multimodal accessibility and a mix of living, working, shopping and recreation in the major cities and metropolitan areas (Cushman & Wakefield, 2018b). Furthermore, a functionally mixed area increases the competitive advantage of the remaining office buildings, as the improvement of location factors affects the attractiveness of the buildings itself. However, properties in these mixed-use locations are scarce and thus the increasing demand drives up rent prices.

The process of transforming urban areas is highly complex. It requires enormous investments, is risky, has a long duration and necessitates collaboration among various stakeholders. Thus, solving the problem of obsolete office buildings in monofunctional office locations through area transformations bears challenges. Conflicts of interests can occur due to the multi-stakeholder involvement which have to be mitigated to meet the actors' joint and individual objectives. Additionally, risks have a significant influence on the process and can affect the whole development. In the case of a risk event, actors can be forced to adapt their strategies or the project definition. On the other side, certain factors can contribute to a well-functioning process and promote success. Success is commonly considered as the completion of the project within the defined scope, schedule, budget and desired quality. Concludingly, risk and success factors must be managed to reduce negative impacts and maximize opportunities to make an urban area transformation successful.

Currently no clear framework exists that provides guidance to manage risks and to achieve success factors in urban area transformations in the Dutch context. Uncertainty which complicates the management of those challenges can be reduced by increasing information and knowledge about the process. Therefore, a thorough analysis of the process and a clear framework that identifies risks and success factors can help to come to a successful project.

1.3 PROBLEM ANALYSIS

This sub-chapter gives a critical overview about the cause of the problem of obsolescence of monofunctional areas and about the solution of area transformations, based on literature and market research. The problem of obsolescence is analysed with its various forms and causes. This is followed by a broader look on the problem from an area perspective and the transformation process. It explains how the demand for housing relates to the issue and finally a summary concludes this analysis.

1.3.1 Obsolescence

Obsolescence is the reduction of the original value of a property during its life cycle. The value of a building is determined by the return on investment that comes from its users' willingness to pay which derives from the property's fitness of use for the specific user (Douglas, 2006). A similar concept is depreciation which, however, is not the same as obsolescence. Depreciation is defined as a measurement of the reduction of "monetary value of an asset over time due to use, wear and tear or obsolescence" (The Economic Times, n.d.). The depreciable amount is calculated with the asset's historic cost as defined in the financial statement minus the estimated residual value (Lawrence & Okechukwu, 2013). Depreciation is thus a quantitative measure of obsolescence, which is a more qualitative evaluation of a property's value. Baum (1993) states that buildings become obsolete when they reach a certain age, which however differs in every case. He concludes that a stronger relation exists between depreciation and quality, rather than with age. However, the link between those two concepts is not easily identifiable and depreciation does not necessarily fully capture obsolescence (Ahmad et al., 2006).

Obsolescence can be curable or incurable. If the revenues of the measures to cure obsolescence exceed its costs, it is considered curable and results in an increase in value. If the costs exceed the revenues it is an incurable form

of obsolescence. In most cases conversions are not technically impossible but certain obsolete building characteristics can influence the financial feasibility substantially (Remøy & Van der Voordt, 2014). Therefore, it does not depend on the physical possibility to cure obsolescence but on the financial feasibility.

Obsolescence can occur on a building level and on a location level which both cause a value reduction of affected properties. If several buildings in one location suffer an incurable obsolescence, it is likely that the location is obsolete. Four types of obsolescence of a location are defined:

- Locational obsolescence: resulting from a poor image and functional obsolescence so that occupiers' demand is not fulfilled (Remøy, 2010)
- Site obsolescence: resulting from an imbalance when the value of the land is higher than the value of the building (Baum, 1993; Nutt, 1988)
- Social obsolescence: resulting from a negative perception of the location by society that influences its economic potential (Blakstad, 2001)
- Environmental obsolescence: resulting from environmental changes (e.g. air pollution) that make the conditions of the area unfit for the current use

However, most research on obsolescence is focused on a building level where the following types can be categorized: functional, physical, economic, legal, aesthetical, social, tenure, financial, environmental, locational or site obsolescence (Baum, 1993; Blakstad, 2001; Nutt et al., 1976; Remøy, 2010; Salway, 1987). The last two types are in fact types of locational obsolescence. Any type of building obsolescence can lead to location obsolescence if a high number of buildings are affected. It is generally difficult to determine whether a certain case involves location or building obsolescence and which type of obsolescence it is, since they are mostly interconnected. Figure 3 shows an attempt to connect the types of building and location obsolescence but it is central to note that the boundaries are blurry.

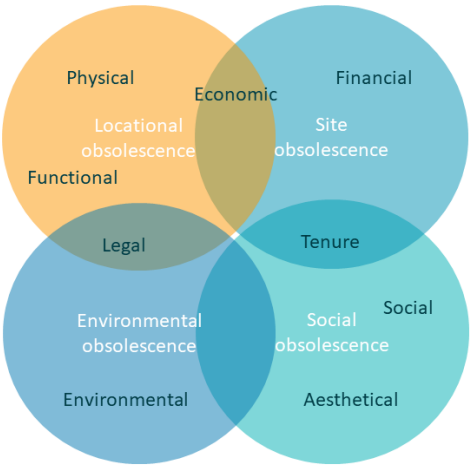


Figure 3 Types of location and building obsolescence (own ill.)

The most crucial types of building obsolescence are functional, physical, economic and legal obsolescence because these types can occur quickly, are difficult to be prevented and can lead to the end of the economic lifespan of a building. These are explained in the following paragraphs.

Functional obsolescence is a reduction of a building's usefulness caused by outdated features such as the architectural design, the floor plan layout, the style or the size. New technology and rising quality standards can change users' requirements which causes functional obsolescence and the building's functional lifespan ends (Brown & Teernstra, 2008). Physical obsolescence occurs due to physical deterioration, e.g. through natural abrasion or a lack of maintenance, which ends its technical lifespan. The economic life span of a building ends in case of a mismatch between its technical and functional lifespan (Remøy, 2010). Economic obsolescence is defined as a loss of value due to external factors which can occur although the building may be functionally and physically in a good state, such as during a business cycle downturn (Brown & Teernstra, 2008). Finally, a building can become legally obsolete when it does not comply with the current state of law. All types lead to financial obsolescence which is the misbalance between costs and benefits and makes the property unprofitable for its owner.

It could be argued that legal obsolescence is part of functional obsolescence, as it depends on functional features of the building and whether they conform with legal standards (Remøy, 2010). Take for instance insulation as a functional feature which can either fulfil the regulations regarding insulations standards or not and in this case make it legally obsolete. Nonetheless, I classify legal obsolescence as a separate category because these variables can occur independently. Legal regulations can be changed while the functional state remains unaltered and yet the building becomes legally obsolete. The other way around legal regulations remain the same while the building can become functionally obsolete. Furthermore, the sources of those two types are different. Functional obsolescence can be prevented by the owner through obviating the source of obsolescence within the building, thus by improving the functional state. In contrast, the source of legal obsolescence, which is the introduction of

new policies, cannot be influenced by the building´s owner. They can only *react* on legal changes by improving the functional state accordingly.

Furthermore, the connection between obsolescence and vacancy should be discussed. Is obsolescence a cause or an effect of vacancy? The answer depends on the type of obsolescence. I regard legal, functional and physical obsolescence as a cause of vacancy. In the first place the building's value is reduced due to legal, functional or physical reasons. Consequently, its users' willingness to pay rent for such a building declines and in the extreme case the object becomes vacant. In contrast, economic obsolescence is caused by external factors that are not related to the state of the building such as a decreased demand for office buildings due to economic recession (ch.1.3.3). This causes structural vacancy, typical for a certain real estate market. Thereafter, as the building has no tenant, it does not generate revenues and is financially obsolete for its owner. Nevertheless, it is nearly impossible to clearly define causes and effects of these complex and interlinked concepts, and this explanation serves as a discussion.

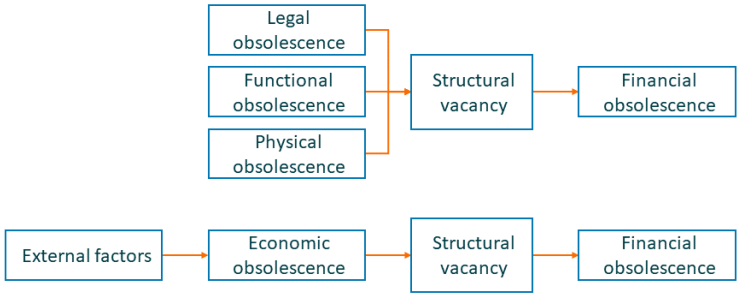


Figure 4 Relations of different types of obsolescence (own ill.)

When a building reaches a certain age functional obsolescence typically occurs before physical obsolescence. The end of the legal lifetime depends on policies. However, an old building is more likely not to fulfil the environmental standards anymore as regulations have been changing frequently throughout the last decades. Economic obsolescence is caused by external influences and again, older buildings that are less fit for use are more likely to be affected. Each type of obsolescence gives the owner of an affected property extra motivation to act and to improve the state of the building. While physical obsolescence can be easily prevented by frequent maintenance or refurbishment measures, functional obsolescence typically requires bigger investments, such as to alter the floor plan. Moreover, economic and legal obsolescence can occur beyond the control of building owners. Therefore, this research focuses on legal, economic and functional types.

1.3.2 Legal Obsolescence

Legal obsolescence is cause by the introduction of building policies by the central government, provinces and municipalities. These regulations regard for instance sustainable development, health and safety. Around 80% of Dutch regulations are implemented from European directives such as the national Environmental Management Act (Government of the Netherlands, 2018). A division can be made between demand policies and supply policies. In other words, policies can either affect the quantity and quality of goods available, so the supply, or the budget that is directed towards those goods, so the demand (Investopedia, 2018a). Furthermore, policies can also make specific goods or trades of those goods illegal. Within the focus of this paper an office building, its use or the trade of it becomes illegal when it does not fulfil legal requirements; and thus, is legally obsolete.

Interfering in the market through policies can stimulate or restrain developments, it affects the market equilibrium and the decision-making of market actors. In the case of energy regulations, it is desired to expedite developments of new energy efficient buildings and the retrofit of existing ones. In case of office vacancy, several policies aimed to stimulate a better functioning market. Tools of the public body are for instance land use regulation, zoning plans, building regulations, taxation, incentives and subsidies.

However, policies do not always achieve the desired outcome. Forecasting is difficult due to regulatory delays, the long time until policies are implemented and the long duration of constructions (Kummerow & Quaddus,

1998). For instance, the economic, financial and spatial policies of the last years in Amsterdam stimulated the construction of new office buildings which lead to a segmentation of the market in old and new, increased vacancy, and thus disturbed the market equilibrium (Brouwer, 2014). Furthermore, policies that are not directly related to real estate can also influence its market. For instance, financial deregulation can lead to an increase in capital supply which can be invested in real estate and cause a sudden push in developments (Kummerow & Quaddus, 1998).

As policies differ regionally, the following paragraphs of this chapter focus on the most recent policy implemented by the central government, its effects and the scope of the problem.

The policy EPC 'C' by 2023 for offices

In order to accelerate the process of creating a sustainable built environment, policies were introduced on a European and national level. The amendment to the Building Decree 2012, published in November 2018, states that from 1st January 2023 all office buildings must at least have an energy label C, which corresponds to an energy index of 1.3 or better (RVO, 2018b). Energy performance regulations for new buildings in form of the EPC (energy performance coefficient, also called energy label) exist since 1995 in the Netherlands and are part of the national building regulations. The EPC expresses the energy performance regarding heating, cooling, hot water and electricity consumption. Since the EU policy EPBD was implemented in 2008, an EPC is also required for existing buildings when being rented or sold (Filippidou et al., 2017). The Dutch government aims for an average energy label B and nearly zero energy for new buildings by 2020 ('*BENG*'), a totally nearly zero-energy built environment by 2030 with an EPC of A or better and energy-neutrality by 2050.

According to RVO (2017), exemptions for the policy EPC C by 2023 apply if:

- the office function is less than 50% of the building
- the total surface area is less than 100 m^2
- the building is nationally listed as monument
- the building will not exist for more than 2 years due to demolition, transformation or disownment
- the necessary upgrading costs have a repayment period of 10 years or longer

Effects of the new EPC regulation

Owners of office buildings must request an energy label and in case it is D or worse, they must make their properties more efficient. If the label obligation is violated after 2023, penalties can be given by the relevant municipality such as a warning or the termination of the use of the building. As the Dutch government states: "From 2023 there will be not one office in the Netherlands with an energy label worse than label C. Offices with a worse label (D to G) may then no longer be used." (RVO, 2017). Those objects then suffer a market value reduction from a valuer perspective. Rents cannot be assumed in perpetuity due to necessary upgrading works in the building and the costs for the upgrade must be included in the cash flow. In case of bigger disturbances, the demand for rent reduction can occur or even the wish to terminate the lease. Furthermore, financiers such as the major banks in the Netherlands ABN AMRO, ING and Rabobank, will not grant loans anymore for non-compliant objects. On the positive side, the investment in an upgrade pays out: higher rents, a higher market value, shorter take-up periods, lower interest expenses, lower systematic risk and reduced vacancy (Devine & Yönder, 2017; JLL & AKD, 2018; RentalCal, 2018). It is recommendable to directly go to label A, as this will be required by 2030. This shows that the upgrading strategy must be considered carefully in terms of finance, timing and with respect to the tenants.

Size of the problem

The number of buildings with officially registered energy labels is low but increasing. The numbers that can be found vary, change quick and often it is unclear how they are calculated. According to Rabo Real Estate Finance (2018), the number of buildings with officially registered energy labels is currently 19%. This number is even lower according to the Rijksdienst voor Ondernemend Nederland, with only 14% of all office buildings (JLL & AKD, 2018). Of all the registered labels for office buildings 64.5% currently have an adequate label of minimum C yet, according to the Data set of RVO (2018a), and only one in six buildings from the total stock (Dynamis, 2019). The average of registered energy label of office buildings is label D with most buildings built before the year 2000.

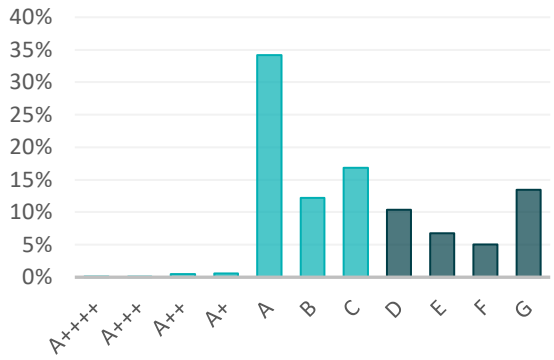


Figure 6 Energy labels of office buildings in the NL, 1 July 2018 (RVO, 2018a)

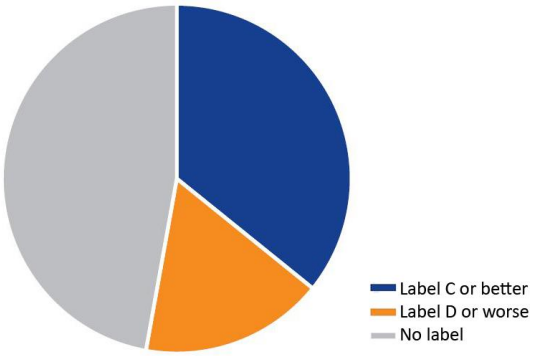


Figure 5 Energy label distribution of total supply, January 1st 2019, by number of properties (Dynamis, 2019)

Thus, the majority of office buildings currently does not fulfil the requirements yet and more than 1,200 office buildings do not yet have a label at all, whereof a significant proportion is expected to have a brown energy label (Dynamis, 2019). Owners of these properties are forced to act within the coming years. Investments to be made are estimated between €867 million and €942 million until 2023 to fulfil the requirements according to the EIB (JLL & AKD, 2018). Thus, this new policy increases the pressure on the office real estate market and will particularly affect the lower segments. However, this might also bring the benefit of tempering over-optimism; since the economy is booming there is a risk of generating an oversupply of office buildings. These factors and numbers show the significance of this challenge for office owners in the coming years.

1.3.3 Economic & functional obsolescence

The second type of obsolescence that causes tension on the office real estate market is economic and functional. A building can become economically obsolete due to external influences which reduces the property's value and causes structural vacancy. In general, vacancy around 3 - 6% is necessary for the market to function. It is needed for developments, refurbishments or lease renewals. This includes 1 - 2% initial vacancy which occurs after completion of a (re-)development project and 4 - 5% frictional vacancy which is necessary to enable movement of tenants (Remøy, 2010). However, if the vacancy rate exceeds the normal rate it is seen as a socially undesirable development and can be problematic (Keeris & Koppels, 2006). Furthermore, hidden vacancy can occur due to a sudden decline of demand when space is officially rented but effectively not used. If the duration of vacancy lasts three years or longer, it is categorized as structural vacancy. Typically office buildings are structurally vacant when they are functionally obsolete, technically deteriorated, facilitate poor climatic and workplace comfort, consume too much energy or offer insufficient parking space (Remøy, 2010). Structural vacancy occurs due to a mismatch between demand and supply, in quantitative or qualitative terms. In the following paragraphs the causes for vacancy are explained, followed by its effects and the scope of the problem.

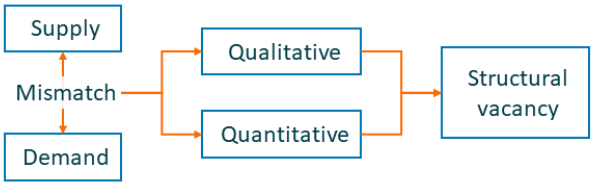


Figure 7 General cause of structural vacancy (own ill.)

Quantitative Mismatch

Many reasons for a quantitative mismatch can be attributed to the imperfections of the real estate market. Imperfection is caused by factors such as the heterogeneity of the properties and segmentation in sub-markets, the relative long duration of new construction, the lack of transparency of price generating mechanisms and limited or asymmetrical information (Manganelli, 2015).

One cause for quantitative mismatch can be cyclical fluctuation, the so-called cobweb theorem cycle, in discrete time frames (Ezekiel, 1938), or the hog cycle, in continuous time frames (Larson, 1964). In the long run the real estate market repeatedly oscillates around a steady state due to lags in delivery, economic shocks and irrational behaviour (Wheaton, 1999). The commercial building stock is relatively fixed in the short-term, due to static and increased rigidity of supply, long construction durations and typically long lease contracts (Manganelli, 2015). However, rents and prices can react quickly to changes and thus demand is dynamic and typically the first to react. Unanticipated increase in demand will lead to a price increase as potential tenants bid for a limited amount of space. The price increase encourages new developments. Consecutively, the supply lag leads to an oversupply by the time of completion (Kummerow & Quaddus, 1998). Demand then decreases again, prices fall and so do construction activities, and the cycle starts again (Owens, 1994). Offices or other industrial or commercial real estates are more affected by cyclical fluctuation as they are linked to a derived demand, while the rental housing sector has a rather inelastic demand and is more stable (Manganelli, 2015).

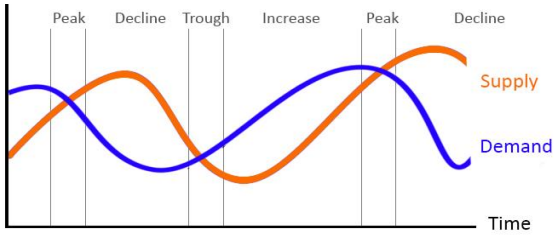


Figure 8 Demand and supply real estate cycle (own ill.)

Vast local differences of vacancy levels and segregation can be explained by local market segmentation due to the immobility of real estate. This phenomenon is also termed “spatial fix” (Harvey, 2001). While there is an oversupply of office space in some regions, there is a lack in others. Furthermore, limited substitutability increases this issue. This means that a building cannot be substituted by an alternative due to the heterogeneity of products.

In the last few decades a steady oversupply of office space occurred beyond the normal cycles. This is caused, on the one hand by a continuous development of new office buildings with a low amount of withdrawals, and on the other hand by a diminishing demand. The office stock has grown steadily until 2015 with an acceleration in growth around the year 2000 which was caused by the internet bubble. However, the use of office space did not keep pace with this development and vacancy increased. The financial crisis drove vacancy even further as the recession caused a decline of jobs by 1.4% in 2009 which reduced office space needed (ANP, 2010). Therefore as history shows, excess vacancy can be an effect of economic recession (Keeris, 2007).

Finally, speculations can cause vacancy. Investors buy real estate for the benefit to generate a flow of future income. This can be divided in a stream of revenues resulting from the exploitation of productive property and the profit resulting from capital gains which is the increase of value over time. In the case of vacancy, no income from exploitation can be achieved. Nonetheless, capital gains may still generate revenues. Investors who focus on this type of profit usually have a short-term horizon and are called ‘hit-and-run’ investors. This is considered real estate speculation rather than investment (Manganelli, 2015). For investors who focus on speculations it does not matter if the object is let or vacant and they can even safe transaction and administration costs if it remains unoccupied. A common method to calculate the market value of office buildings is the income approach which is based on the generated rental income. This is problematic when there is no income due to vacancy and in this case often a value calculation is based on potential tenancy (Hendershott, 1996). However, this distorts the actual, current value. The revenues generated through capital gains depend on the duration of the holding period and economic developments. As the market moves toward a recession, it is considered more advantageous to generate rental income over capital gains and vice versa during an economic upswing. (Prosper Australia, 2015).

On top of all those factors, demand is diminishing. One reason for that is a change of working methods, from classical to more flexible working. The 'new way of working' has reduced the space needed per employee from historically 25 m^2 per person to 12.1 m^2 in 2017, particularly in the banking, finance and insurance sector (JLL, 2014; Statista, 2017). Furthermore, the demographic change with an aging population and globalisation reduce the labour force and therefore also demand for office space (Mackay et al., 2009).

Qualitative Mismatch

There can also be a qualitative mismatch between demand and supply. Whilst quality standards rise and technology develops, buildings who cannot cope with the development become functionally obsolete. Spatial factors on different layers play a role as well as push, pull and keep factors; Building and location factors have been studied extensively by previous research (Remøy, 2010; Remøy & JM van der Voordt, 2014; Remøy & Koppels, 2012; Van Wingerden, 2013). Corporations can assess the mis-/match between their demand and supply with tools such as the 'DAS framework' (de Jong et al., 2009). When relocation is necessary to achieve a match, tenants prefer newly developed buildings and the least desired buildings become vacant. As Geraedts and Van der Voordt (2003) showed, good buildings drive out bad buildings. This development led to a shift from a growing market to a replacement or also called relocation market (Brown & Teernstra, 2008; Mackay et al., 2009).

The new way of working, as flexible working both in terms of time and location, did not only reduce space needed per employee but also changed requirements for floor plan layouts. The trend 'healthy office' focuses on the wellbeing of employees and aims for a healthy work environment which also changed internal requirements. A shift in demand towards higher quality offices is observable, with more service levels, greater flexibility and located in prime locations. Also fully serviced workspaces and the 'hotel principle' where the building is self-sufficient, became increasingly popular (JLL, 2016). Finally, the ecological awareness increases and especially due to the latest energy label policy users will pay more attention on the sustainability of their working environment.

This explains why vacancy levels are high while still new buildings are being produced and at the same time there is a shortage of high-quality offices space in multimodal, prime locations in the major cities (Cushman & Wakefield, 2018b; Rabo Real Estate Finance, 2018).

Effects of structural vacancy

Structural office vacancy is a problem because it bears risks and disadvantages for different stakeholders. Owner-investors of vacant buildings face a direct loss of the capital invested in these buildings, due to the lack of rental income combined with running expenses such as operation costs, interests and taxes and perhaps incentives to attract new tenants. However, as discussed before, a speculative investor might still be able to generate capital gain. Structural vacancy also influences the value and rent level of surrounding buildings. A study by Koppels et al. (2011) showed that 10,000 m^2 of additional structurally vacant office space caused a rent-level reduction of 1.6% of other buildings within a radius of 500 m. So not only the owner of a vacant building suffers financial loss but also owners of surrounding buildings, even though they are rented out.

Due to the declining demand of office space, land value decreases and municipalities have difficulties selling land to developers. This is problematic for municipalities, as selling building plots for land development is a major income source (van der Krabben et al., 2011). However, one benefit of a large supply of cheap, vacant office space for municipality can be that new companies are attracted (Brown & Teernstra, 2008). Also, smaller companies and start-ups can benefit from cheap space.

Downsides for residents are the disintegration of specific areas, deterioration, a growing risk of crime and social uncertainty (Van der Voordt, 2007). Furthermore, vacancy affects society, adjoining neighbourhoods and the whole city by impairing the image and reducing attractiveness. In terms of environmental issues, vacancy is an unnecessary waste of natural resources and a waste of raw materials, on the one side due to unproductiveness of the vacant building and on the other side due to production of new buildings while existing space is already redundant.

These effects prove that an individual buildings' problem becomes an area problem.

Size of the problem

The numbers for office vacancy in the Netherlands have been changing drastically in recent years, from as high as 17.5% in 2015 to below 10% in the last quarter of 2018 (Cushman & Wakefield, 2018b; PBL, 2017). In recent years the total office stock has decreased. As can be seen in Figure 9, since 2012 the number of withdrawals, due

to demolitions and conversions of office buildings mainly transformation into housing, was higher than the number of new additions. Thus, the supply started to shrink in 2015 (Figure 10). However, it was not until 2016 that the vacancy level declined, from 17.5% to 15.9% (PBL, 2017). From mid-2017 to the second quarter of 2018 office vacancy fell again by 3.7% (Cushman & Wakefield, 2018b). This is caused by increasing business activities, take-up and improving levels of occupier demand, as well as transformations, withdrawals and zoning changes and a very limited number of new completions (CBRE, 2018; Cushman & Wakefield, 2018b; Knight Frank, 2018). The largest part of vacancy is structural. While frictional vacancy decreased in recent years, initial and structural vacancy are continuously increasing (PBL, 2017).

As real estate markets are local markets the vacancy level also varies extremely in different areas (see Figure 2). In July 2018 the total office space supply numbered approximately 4.7 million m^2 (Statista, 2018). The Randstad region is generally the most affected area, with more than half of the total office space being located in the provinces North and South Holland. This can be explained due to the fact that many big national and international investors are active here, while in peripheral areas offices are often owned by owner-occupiers (PBL, 2017).

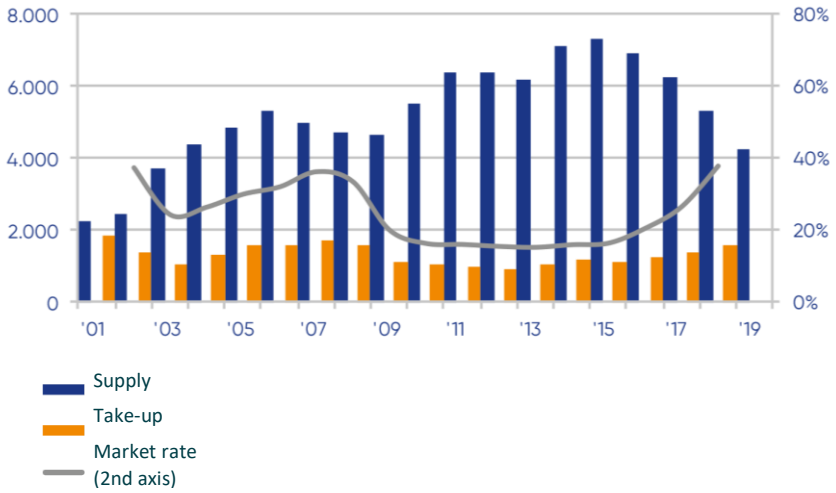


Figure 10 Take-up, supply and market ratio in m2 lettable floor space (x 1,000) (Dynamis, 2019)

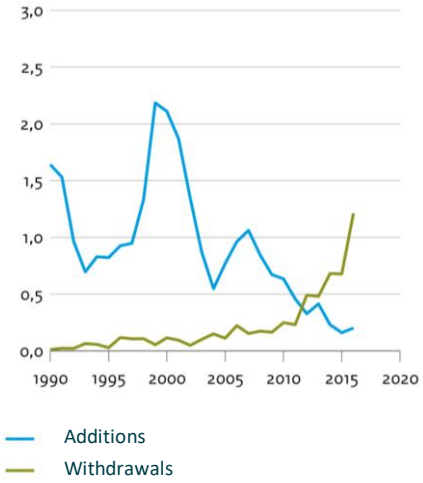


Figure 9 Additions and withdrawals of lettable office floor space office per year in m2 (PBL, 2017)

Market Forecasts

Nonetheless, despite the current economic upturn with a ten-year high GDP growth of 3.3% in 2017, still 20 - 30 million m^2 of industrial real estate is unoccupied. Estimations for the future do not draw a pleasant picture. Rabobank predicts 10% - 15% of office buildings to become vacant due to obsolescence in the next decade. The Netherland Environmental Assessment Agency predicts the utilisation of office buildings to be 4 - 30% lower than the current rate by 2030, depending on different scenarios, and the estimated vacancy in the next 15 years could increase between 75 and 100 million m^2 (Rabo Real Estate Finance, 2018). Thus, the problem of structural vacancy is far from being solved.

1.3.4 Approaches to solve obsolescence

On a building level, owners of office buildings have several options how to deal with obsolescence: adaption within or across use, demolition and new built, consolidation or disposal. Maintaining the building in its current state or selling it are considered passive approaches. These are only viable options for certain types of economic obsolescence when an improvement of the situation is foreseeable. Other alternatives require higher investments and aim to improve the physical state. Depending on the state of the building, demolition and new built can offer

advanced sustainable solutions. The permanent change of a building's function is in many cases the best solution to obsolescence and structural vacancy (Schalekamp, 2009).

Transformation from offices to housing is particularly interesting in the light of the persistent lack of affordable housing in the Netherlands. As empty office buildings can be transformed into housing, the high demand gives extra incentives for such projects. The shortage is caused by a growing demand with limited, insufficient supply. This imbalance pushes up the market prices and limits private offer of affordable housing. The reasons for a growing demand are manifold: the general population growth, continuing urbanisation and demographic changes, such as a growth of single-person households, ageing population, immigration and a rise of middle classes. In total 800,000 houses are needed in the Randstad which is at the same time the area that faces the biggest problem of office vacancy (PBL, 2017) and where 56% of the office stock is situated (Bouwinvest, 2017). By 2020 the total shortage is expected to be 235,000 homes (Capital Value, 2017). Therefore, transformation of existing, obsolete office buildings into housing can be a quick and sustainable solution to cope with the growing demand for dwellings.

Although this approach on a building level seems straight forward, the transformation from offices to housing is not possible when the building is located in a monofunctional area as the whole infrastructure and facilities are insufficient (Geraedts et al., 2017; Remøy & Van der Voordt, 2014). Monofunctional areas are characterised by hosting primarily office function, a minimum of 10,000 m^2 of office space, are typically in isolated location and are built with a focus on car accessibility (Van Velzen, 2013). Factors that make these locations undesirable are 'dead' ground floors, a lack of facilities, isolation from surroundings and the location at the outskirts of the city, incoherent urban design, bad image and no use in the evening and night-time. Additionally, agglomeration, as one factor that created monofunctional office areas, increases the value reduction of an area when similar companies move out.

Since the majority of all office buildings in the Netherlands are located in monofunctional areas, structural vacancy is typically high in these areas (Dynamis, 2019; EIB, 2012). Furthermore, properties located in these areas obtain a higher risk to become vacant (Geraedts & Van der Voordt, 2003). For instance, according to Brouwer (2014), vacancy rates of the main office-only locations in Amsterdam are significantly above the average percentage; with over 25% compared to 18.9% in 2011. Thus, the problem of office space that is still unoccupied is a structural problem and implies obsolescence of monofunctional areas. Therefore, an object approach is not sufficient, and an area approach is required.

1.3.5 Transformation of monofunctional areas

Transformation of monofunctional areas can be a solution when there is a loss of economic activity, social dysfunction or exclusion, loss of environmental quality or ecological balance (Van Wingerden, 2013). Particularly the transformation of office areas towards an area for living is possible as they do not host hazardous functions and are typically well accessibility (Remøy, 2010). However, this is a complex process.

Urban areas are characterized by fragmented ownerships due to their typically private and organic development. This means that a multiplicity of stakeholders is involved who must all be willing to pull in the same direction. Private owners are typically concerned with individual objects, not with areas. In many cases, the lack of an opinion leader and of one overall vision makes it very difficult to initiate and execute such an approach (Haavik et al., 2012; Hoppe, 2012). Owners of the buildings have great influence on the development. There may be different types of owners, such as investors, owner-occupier, private persons or public authorities. Large funds typically focus on one specific type of properties, are not specialized in developments and so are often not interested in transformations. Moreover, municipalities can influence developments, as they obtain legal power and public-law instruments, such as building permits and zoning plans. Some buildings are only partly vacant, and transformation may have to be delayed until the end of the contract duration, as tenants might not want to move. Incentives and negotiations can be used to convince the tenant to relocate. Also building owners might hesitate to redevelop their property due to the long lifespan of existing buildings. Furthermore, investors that already faced a loss of income due to vacancy might not have the financial power for large developments. Naturally, transformations require enormous investments and involve specific risks (Remøy, 2010). Especially adaption of old buildings is riskier than new built, as the current state might not be known exactly and unpredicted events can occur. Finally, also legal restrictions and policies limit transformations and the current land use plan must be adapted from office to new functions.

All these factors show that area transformations are highly complex. To conclude, urban area transformations are characterized by the case specific context which is determined by the involved actors, the history and location of the place, the end-goal in form of a vision, and the process. Above all, risks and success factors can determine over failure or success.

1.4 RESEARCH GOAL AND RESEARCH QUESTIONS

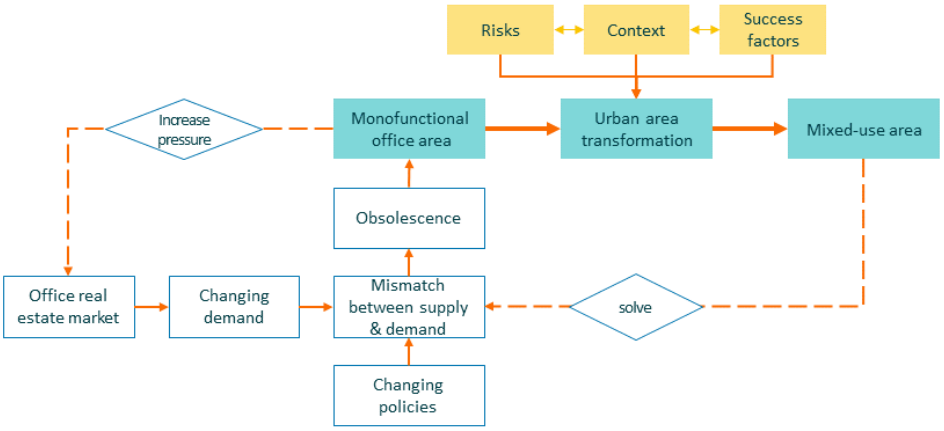


Figure 11 Conceptual Model (own ill.)

The conceptual model reflects the problem statement. It shows the relevant concepts and how they relate to each other. Monofunctional office areas are pressured by obsolescence which is caused by a qualitative and quantitative mismatch of supply and demand that results from a changing demand. Additionally, changing policies can cause a mismatch as the supply might not fulfil new standards. This obsolescence increases pressure on the market, due to negative effects such as value reduction. The transformation of urban areas towards mixed-use areas is a solution to break this downward spiral. This process is influenced by the case-specific context, risks and success factors which can determine over success or failure. Therefore, this research aims to increase knowledge about this process, to reduce uncertainty, to better manage risks and to achieve success factors. For this purpose, the most crucial risks and success factors are identified and analysed, and a framework is designed that guides the management of risk and success factors. The main research question is:

> *"Which risks and success factors influence the process of urban area transformations from monofunctional to mixed-use areas and how can they be managed?"*

To provide an answer for the main research question, the following sub-questions must be answered.

CAUSE	*1. When is an office building or an urban area obsolete and how is it caused?*	*Ch. 1*
COPE	*2. How can the problem of obsolescence be solved on an area level?*	*Ch. 3*
	3. What are the variables that determine the context of urban area transformations?	
	4. How are risks and success factors defined?	
	5. Which risks and success factors influence the process?	*Ch. 4*
DELIVER	*6. How can risks be managed and success factors achieved?*	*Ch. 5*
	7. How can a framework be developed to manage risks and success factors in the process of urban area transformations?	*Ch. 6*

1.5 DELIVERABLES

The goal of this research is to support area approaches to transform obsolete monofunctional areas to mixed-use. The additional knowledge gained through this research reduces uncertainty, facilitates the management of risks and success factors and helps to conduct a successful project. The objective is to support all actors who are involved in such a project in order to derive the best possible outcome for everyone.

According to the main research question, the primary goal is twofold. Firstly, to understand the main risks and success factors (SF) and secondly, to develop a framework that helps to manage them. There are three main deliverables of this research. The first deliverables is an overview of the main risks that can occur during an area transformation process and a list of factors that contribute to its success. This will increase awareness and can be used as a checklist by experts who are involved in such a project. The second deliverable is a framework for risk and success factor management. It presents the different tasks that should be taken to manage risks and to achieve success factors in this process. The framework should not be a fixed step-by-step tool but serve as a guide that helps to design a management strategy for risks and success factors for any individual case. Due to the high complexity of urban area transformations, projects are too unique to apply one fixed strategy. A framework, in contrast, serves as a guide and is applicable to any case. Moreover, general advice is given for developers and municipalities based on remarkable findings and lessons learned throughout this research.

The audience for this paper are actors who work on urban area (re-)developments, both public and private parties. These are primarily developers, municipalities and urban planners. Particularly area managers and project leaders who focus on the development of the area rather than on the development real estate, can use my framework. Moreover, investors, architects, contractors, other public institutions and researchers in that field of studies can benefit from the knowledge gained and use the outcomes to create liveable, future-proof mixed-use areas.

Figure 12 Main deliverables (own ill.)

1.6 RESEARCH RELEVANCE

1.6.1 Societal Relevance

As the problem statement and analysis demonstrated, several factors pressure the office real estate market that require quick solutions. As shown in the problem analysis, obsolescence bears risks and disadvantages for the owners of those buildings, municipality, residents and society. These risks and the high number of affected office buildings which led to locational obsolescence, demonstrate the societal relevance of this topic. Urban area transformations are area-oriented solution approaches. However, these are complex, time-consuming, risky processes and involve a high number of different disciplines and fields of expertise, and the interaction between networks. Above all, every urban area development has a different context. Therefore, it is not possible to have one ready-made strategy that fits all.

I aim to design a framework that serves as a guide to manage risks and success factors and to design an individual strategy. This research contributes by increasing theoretical and practical knowledge and reducing uncertainty in the process. The framework can support the process of multi-stakeholder area-oriented approaches and therefore stimulate and encourage such area transformations. Thus, it helps to design successful urban area developments, to prevent and eliminate negative effects of obsolescence on an area level, to re-integrate urban areas and to create better working and living environments.

1.6.2 Scientific Relevance

Throughout the last decades much research has been conducted on vacant office space including its causes and effects (Brown & Teernstra, 2008; De Koning, 2010; Geraedts & Van der Voordt, 2003; Koppels et al., 2011). Many researchers responded to that issue by exploring various solutions how to solve the problem on a building level (Borst, 2017; Bullen & Love, 2010; Damwijk, 2015; Geraedts et al., 2014; Watson, 2009), with a focus on transformation of vacant offices into other functions such as housing (Geraedts et al., 2017; Mackay et al., 2009; Remøy, 2010). However, as vacancy percentage dropped and the remaining structurally vacant buildings are primarily located in obsolete monofunctional areas, a structural transformation on an area level is needed. Only little research so far aimed to tackle this issue of transformation on an area level (Huijsmans, 2018; Schalekamp, 2009; Van Velzen, 2013; Van Wingerden, 2013).

The following table gives an overview of the main research projects on the process of transformation of monofunctional office areas. This helps to identify the scientific 'gap' and to define my own research approach. These research projects mainly differ on the phase they focus on, the perspective of involved actors and the scope. This literature review shows that no research has been done on risks and success factors in urban area transformations and a comprehensive framework about how to manage them is missing thus far. Furthermore, the latest regulations about energy labels (EPC 'C' by 2023) are not included yet in previous models. My research can fill that scientific gap and therefore scientific relevance is given.

Table 1 Literature review (own table)

	Huijsmans,2018	Van Velzen, 2013	Van Wingerden,2013	Schalekamp,2009
Problem	Transformation of monofunctional offices into mixed-use	Transformation of monofunctional offices locations	Link between location characteristics and structural office vacancy	Breaking the downward spiral by redevelopment into mixed-use
Question	Which strategic activities within an urban development strategy contribute to the transformation of a monofunctional office area into a mixed-use urban area?	How can a tool be developed to support the process of initiative to tackle a monofunctional office location?	Which and to what extent do location characteristics increase the risk of the occurrence of structural office vacancy in Utrecht, and what kind of urban strategies are needed to regenerate the Merwede quarter, an area with high structural office vacancy?	How can the problems on office areas be tackled and how can this approach be promoted?
Scope	Process and products during first stages of transformation (initiation), focus on municipality role	From initiative to joint area-based approach	Area regeneration of one specific case	Focus on initiation
Method	Case studies, expert interviews, Cross-case analysis	Interviews, Case study	Literature study linked to data analysis from case study	Cross-case analysis, expert interviews
Cases	Binckhorst The Hague, Amstel III Amsterdam, Strijp-S Eindhoven	Rijnsweerd, Rivium; Test case: Schiphol Rijk	Merwede quarter, Utrecht	Amstel lll Amsterdam; Test case: Hogehilweggebied, Berwijkpark
Product	Urban development strategy with strategic activities	'Gebiedsgenerator', tool to support actors in initiating a joint area-based approach	Urban regeneration strategy	Step-by-step plan to arrive at a joint, feasible plan for redevelopment

1.7 SUMMARY

The first chapter introduced the problem of obsolescence and structural vacancy for office buildings in the Netherlands. This analysis showed that the issue of obsolescence of office buildings became an issue of obsolete areas and a generic, structural solution is needed. As the average number of vacancies in the Netherlands dropped, it can be assumed that the remaining obsolete buildings are located in monofunctional areas where transformation of single buildings into other functions is not possible easily. Transformations of areas into mixed-use neighbourhoods becomes necessary to maximize efficient space use and to make it future-proof. However, an area-based transformation approach is complex due to a lack of knowledge, high uncertainty, fragmented ownership, high investment costs and long duration which increase the potential for conflicts and specific risks. Thus, an increase of knowledge and a coherent framework how to manage risks and success factors within the process can reduce uncertainty and provide guidance.

Moreover, causes and effects of obsolescence were identified in this chapter. It is defined as a reduction of the original value of a property during its life cycle which can have different types of obsolescence. It is caused by a qualitative and quantitative mismatch between demand, supply and new policies. The analytical framework, see Figure 13, provides an overview of all analysed causes of obsolescence. It also shows a DESTEP analysis which gives a clearer picture of the external environment within which the office real estate market operates. An area is obsolete if functional requirements are not fulfilled, if the value of land is higher than the value of buildings, if the location has a negative public perception, or if environmental influences affect the area negatively and conditions are unfit for the current use. A sign for an area to be obsolete is a high number of obsolete buildings within it.

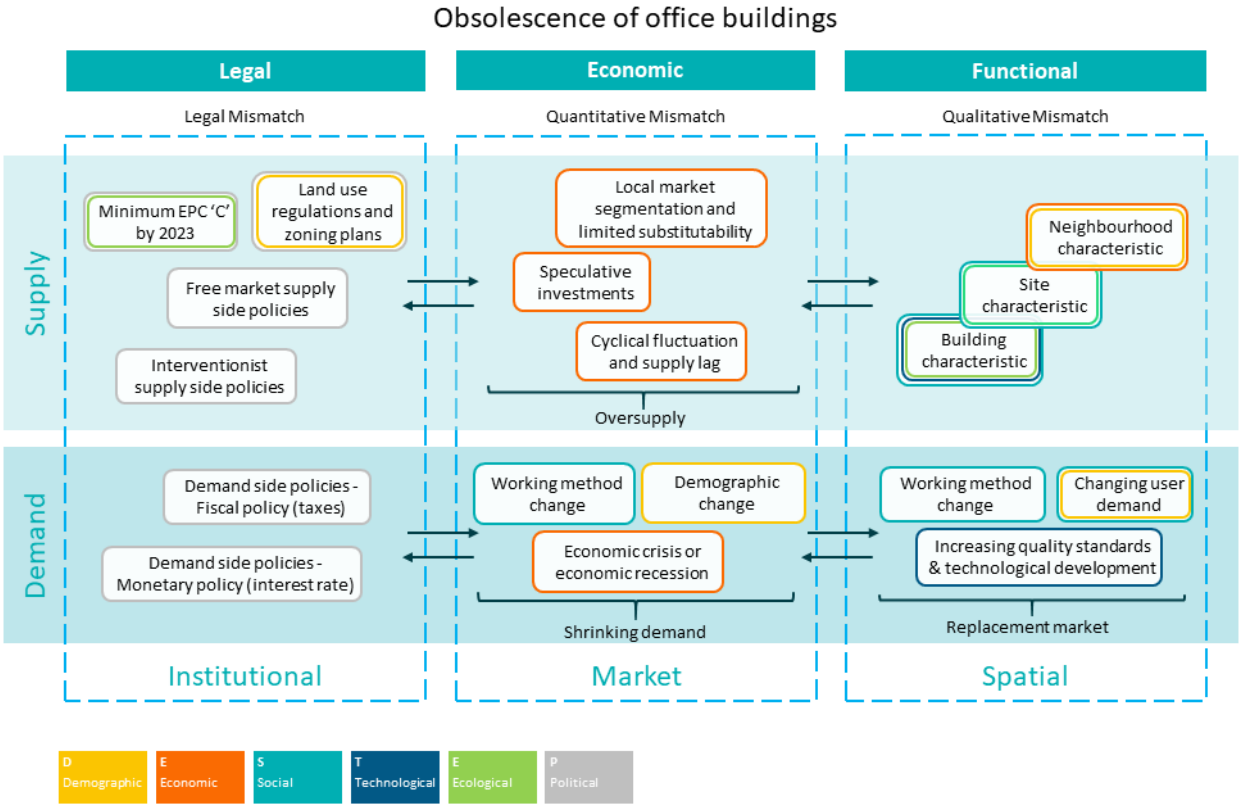


Figure 13 Analytical framework (own ill.)

Research Approach

2 RESEARCH APPROACH

This chapter describes the research approach. The research design and research methods are chosen based on the research questions and goals as defined in Chapter 1. The central methods used are case studies with a within-case analyses and a cross-case analyses. Furthermore, the Delphi method is used for generating data through expert consultation and will be explained in detail.

2.1 RESEARCH STRATEGY & DESIGN

This research is a hybrid of empirical and operational. The first two parts CAUSE and COPE are empirical, as the goal is to formulate explanations about the context, background and what the main risks and success factors are. This task is descriptive and past oriented. The third part DELIVER is operational with the goal to create a framework. This task is prescriptive and future oriented. A qualitative design is used because the subject is complex and requires a comprehensive, coherent approach with different types of data collection methods. The approach is inductive regarding the relationship between theory and research, meaning it aims to generate new theory emerging from research (Bryman, 2016). The purpose of this research is threefold: The first part CAUSE is of explanatory nature, analysing the 'why' question of the problem; the second part COPE is descriptive to find out 'how' the problem was approached in previous situations; finally, the last part DELIVER is explorative and aims to explore and design the strategy.

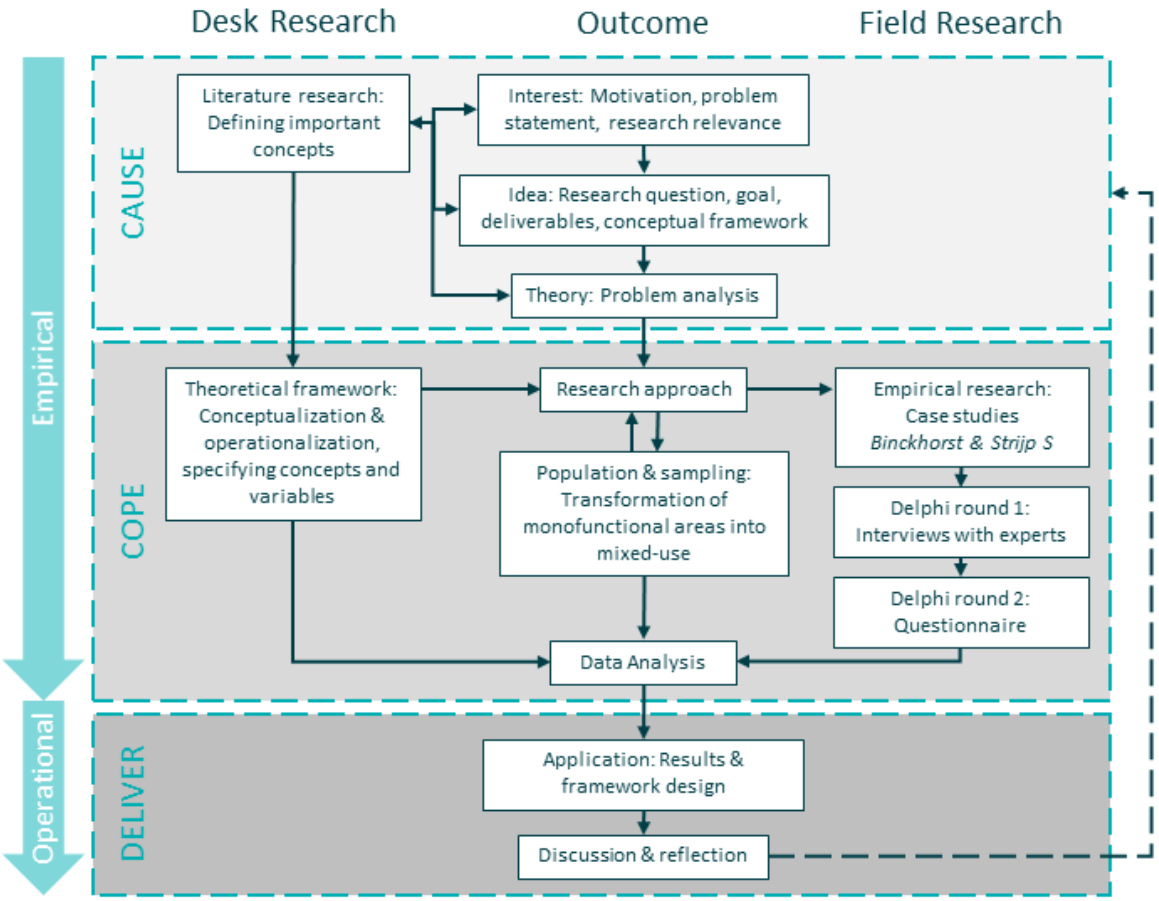


Figure 14 Research design (own ill.)

2.2 RESEARCH METHODS

The research design in Figure 14 outlines the scope of this research and shows how data is collected, analysed and which methods are used. The first part CAUSE is solely based on desk research. The interest, idea and theory were analysed, alternating with a comprehensive literature study that identified all important concepts and background knowledge. This includes the thorough analysis of relevant scientific papers that are related to urban area transformation processes to find the loose ends and to identify the scientific gap. This was used as the starting point to connect own ideas to literature.

In the next step the research strategy was formulated to design an appropriate research approach. The population and sampling for this research is chosen in regard to the research approach. For the main body COPE desk and field research is performed mutually. The theoretical framework defines and specifies important concepts and variables that are relevant for this research. Furthermore, it is analysed how concepts relate to each other and how they can be operationalized as a preparation for the empirical research. Two case studies are chosen for the empirical research. First, within-case analyses are performed and subsequently a cross-case analysis. This comparison increases the richness of lessons learned and generalization for other cases. Those cases are the foundation for the Delphi method which is used to generate data through expert consultation.

In the last part DELIVER all gathered data is analysed and compared to draw lessons. It is explored how the outcomes from the case-studies and expert consultation match with theory. The main findings from empirical and theoretical research are then combined and lessons learned are defined which is the input for designing the framework and providing general advice. The research is rounded up with a conclusion, discussion, recommendation and reflection.

2.2.1 Case studies

Case studies are used to investigate the topic in a real-life context. This method fits well to qualitative research and the complexity of the topic. These case studies have an extracting nature using inductive logic to build new theory from data collected through the cases (Eisenhardt & Graebner, 2007). A comparative design with multiple cases of a high variation is chosen to obtain information about the significance of various factors. This helps to better understand causalities and thus to develop better and more robust theories (Bryman, 2016). Two cases are selected by purposive sampling. As urban area transformations are complex projects and differ from case to case; this ensures the selection of representative cases. The selection criteria are as follows:

- The areas are located in the fringe of a city, not at the countryside and not in the city centre, as most mono-functional office locations are in those areas.
- The area contains at least 10,000 m^2 of office space (Van Velzen, 2013).
- The cases have a different area development approach. The two types are integrated and organic (Ch.3.1.3).
- The selected cases are in a geographically different location and belong to a different municipality. This allows to cover two different political contexts, since legal restrictions and politics differ in municipalities.
- Additionally, the cases should be in different stages of the process. This enables the comparison from a retrospective and an anticipatory point of view.

The chosen case studies which fulfil all requirements are the areas Binckhorst in Den Haag and Strijp-S in Eindhoven. Firstly, research was conducted to obtain data about context variables through case documents, newspaper articles, websites, previous research, site visits and observations. Based on this knowledge, I consulted experts who are actively involved in the transformation of these areas, to analyse risks and success factors. These variables are case specific and thus information is not obtainable through other sources. Risk identification through expert consultation is a common technique in risk management and relies on the experts' expertise and experience (Gajewska & Ropel, 2011). New insight on the contexts of each case gained from interviews was combined with findings from case documents. Finally, a detailed case description of the cases was made.

2.2.2 Delphi method

The Delphi method is used to consult experts. It is an iterative method consisting of several rounds interrupted by feedback moments. The aim is to synthesise a group consensus within a group of experts and to achieve a degree of convergence. Key to the Delphi method are controlled feedbacks to individual participants with their contribution in combination with the group judgement and the opportunity to revise their opinions (Linstone & Turoff, 1975). The number of participants can be small, as the Delphi method relies on quality and the expertise of interviewees rather than on statistical power.

First Delphi round

The Delphi method consisted of two rounds, starting with semi-structured 1-on-1 interviews with 13 experts who are involved in one of the cases. The selection of experts is based on purposive sampling, to strategically select people that could best answer the research questions. Furthermore, I made use of snowball system when experts recommended other people. To prevent bias, experts from different fields and different roles within the projects were consulted, including developers, municipalities, contractors, architects and pioneers.

The interview questions regarded actors, phases & milestones, with the focus on risks and success factors. A standardised interview guide was prepared, and the same questions were asked to all respondents (Appendix II, p.129) The structure of open questions increases the richness of data and enables flexibility to react to individual experiences or interesting answers (Bryman, 2016). 1-on-1 conversations, in contrast to group sessions, prevent generalization of the results, as people in groups can get influenced by others or might not speak openly. This increases external validity. Although interviews are an insightful method to obtain qualitative data, it includes bias and solely relies on the expertise of the respondents. This bias can be reduced by conducting multiple interviews.

The interviewees were asked if they consent to be recorded which all approved. Consequently, the interviews were transcribed and analysed in excel. The most important findings for each case in the first round were combined with the previous case analysis as part of the within-case analyses. Concludingly, a cross-case comparison is performed to test which results are identical or disparate and thus case-specific. The outcome is a comprehensive table of all risks and success factors that were mentioned by experts.

Second Delphi round

The previously gained results were tested quantitively in the second Delphi round. An online self-completion questionnaire was used for that purpose (Appendix IX, p138). This round has a descriptive nature using deductive logic to test the developed theories and thus completes the cycle. The compulsion to written form and multiple-choice questions increase preciseness. To increase generalizability of the research, the second round was executed with two groups of respondents. The first group consists of the same experts that were consulted for interviews. This allows each expert to adapt their answers to the obtained group results and to increase consensus. Furthermore, this group is highly specialized in the field of interrogation and they are already familiar with the topic. Therefore, the answers of this group are considered highly significant. They received the invitation for the survey via email. Out of the 13 experts of group one, 9 responses were obtained which is a response rate of 69,2%.

The second group is a larger pool of experts who work in the field of area development in a broader sense with a focus on developers, municipalities, consultants, investors and urban planners. These experts were selected by means of purposive sampling and snowball-system by sharing the link to the survey with open access on the platform LinkedIn and social media platforms. Additionally, experts were directly contacted via LinkedIn. Due to the rather narrow specialisation of my research topic, this method ensured that people with the right expertise who have the knowledge to answer the survey are selected. Moreover, contacting people personally increased the response rate. To ensure representativeness, the selection was based on randomization and respondents had to fulfil these criteria, whereof at least two must be fulfilled:

- Expertise in urban (re-)development or real estate (re-)development
- Expertise in risk management related to area or real estate development
- Works as a developer, architect, urban designer, investor, consultant, contractor, for the municipality, government agency or housing association

Approximately 235 people were directly contacted, and 67 responses were received. This gives a response rate of 28,5%. However, the actual response rate is smaller, assuming that people also saw the link to the survey on

social media platforms. The questionnaire for the second group was adapted and reduced to the most important questions to simplify the answering process and to attract more respondents.

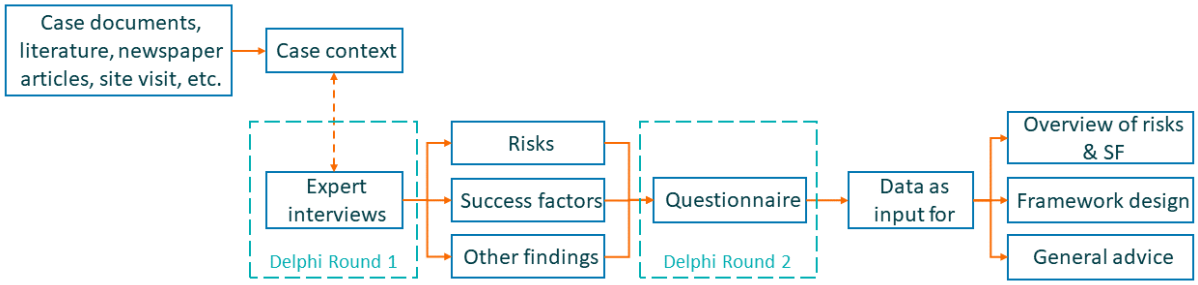
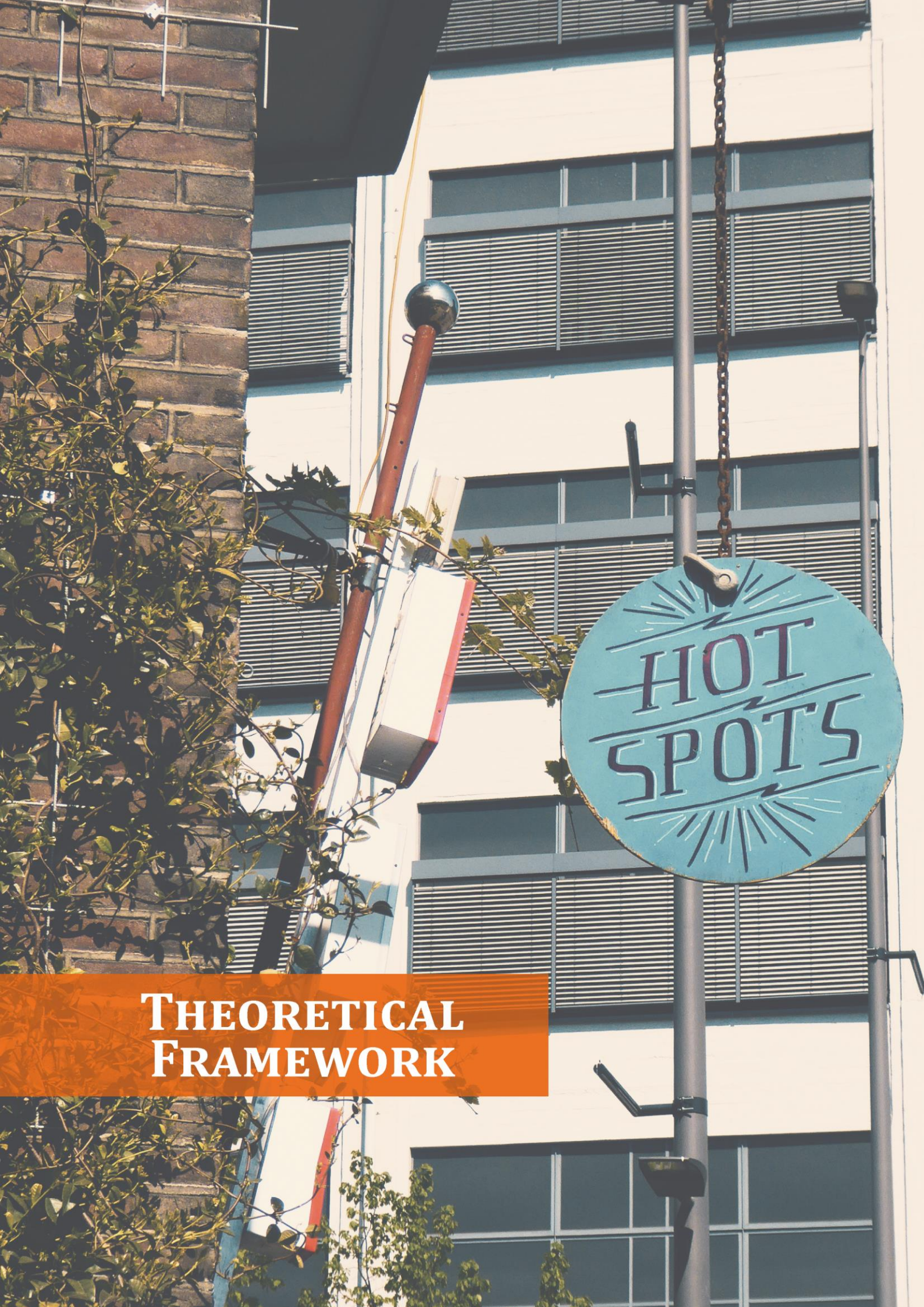


Figure 15 Data collection method case studies (own ill.)

2.3 SUMMARY

Chapter 2 presented the research strategy for this thesis. A qualitative approach was chosen due to the complexity of the topic. Three parts, CAUSE, COPE and DELIVER define the research design which is based on desk research and field research. The theory gained through literature study is tested on two real-life case studies, namely Binckhorst in Den Haag and Strijp-S in Eindhoven. Both cases are first analysed within-case regarding their context, and regarding risks and success factors, which is based on semi-structured interviews with experts. Concludingly, a cross-case analysis is performed to compare results and detect identical outcomes. This is the input for the next step which is the evaluation through a questionnaire by the same group of experts from the first round, plus a second group with a bigger number of respondents. The gained data is used to generate an overview of risks and success factors, to design the final framework and to provide advice.

The collected data is treated with respect to the FAIR guiding principles to enable findability, accessibility, interoperability, and reusability (Wilkinson et al., 2016). This research will be uploaded to the website www.repository.tudelft.nl to make it publicly accessible. My personal contact details are included in case of further questions. Consulted experts were asked whether they agree to be mentioned by name and which information provided by them can be used, in order to protect their privacy.



Theoretical Framework

3 THEORETICAL FRAMEWORK

This chapter explores the theoretical framework of urban area transformations. The definition, scope and characteristics of urban area transformations are explained which is followed by an overview of historic developments and the different transformation approaches. Area transformations are characterized by the case specific context which is determined by the actors, the history and location of the place, the vision, and the process, as concluded in Ch.1.3.5. These factors are the context variables that will be explored in this chapter. Finally, risks and success factors are analysed from a theoretical perspective. All variables are operationalized as a preparation for the following empirical research. This chapter demonstrates why transformation processes are highly complex and why management of risks and success factors is crucial.

3.1 URBAN AREA TRANSFORMATION

Cities continuously adapt to changing demands. The transformation of an area can be organic and happen as a natural, continuous development where actors react on their environment. However, a reactive approach can be insufficient to guarantee the successful functioning of cities in the future (van 't Verlaat & Wigmans, 2011). In contrast to that, the development can also be initiated or influenced deliberately by active interventions. Different actors can steer on the transformation process which are typically public bodies such as governments and municipalities, or market parties who have the necessary power, influence and financial means. An urban area development is often driven by social urgency and/or potential. Due to the sheer size of an urban area, multiple actors are involved in the transformation ranging from owners to users, developers, public bodies or other interest groups. Naturally, they all have different opinions that seldom align. A transformation process brings extensive spatial changes and alters the structure of an area. The long-term goal is on strategic improvements of the economic, physical, social or environmental conditions. This happens step-by-step through the development of several individual projects. Moreover, urban area transformations are no green-field developments but alter existing structures which means that people already occupy the area for living and working. These occupiers cannot simply be expropriated and relocated, and thus existing structures and systems must keep operating during the process.

In conclusion, an urban area transformation process is highly complex due to its multiplicity: multiple actors with multiple interests, multiple processes of multiple project developments, cash-flows and functions which all creates multiple challenges and risks.

Is an urban area transformation therefore a megaproject? No clear definition for megaprojects exist, however, according to literature, some characteristics are: an investment over 1 billion dollars, high uncertainty, attractive long-term results and intangible benefits (Irimia-Diéguez et al., 2014). Although urban area transformations usually fulfil all those characteristics, it cannot be defined as a megaproject since it is not one single project itself but consists of several individual projects. Nonetheless, we can still learn from megaprojects as both concepts are characterized by a high level of complexity, uncertainty and risks (Flyvbjerg et al., 2003).

3.1.1 Urban area development

The transformation of monofunctional areas to mixed-use areas is a type of urban area developments. The umbrella term ‘urban area development’ (*Gebiedsontwikkeling*) comprises different kinds of urban interventions such as renewal of inner-city areas, developments of new areas for living, working or leisure, rehabilitation of historic centres and transformations of existing ports or industrial areas (Franzen et al., 2011). For certain parts of the theoretical framework it is referred to as urban area developments instead of urban area transformations when the same theory applies for both.

Urban area development can be defined as “the sum of a large number of complex processes performed by many individual actors and organisations with their own interests and claims” (van 't Verlaat & Wigmans, 2011). The purpose of this process is the creation of spatial compositions wherein all users and systems can co-exist in harmony (Franzen et al., 2011). To manage an urban area development, it is crucial to understand its main

concepts, the physical, organisational and social context. As a response to the increasingly high complexity of urban area developments, the discipline urban development management (UDM) was established. "UDM concerns the art of managing, of coordinating, guiding and perhaps even directing the decisions of the many stakeholders involved in the development of urban areas towards a high quality outcome: urban places to be enjoyed by all." (Bueren et al., 2016).

According to this definition, four elements – the 4P's – are central to UDM: Place, Product, Person and Process. Place describes the area with its geographical and physical characteristics, qualities, boundaries and its history. Product defines the outcome of the urban area development, including for instance buildings, infrastructure, public spaces, etc. Person refers to all involved actors. Process relates to the actions, decisions and strategies of those actors in an on-going, interactive and dynamic manner. These 4P's define the framework of UDM and furthermore represent the context variables as previously identified: Involved actors, the history and location of the place, the end-goal in form of a vision, and the process. Therefore, those variables are used for the purpose of this research to define and analyse the context of urban area transformations.

Figure 16 4Ps model on UDM (Bueren et al., 2016)

3.1.2 Historic development of area development approaches

This paragraph explains why urban area developments have become more complex in recent times (Franzen et al., 2011; Zidane et al., 2013). Throughout the history of urban area developments, a shift in power and change of roles occurred in the Netherlands.

For decades urban developments were characterized by an active role of Dutch municipalities which was quite an exception compared to continental Europe practice. They applied active land use policies and took a hybrid role by pursuing public objectives as well as applying market economic thinking (Heurkens & Hobma, 2014). This integrated approach was a response to the complexity of (re-)development of urban land and the necessity to integrate various disciplines and interests (Franzen et al., 2011). Those integrated, large-scale approaches were a powerful tool to realise a high quality for living, working and public environments (Tennekes & Harbers, 2012), due to the principle of economy of scale. Typically, the municipality bought the land upfront and prepared it before selling it to private developers. Then market parties developed buildings, infrastructure and public spaces. A specialty in the Netherlands are housing associations who took an active role in developments of social housing. After completion the properties were sold to private owners or investors. The municipality remained responsible for the maintenance of public spaces. As only a small number of actors are involved in an integrated approach, this approach was exclusive, centralized and focused on government.

Since the beginning of the millennium, power shifted towards an equilibrium between the state and the market. A multidisciplinary and collaborative approach appeared, facilitated by various forms of public-private partnerships (see Public-private cooperation). As the government has steadily withdrawn itself from the leading role in developments, the dependency on the private market for implementation of development plans increased. Private and semi-private real estate developers took over the leading role, civic society gained power and the state took on a facilitating role (Bueren et al., 2016). Thus, an organic approach of area development emerged.

Causes for this shift towards market-oriented development practice are diverse: globalisation, an increased mobility of capital, growing complexity of government tasks, the fiscal crisis in the public sector and neoliberal ideas (Bult-Spiering & DeWulf, 2006) which promote deregulation, decentralization and privatization (Heurkens & Hobma, 2014). At the same time societal, demographic and technological trends led to urban growth and increased the demand for infrastructure, public space and amenities which was more and more provided by the market.

In contrast to the integrated, large-scaled and project-based approach, the organic approach is characterized by various small-scale developments with an open-end process and without a clear final picture. The shift of Dutch urban governance over time is shown in Figure 17. To summarise: power shifted from public actors to private and civic actors, market shifted from supply-driven to demand-driven development, and planning shifted from development to coalition planning (Heurkens, 2012).

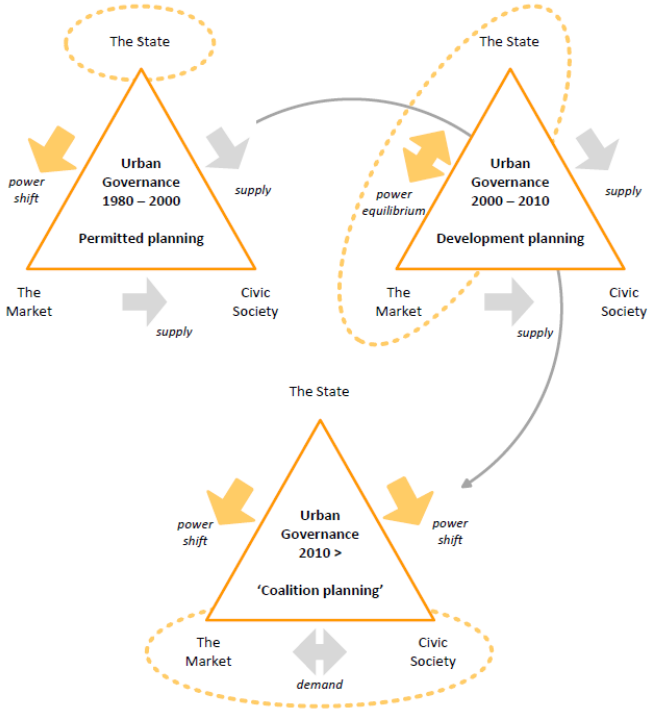


Figure 17 Dutch urban governance shifts over time (Heurkens, 2012)

3.1.3 Integrated vs organic approach

The historic development showed that there are two distinct approaches for area transformations: integrated and organic. Although a shift has been observable from an integrated approach toward an organic approach, both types still exist and in reality, most cases are hybrids of both forms.

Integrated transformation approaches are comprehensive, large-scale developments that combine different land uses and operates with integrated financial and organisational systems. Public authorities adapt an active land policy as a tool for an active development and additionally as a source of income (Buitelaar et al., 2014). Integrated urban redevelopments by collaborating public and private organizations are considered to strengthen the particular urban region and positively influence the image of the whole city (Geraedts & Van der Voordt, 2003).

In contrast, public authorities take on a facilitating and risk-averse role in organic transformation approaches, while market parties and end-users obtain a leading role. Developments happen on a small scale by small developers and individuals and are executed in a gradual and mixed manner. This type of development is considered more flexible and responsive to uncertainty and changing demands (Buitelaar et al., 2014).

Figure 18 shows the differences of these two approaches in various aspects. In respect to those differences, the approaches should be managed differently (Buitelaar et al., 2014). To respond to that, two case studies were selected for this research with one being developed in an organic approach and one in an integrated approach.

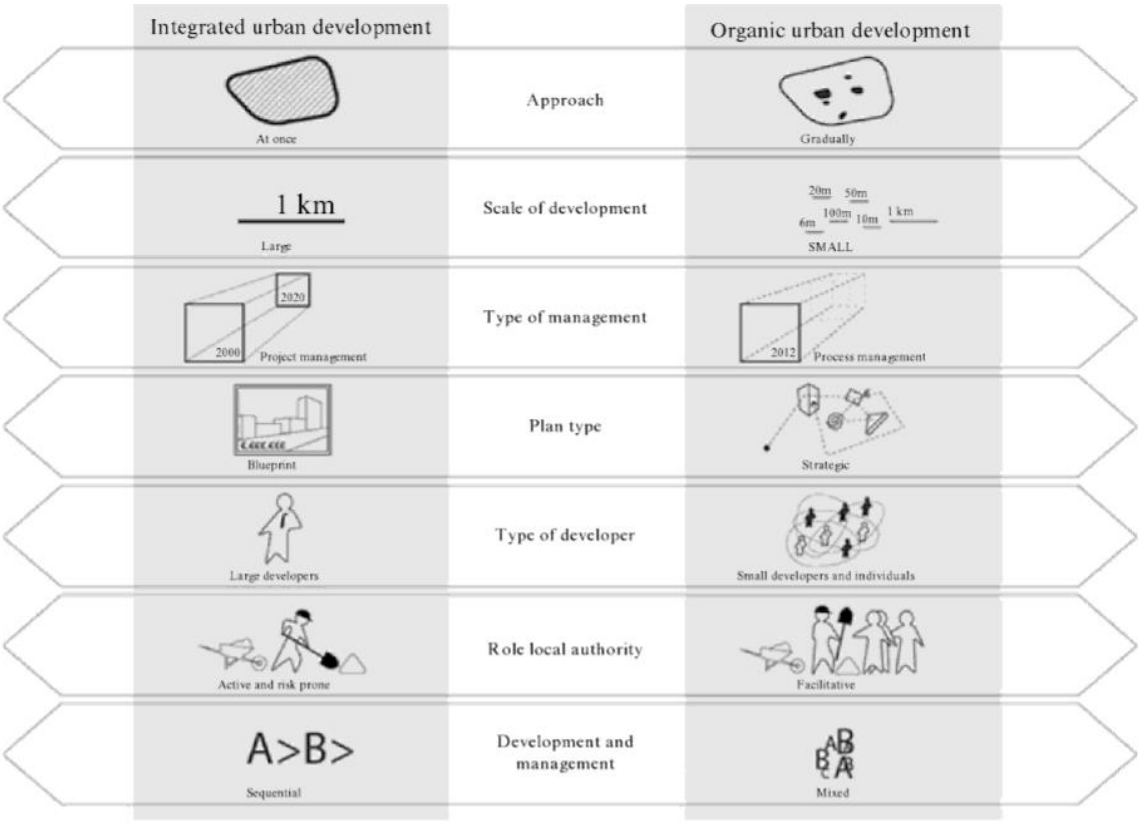


Figure 18 Integrated vs. organic urban development (Buitelaar et al., 2014)

3.2 CONTEXT OF URBAN AREA TRANSFORMATIONS

In the following sub-chapters, the context of urban area transformations is studied in depth. The content of each unique area determines the transformation process and thus it is crucial to establish the context at the beginning of the project. The 4Ps model, as previously described, is used as a framework to analyse the context. The model is complemented with risks and success factors, due to their enormous influence on each variable and the overall process. Figure 19 presents an adapted version of the 4P's model by Bueren et al. (2016) to the focus of this research: urban area transformations of monofunctional areas towards mixed-use areas. Thus, the following paragraphs introduce the variables (1) *process* based on phases and milestones, (2) *place* defined as monofunctional urban area, (3) *product* which represents the final goal as defined in the visions, (4) and *person* with a focus on involved actors.

Figure 19 Adapted 4P's model (own ill.)

3.2.1 Process: Urban area transformation process

An urban area transformation process is in fact the sum of individual processes. It consists of individual project developments which are characterized by a single project, for instance real estate, public space and infrastructure. These individual developments run parallel or consecutively, depending on the physical, organisational or logistical relation amongst each other.

Due to the long duration of those projects, the overall urban area transformation has a long-term orientation and can last 5 - 20 years or longer. What distinguishes an urban area transformation from *only* the sum of individual projects is an overall, comprehensive vision. Spatial projects consist of an integration of planning activities and spatial investments in combination of locations, functions and finance (Daamen, 2010).

In the process of riding the project life cycle the level of detail becomes increasingly finer and different types of resources are mobilised in each stage (Winch, 2010). The planning efforts become physically manifested step by step from initiating the project to its completion. The process can be broken down into several phases. Moreover, processes are driven by decision-making cycles which are attached to key-decision moments. These moments, together with certain key-events mark the milestones within the process. Milestones can also mark the beginning or end of a phase. According to Winch, the project life cycle is a process of dynamic reduction of uncertainty while more and more information becomes available. Uncertainty bears risks and thus risks are an integral part of any process.

Phases

To structure the process of a project it is typically divided in several phases. After each phase a project review moment takes place. If the review is positive, the next phase can be initiated which shows that involved actors are confident in making further investments to the project. In case the review is not satisfying, the deficiencies may be revised or, in the extreme case, the project is terminated (Gehner, 2008). Several activities take place simultaneously or subsequently during each phase and it is mostly acknowledged that the process is iterative rather than linear (Gehner, 2008). In contrast to single project developments, an urban area development consists of several individual project developments that run simultaneously or subsequently. As every individual project follows its own phases, it becomes difficult to divide the overall process of an urban area transformation into clearly defined phases.

Different categorizations of phases can be found in literature. In regard of real estate developments, the following phases are typically identified, sometimes with different names yet with similar meaning: initiation, feasibility, commitment, construction, and management (Gehner, 2008). However, these phase categorizations may not apply to urban area developments, due to the previously explained difference between individual real estate and area developments. The following categorizations of phases of area developments can be found in literature:

- Initiate, feasibility (consisting of definition, design and preparation), realization, maintenance (VROM, 2011; Wolting, 2006)
- Initiation phase, feasibility phase, realization phase, management phase (Deloitte Real Estate Advisory & Partnerships, 2017)
- Initiation, planning, realisation, maintenance (Franzen et al., 2011)

It is recognized by most authors that those phases are part of an iterative circle. This means, that the process starts all over again with the redevelopment of the area, sometimes decades later or longer. Based on literature, the first categorization (VROM, 2011; Wolting, 2006) is regarded as most suitable for this research due to its recognition of the concurrency of multiple projects throughout the process.

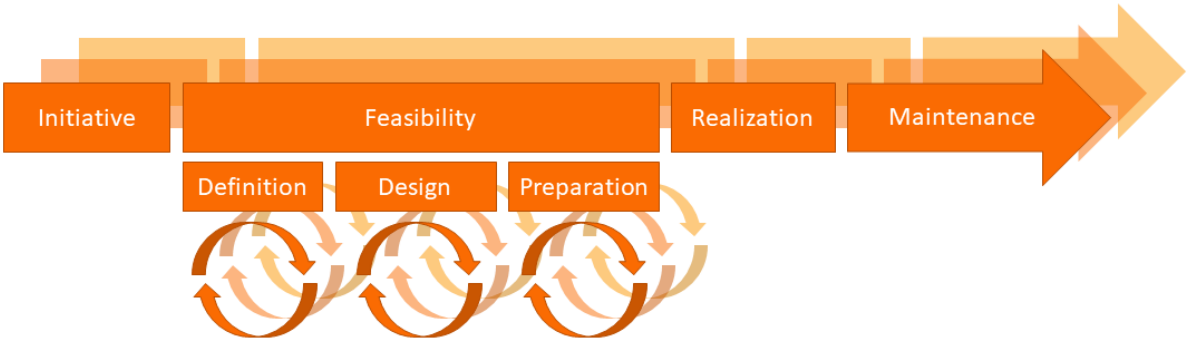


Figure 20 Area development phases (based on VROM 2011 and Wolting, 2006)

Initiative

Any project starts with the initiative which is a first idea to develop a certain area. According to Gehner and Peek (2008) there are two main strategies to start a project: 'site looking for a use', so supply-driven, and 'use looking for a site', so demand-driven. The first strategy is becoming less popular due to the shift from greenfield developments to re-developments; whilst the second strategy is increasingly common in the Netherlands since the 2000s. Other less common strategies are concept driven strategy, development competition, investment driven strategy. In general, a project initiative is either the response to a problem or to an opportunity. Both public and private parties can initiate an urban area transformation. The main tasks of this phase are investigating the suitability of the area for transformation, formulating reasons of initiative, analysing the area, the task, the parties concerned, the market, the policy framework of the area, the risks and related problems (Franzen et al., 2011; Huijsmans, 2018). Furthermore, ambitions and goals must be defined, communication and partnerships with involved actors are established and branding of the area is started. In this phase no obligations and responsibilities are laid down but letters of intent can be signed to signal commitment.

Feasibility

This phase includes a multiplicity of actors, interactions and tasks. The project is defined with a draft of the program of requirements. The plans are design and feasibility is analysed. Generally, all preparations before the start of construction are made and all aspects and interests are integrated in a plan. Those tasks are of iterative nature and require collaboration with various parties. During this phase contracts are signed and agreements between relevant parties are made, including tasks and risk distribution. The result is an urban and financial master plan which serves as the base for the new land-use plan (Huijsmans, 2018).

Realization

In this phase the previously designed plans are executed. All construction-related activities happen during realization including soil preparation, demolishing existing buildings, construction of infrastructure, public space and buildings (Franzen et al., 2011). During those tasks it is likely that unexpected events happen, for instance technical, environmental or jurisdictional challenges. This requires flexibility to react to problems and to adapt plans accordingly. Furthermore, the construction processes must continuously be monitored.

Maintenance

The maintenance phase begins after all construction tasks are completed. Different parts of the area require different maintenance approaches. Public spaces are typically property of municipality while individual buildings are in the responsibility of private owners. Repairing damages, preserving or improving the original state, maintaining cleanliness and safety are typical tasks in this phase. In case of more radical interventions, demolitions and new built can be necessary, or even the re-development of an entire area.

Milestones / Key-decision moments

Milestones mark events of completion or deliverables in the process and serve as progress markers. Thus, milestones can define the beginning and end of phases. Moreover, key-decision moments can also be milestones, as they define the points which determine the path of the development. Certain milestones relate to the overall process, while others only apply to individual projects. The latter ones can be moments of commitments which are typically "land purchase, conceptual design choice, application for building permit, closing majority of leasing contracts, and closing sales contract" (Gehner & Peek, 2008). Therefore, some milestones are linked to moments of cash-flows. Figure 21 shows the cash flows of an integrated area development project. Every peak of cash-flows marks the completion of a project part such as an individual building and the start of using the object. In between those steps is the sale which generates the cash-flow. Each of those moments is an individual milestone of a project.

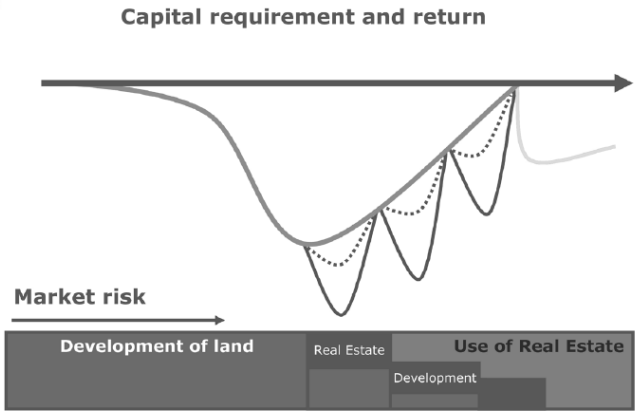


Figure 21 Progress of the balance sheet of an area development project (Franzen et al., 2011)

3.2.2 Place: Monofunctional urban area

Definition monofunctional urban area

Urban areas can be defined as places with a very high population density, compared to its surroundings (McDonald & McMillen, 2011). On a size scale, an 'urban area' lies between a 'city or urban region' and a 'plot' (Daamen & Verheul, 2018). Urban areas, also referred to as districts or 'medium-to-large sections of the city', have an individual identity which the observer mentally enters into (Lynch, 1960). Districts can be official or political and thus have clearly defined borders. However, they can also depend on social or individual perceptions when people have a sense of community or of 'my neighbourhood'. The areas in question for this research are in the fringe of cities, neither in the city centre nor in rural areas.

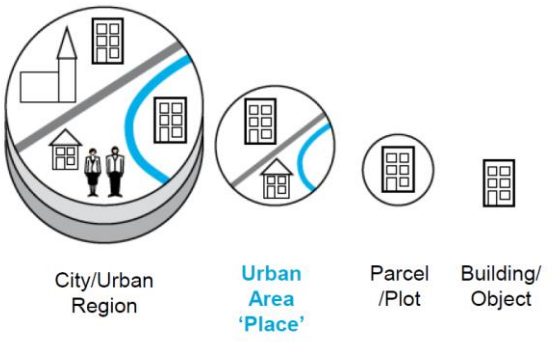


Figure 22 Geographical scales (Daamen & Verheul, 2018)

An area is monofunctional if it hosts primarily one function such as residential, offices or industry. Although it is natural that scattered other functions exist in the area, like small shops or restaurants, it is only defined as monofunctional if these are negligible. Monofunctional office areas are characterized by hosting more than 10,000 m^2 lettable floor area of office space (Van Velzen, 2013). Monofunctional areas can economically work well in a predictable, growing economy. However, they are not future proof, cannot adapt to sudden changes of demand and thus have a higher risk to become obsolete (Remøy, 2010). Furthermore, a lack of diversity a focus on car accessibility and high level of traffic reduce the attractiveness of these locations. The majority of office buildings, which is 40% of the total supply, are located in monofunctional office parks (Dynamis, 2019).

Urban Economics and Location theories

To describe how monofunctional urban areas developed, a brief introduction follows on how cities emerged by consulting McDonald and McMillen (2011). According to urban economics, cities are formed by location decisions of companies, households or public bodies. Generally, locations are preferred where the resulting benefits exceed the disadvantages. According to location theory in a nutshell, firms strategically chose locations that improve productivity and increase profits, thus decrease costs and increase revenues. When transport costs are a dominant factor for location decisions, firms are transfer-oriented and prefer locations that minimize transportation costs. Market-oriented firms who seek close contact to their costumers locate in cities, based on transportation and commuting costs. Offices typically host input-oriented firms who prefer a short distance to their source of input – which are human labour. In this case, they also prefer a location in cities. Other factors that determine the location decision are the type of production process, costs for labour, energy, land and capital, taxes and knowledge input.

Another decisive aspect are location economies. The clustering of economic activities in a certain place can create an economically favourable environment that attracts firms, reduce costs and improve productivity. There are different types of agglomeration economies. Economies of scale are internal to the firm; localization economies and urbanisation economies are external to the firm (Koppels, 2018). Agglomeration can further occur within the local industry and within inter-industry linkages. Depending on the type of industry, the benefits can range from lower transportation costs, to a supply network, industry-specific infrastructure, supply of trained labour and knowledge spill-over effect. Office functions primarily benefit from the last three aspects. Therefore, agglomeration economy is one of the driving forces behind the establishment of monofunctional areas.

What determines where monofunctional areas exist within the city? The model of urban land market describes how land is used and how its market value is determined (McDonald & McMillen, 2011). Each plot of urban land is occupied by the sector that bids the highest for it. The willingness to pay for a plot depends on the resulting benefits, inherent costs and typically on the distance to the central business district. Therefore, the concentric ring model, that assumes only one city centre, shows where most companies of one function would prefer to settle. This explains why monofunctional offices areas typically locate in the fringe of cities, where rents are lower than in the centre and accessibility by car is good.

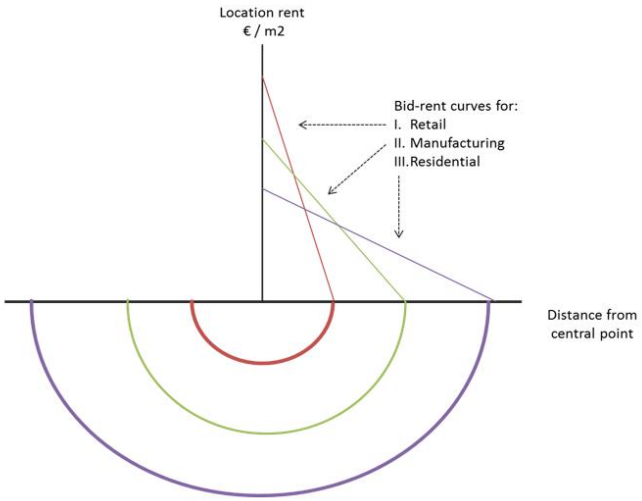


Figure 23 Concentric ring model (Koppels, 2018)

Historic development

Back in history, cities were typically founded in strategic positions for instance near the sea or rivers and were based on the central function of its port. In the second half of the 19th century, railroads influenced the location-decision for cities. In those times transportation costs were much higher and companies were willing to pay a premium for locations close to ports or city centres. The industrial revolution marked a turning point, and offices

were no longer mainly connected to other functions such as houses or workshops. Together with the rise of new manufacturing processes and heavy industry, office functions were constructed close to industry and so moved from mixed-use area towards separated locations (Remøy, 2010). Sites in strategical positions in the urban fringe and near highways were attractive in terms of transportation.

Since the beginning of the 20th century the design of cities was influenced by utopian ideologies. The garden city movement introduced principles for healthy and secure living environments with sufficient space, sun and air. Part of this idea was functional zoning and the organised migration of industries out of the city. The *Charte d'Athènes*, published by Le Corbusier as the results of the fourth CIAM conference on "The Functional City" in 1933 promoted the functional separation within cities (Le Corbusier & Eardley, 1973). After the Second World War zoning plans became an instrument to clearly divide functions. This separation was thought to contribute to healthier cities. Even though these principles no longer apply to our modern lifestyles, they still have been influencing the design of cities for decades (Remøy, 2010).

The shift from industrial to information economy changed the image of the city once more, when the service providing third sectors gained importance. With the decrease of transportation costs and the diminishing importance of natural and geographic factors for location decisions, human factors increasingly gained influence. Due to the changing demand, the highest and best use (HBU) of plots changed within the urban land market. Former industrial sites became new city centres and modern monofunctional office locations formed based on car accessibility (Remøy & Van der Voordt, 2014). In the 1980s the market showed an economic upswing and politics supported the extension of cities due to the restricted extension of city centres (Remøy, 2010). Particularly during this time monofunctional office locations were extensively built that became obsolete some decades later.

This theoretical and historical overview shows that cities are complex systems, embedded in social contexts and usually result from path-dependent co-evolutionary processes. Institutions, organisation and individuals continuously create, adapt and use cities which makes it difficult to purposely influence its development. This can be compared to technological systems (Unruh, 2000): Once locked in, such complexes are difficult to be replaced by alternatives, even though these alternatives are proven to be an improvement.

3.2.3 Product: Mixed-use urban area

The product of a transformation process is defined in the vision. According to the focus topic of this research, the product are mixed-use urban areas. The concept of mixed-use urban areas has been reintroduced in recent times. The shift in planning approaches and the change in the way of thinking, as explained in Ch.3.1.2, has led to the increased endorsement of mixed-use areas (Franzen et al., 2011). Those transformations of urban areas has become a way to revitalise monofunctional areas (Vreeker et al., 2004).

Definition Mixed-use

There is not one definition for mixed-use urban areas. Certainly, it should include at least more than one function. The different functions that can be found in an urban area are, inter alia, living for various user groups, working, public facilities, retail, hotels, catering facilities, healthcare facilities, art & culture. However, functions such as industry that causes noise or odour nuisance, air pollution or are hazardous in any way should not be included in a mixed-use urban area. All different functions are physically connected with technical infrastructure and public space. According to the Urban Land Institute, mixed-use should have a combination of minimum three functions, like retail & entertainment, offices, residential, hotel or culture & recreation (Herndon, 2011). Furthermore, those functions should mutually support each other and create a space that socially functions well with a high density of people.

According to Jacobs (1961), mixed-use requires a minimum of two functions. She defined principles for a good city and specified diversity as one of seven concepts of urban quality (environmental quality, human health, efficiency, equity, diversity, accessibility and learning). Diversity means both the diversity of actors and built and natural landscapes. In order to mutually support each other economically and socially, this diversity must be close-grained. Jacobs set several conditions for diversity. The district must serve more than one primary function and preferably more than two. These functions must ensure a use by people at different times throughout the day and for different purposes. Blocks must be short to reduce the size of the grid and buildings must vary in type, age and condition. A mix of primary functions such as living, working and service, and secondary functions like shops and restaurants, adds to diversity and a balanced demand over the day. These conditions create a dense,

lively, stimulating and secure public area (Jacobs, 1961). Those requirements show that a mixed must exist on different levels. According to Jacob's definitions, two dimensions can be identified wherein functions should be mixed: a space and time dimension.

The model by Rowley (1996) distinguishes a mix within buildings, street blocks, streets and districts. Mixed-use is described as an essential aspect that is characterized in its physical form by urban texture, setting and location. Therefore, this model focuses mainly on a horizontal dimension and recognizes a time dimension.

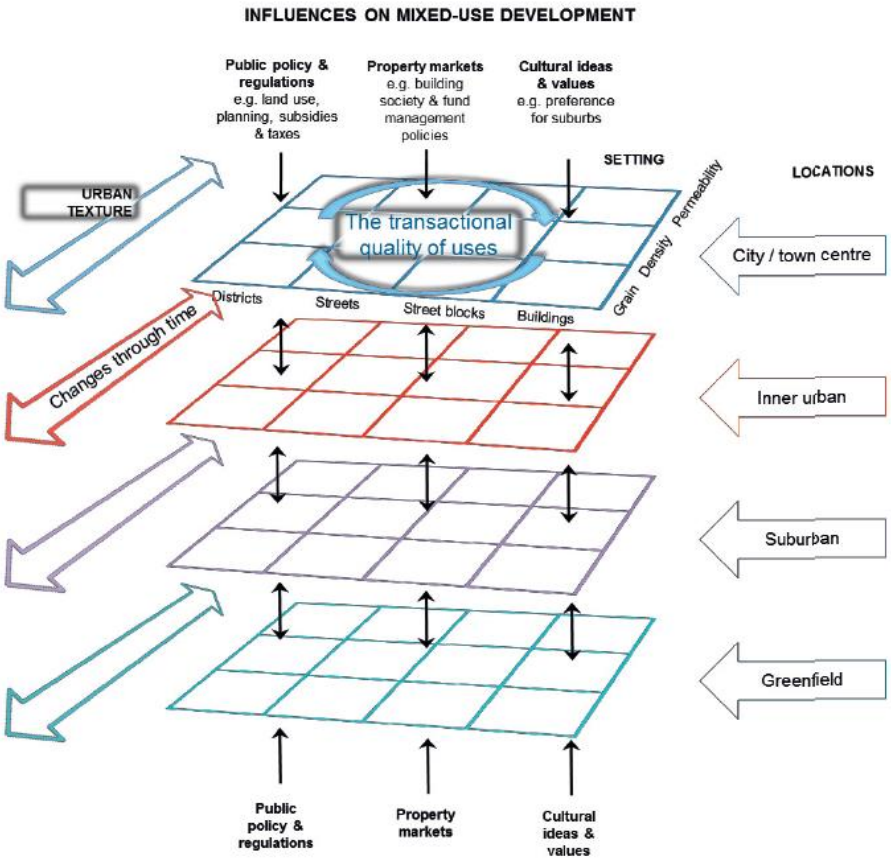


Figure 24 Conceptual model of mixed-use (Rowley, 1996)

Hoppenbrouwer and Louw (2005) include four dimensions in their mixed-use model. This model is organised in a spatial way by function, dimension, scale and urban texture. They argue that functions must be mixed on different layers within the urban fabric to establish a true mixed-use development. These are (1) the shared premise dimension where several functions must exist in one building; (2) the horizontal dimension where a diversity of functions must be within the area; (3) the vertical dimension that extends to the block; and (4) the time dimension that requires a mix of functions throughout the day and the buildings life-cycle.

Table 2 Components of mixed land use according to Hoppenbrouwer and Louw (2005)

	Building	Block	District	City
1. Shared premises dimension	X			
2. Horizontal dimension		X	X	X
3. Vertical dimension	X	X		
4. Time dimension	X	X		

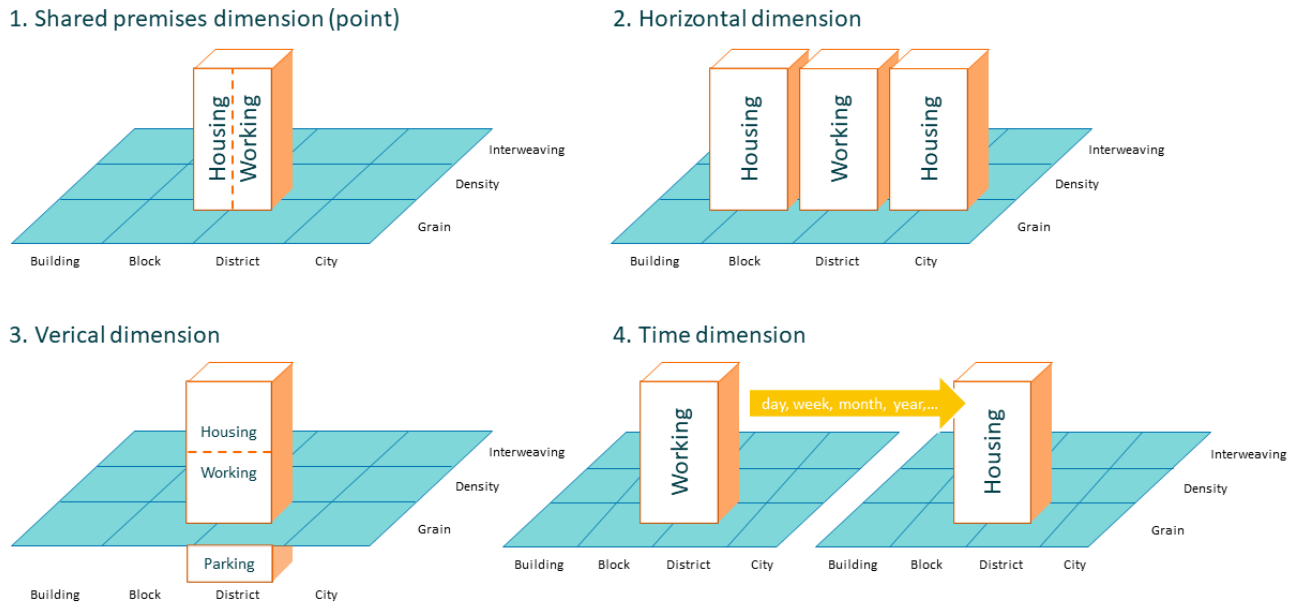


Figure 25 Mixed land use in four dimensions (adopted from Hoppenbrouwer & Louw, 2005)

Both models require a mix on different levels. Rowley's model mainly focuses on a horizontal dimension and acknowledges a time dimension, while the model by Hoppenbrouwer & Louw clearly defines four dimensions. Four different levels are divided, whereof both models include building, (street) block and district, however district is the biggest level in Rowley's model, while it is city in the second model. Furthermore, the last level differs and is street in the former and city in the later. The urban texture shows similar divisions, which are grain and density, but the third level differs in permeability and interweaving. Moreover, both models emphasize the influence of other non-design features. Rowley highlights the influence of public policy & regulations, property markets and cultural ideas & values. Hoppenbrouwer & Louw state that other components are important such as urban experience, location, types of functions, employment, conflict and security (Hoppenbrouwer & Louw, 2005).

Other concepts that contribute to a 'good' urban area additionally to mixed-use should briefly be mentioned. Lynch (1960) defined three integrated components of a city: identity (what makes one object a separate entity), structure (the spatial pattern) and meaning (practical and emotional feeling). According to his research, 'imageable cities' are places that can be experienced and mentally mapped by the sum of their paths, edges, districts, nodes and landmarks. These aspects should be considered by urban planners and professionals when (re)developing an urban area to make a place 'imageable'.

Adams and Tiesdell (2012) define five characteristics of successful places: "places meant for people, well-connected and permeable places, places of mixed-use and varied density, distinctive places, sustainable, resilient and robust places".

Concludingly, a mixed-use urban area can be defined as a combination of at least three interacting and integrated functions that mutually support each other. The primarily functions are living, working and recreation. This mix must occur on different layers, horizontally and vertically within a building or block, horizontally within the area and furthermore throughout different points in time. A coherent plan should be implemented that focuses on pedestrian use and optimization of space usage. Mixed-use should enable the coexistence of a diversity of actors and built & natural landscapes. Furthermore, the urban grid should be close-grained and dense to stipulate interactions. These requirements create a mixed-use urban area.

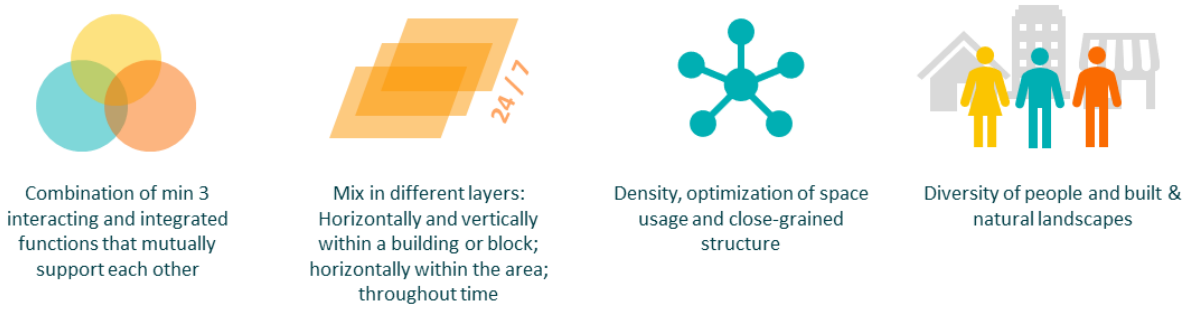


Figure 26 Requirements for mixed-use (own ill.)

Mixed and compact land use theories

Early approaches of mixed land use mainly focused on the combination of housing, offices and retail functions. The focus shifted to the concepts of mixed and compact land use, and the redevelopment and revitalization of cities (Vreeker et al., 2004). Different planning schools promote the reduction of urban sprawl and the improvement of spatial and environmental quality such as New Urbanism, Smart Growth, Growth Management and Multifunctional Land Use (Hall, 1998). Furthermore, emphasize is put on creating a synergy amongst the combined functions. A similar concept to improve sustainability and quality of life is 'compact city' which promotes high density, compactness and a mixed land use. Compact cities should reduce travel distances, protect rural land from urban expansion, support local facilities and increase autonomy of local areas (Widiastuti & Harsritanto, 2017).

Although the objectives of these schools overlap, they mainly differ in the spatial level addressed, the measures taken and their origins (Vreeker et al., 2004). To avoid confusion, the difference between multifunctional and mixed-use should be explained. Mixed-use, or mixed land use, establishes density by combining functions on different levels and within the dimension of time. This means, that the same land can be used by various users at different moments in time (Vreeker et al., 2004). Furthermore, a central element is walkability and uninterrupted pedestrian connection (Herndon, 2011). Both aspects are no integral part of multifunctional or multi-use developments. Therefore, multifunctional land use is a form of mixed-use but not vice versa (Huijsmans, 2018). For this research, the term mixed-use is used due to the importance of the time dimension.

Mixed-use urban areas are considered more liveable, future-proof and sustainable compared to monofunctional urban areas. These attributes increasingly gain importance for nowadays urban developments. Cities in developing countries face significant challenges due to limited resources and the rapid pace of urbanisation brings administrative, technical and financial capacity constraints. These problems must be tackled with a sustainable long-term perspective. Mixed-use urban areas can be a solution to limit urban sprawl and consumption of resources by redeveloping and improving existing urban landscapes. Moreover, the concept of 'urban sustainability' is linked to the concept of mixed-use. Mixed-use contributes to urban sustainability as defined by Wu (2010) through an optimization and minimization of space use, improved urban flows and an increased diversity. Therefore, mixed-use areas contribute to a more sustainable and future-proof urban development that does not jeopardise the needs of future generations.

Characteristics of mixed-use

It is widely accepted that mixed-use areas are more sustainable and environmentally friendly due to an optimized use of space, reduced car traffic, better accessibility by public transport and better walkability (Grant, 2002; Herndon, 2011; Jacobs, 1961; van den Dobbelsteen & de Wilde, 2004). Diversity makes the area future-proof, as it can better react to changing demands and economy. Therefore, mixed-use allows for higher investments in the area and improves competitiveness with other areas (Van den Hoek, 2008). This results in a lower risk of structural vacancy as these locations are less sensitive to economic shocks and cyclical fluctuation (Remøy, 2010). All in all, mixed-use creates areas that are lively, safe, diverse and more attractive for residents, businesses and visitors.

The downsides of mixed-use developments are the inherent technical and organisational complexity of spatial planning (Remøy, 2010). Since mixed-use areas involve a greater variety of different actors, conflicts can occur, and the management of stakeholders becomes more challenging. The high density of people increases the

demand for parking, although the focus of mixed-use should be on walkability and public transport. Furthermore, investors and real estate funds typically focus on one type of real estate only, so either residential or offices etc. Due to the increased administrative costs, mixed-use on a building level is less attractive for investors. These challenges must be managed and the benefits for everyone must exceed the costs. Nonetheless, if the demand for mixed-use locations is high – what is currently the case according to market research – users are willing to pay a premium for mixed-use (Rodenburg & Nijkamp, 2004).

As explained in Ch.3.2.2, several factors such as agglomeration and HBU for land stipulate developments towards monofunctional areas. Thus, it requires a long-term perspective and a coherent plan to achieve an optimal mixed-used area.

3.2.4 Person: Stakeholders & Actors

The process of urban area transformations is highly influenced by a multiplicity of stakeholders who are interested in an area. They all have their own interests, roles, responsibilities and power to influence the process. First, it is useful to explain the difference between actors and stakeholders. Project stakeholders are individuals, groups or institutions with an interest in the project (Boddy & Paton, 2004) or parties who "will incur – or perceive they will incur – a direct benefit or loss as a result of the project" (Winch, 2010). Actors, on the other side, are individuals, groups or institutions who act on the project and represent a role within it. Therefore, all actors are stakeholders but not vice versa.

It is useful to categorize stakeholders and to analyse their power and interest in a project to manage them and anticipate conflicts. Winch (2010) provides an analysis approach of stakeholders: Stakeholders can be categorized in internal or external stakeholders. Internal stakeholders are actors by definition and can further be divided into demand side or supply side. External stakeholders can be divided into public or private.

Internal stakeholders		External stakeholders	
Demand side	*Supply side*	*Private*	*Public*
Client	Architects	Local residents	Regulatory agencies
Financiers	Engineers	Local landowners	Local government
Client's employees	Principal contractors	Environmentalists	National
Client's customers	Trade contractors	Conservationists	Government
Client's tenants	Materials suppliers	Archaeologists	
Client's suppliers		Non-governmental organisations (NGO)	

Figure 27 Categorization of stakeholders with examples (Winch, 2010)

As urban area transformations comprise large areas, a wide range of stakeholders are affected by it. Interests of stakeholders differ and naturally conflicts occur in a way that any project definition is a compromise. This again increases the complexity of managing the transformation process. It is important for the success of the project that the interests of demand side stakeholders are fully understood to be able to satisfy their needs. The main objectives of supply side stakeholders are typically to generate revenues through working on the project, to improve their reputation and to gain knowledge and experience throughout the process. External stakeholders may be in favour of, against or indifferent to the project (Winch, 2010). The influence of external stakeholders increased massively in the last decades. As previously explained, the power shifted towards more influence by civic society. Thanks to the internet and media it became easier to make an opinion heard and to organise citizens' initiatives which can influence the project.

In the following subchapter the most important actors are described in more detail with a focus on their roles and objectives. Very simplified the role distributions are as follows: users demand space; investors, developers, contractors, housing associations and architects supply space; governments, provinces, municipalities and policy makers regulate space.

Public actors

Municipality

The primary responsibility of municipalities is to facilitate legal processes within public law such as maintaining land use plans, environmental zoning and granting building permits. However, they can also make use of private law by adopting an active land policy and thus become both market leader and market player (van 't Verlaat & Wigmans, 2011). In this role they can develop land, establish own development companies or enter collaboration agreements with private parties. Municipalities also own land and buildings themselves. As previously described (Ch.3.1.2), the role of the public sector changed, and a power shift occurred in recent decades towards more market-led developments.

Municipalities consist of various departments that are responsible for instance for spatial planning, municipal real estate, economic affairs, traffic and transport, environmental impact, public works, etc. Depending on the size of the municipality, some professionals are organised in-house and some services are leased from external consultancies. The municipality is furthermore closely connected to fire and emergency services and police authority. The final say in any regard is done by the elected administration: the councillors and the aldermen. Due to the large amount of disciplines within the municipality, it becomes clear that this public body is not per se one closed entity but represents a variety of interests. This increases the complexity of the collaboration with and within the municipality. Additionally, area transformations often not only regard one municipality but also adjacent ones. Areas to be transformed can cross municipal borders and thus require collaboration.

In the Netherlands, elections are held every four years. Since urban area transformations can take decades to be completed, every change of composition of the municipal council creates disturbances. Depending on the political climate, requirements and support for a project can change which is a risk for market parties.

Municipalities often create a structural vision (*Structuurvisie*) for the long-term development of the city. This defines priority areas to be developed and actions to be taken. Typically, a structural vision regards various facets, not only spatial policies, and can have an inspiring character (van 't Verlaat & Wigmans, 2011). In the next step a land-use plan (also called zoning plan) is established in line with this vision. Changes in zoning plans must receive approval by provinces. Once a new zoning plan is operating, building permits can be granted. It is possible to apply for an exception if the planned program does not comply with the zoning plan.

As physical municipal boundaries are limited for new constructions, transformations of existing urban areas become increasingly important for municipalities. Generally, the municipality's interest in transformation projects is the improvement of the image and living quality of an area to increase attractiveness for residents and companies. It is important to keep in mind that the particular role and policy instruments that municipalities adopt depend on the political climate and differ in each individual municipality.

Province

Provincial governments have certain responsibilities regarding urban area developments. They must approve changes in land-use plans made by the municipality. Furthermore, they determine environmental law like rules and environmental plans about nature protection in a provincial ordinance based on environmental law by the central government (Jong, 2018). Provinces in the Netherlands can have different influences on urban area developments. Each province can decide whether to take a more active or passive role and thus every province has a different approach how to deal with obsolete areas (Zijlstra, 2015).

Government

Next to municipalities, the central government also used to have a more active role in the development and strategic management of cities. The main responsibility of the government regarding area developments is the environmental law manifested in the Environmental Management Act which provides a legal framework for environmental management (Government of the Netherlands, n.d.-a). Tools that can be used are for instance environmental plans, environmental quality criteria and impact assessments. Moreover, it is mandatory for European member states to implement European environmental law in national legislations. Environmental law is an important framework for area developments an must be addressed in an early stage (Jong, 2018).

Furthermore, the central government determines the Dutch Building Decree which defines requirements for buildings regarding health, safety, usability, energy efficiency and environment. This ensures that buildings do not

jeopardize peoples' safety or endanger the environment. Building regulations have an exhaustive, limited nature, meaning that municipalities are not allowed to demand higher standards (Jong, 2018).

There are various public instruments that can be used for public governance on area developments (Table 3). They can be categorized as shaping, regulatory, stimulus or capacity building instruments. Public parties can use these tools to shape, constrain or expand the decisions environment of development actors, or enable a more effective operation within the decision environment, respectively (Heurkens, Adams, et al., 2015).

In case of resistance against public plans from private parties, government has several options (Hobma & Jong, 2016). If private owners are not capable or not willing to realise changes of the land-use plan, the government can buy land and buildings in form of a private law amicable agreement. The next option is to establish pre-emption rights under the Municipal PreEmption Rights Act (*Wet voorkeursrecht gemeenten*). This is mostly executed by municipality, however, also provinces and governments can make use of it. Pre-emption right ensures that if the owner of a land wants to sell the property, he must offer it first to the municipality. The last measure is governmental expropriation. This ensures absolute governmental control where the government obtains ownership of the land.

Table 3 Public steering instruments (Heurkens, Adams, et al., 2015)

Instruments	Impact on market	Steering roles	Steering objective	Sub-types	Steering instruments
Shaping	Shape decision environment of development actors by setting broad context for market actions and transactions	Framework (policy-based)	Creating the area potentials, shaping the decision-making environment of the market	Development/investment plans, regulatory plans, indicative plans	Urban policy, regional vision, master plan, covenant
Regulatory	Constrain decision environment of development actors by regulating or controlling market actions and transactions	Framework (legal, planological)	Demarcating area potentials, limiting the decision-making environment of the market	State/third party regulation, contractual regulation	Structural concept, land use plan, environmental permit, regulation
Stimulus	Expand decision environment of development actors by facilitating market actions and transactions	Initiating	Increase area potentials, broaden the decision-making environment of the market	Direct state actions, price adjustment instruments, risk-reducing instruments, capital-raising instruments	Subsidy, premium, tax regulation, financial construction, public space/ infrastructure/ real estate
Capacity building	Enable development actors to operate more effectively within their division environment and so facilitate the operation of other policy instruments	Facilitating	Explore the area's potentials, support the decision-making environment of the market	Market-shaping cultures, mind-set, ideas; market-rich information, market-rooted networks, market-relevant skills	Cooperation forms, process guidance, area manager, municipal office

Private actors

Investors

In most cases commercial real estate and land is owned by investors. Investors are financial institutions, investment companies, banks or private investors who own real estate with the objective to generate revenues from invested capital. Their primary task is to manage pensions or insurance funds and therefore their role is attached to the maintenance and management phase of a real estate life cycle. Investors are typically not concerned with the realisation of real estate. In the rare case that investors initiate a (re-)development, the property is transferred to developers and then sold back after completion (Remøy, 2010). Investors strive for a sound long-term return. Thus, they are interested in real estate with a good liquidity, profitability and cost-effective maintenance (Carmona et al., 2002). Problems for transformations can occur because investment funds are typically specialized on one type of real estate. Consequently, they might not be interested in transforming

their office property into housing. Furthermore, obsolete offices are often owned by foreign investors who can be reluctant to transformations due to the high book value of their real estate (Heurkens, Daamen, et al., 2015).

Owner-occupiers

Commercial real estate can also be owned by companies who use the property themselves for conducting business. However, the number of commercial owner-occupiers is declining as the addition of real estate to the portfolio statistically causes a reduced realized returns (Brounen & Eichholtz, 2003). If real estate ownership is not the core business of a company, they often use sale and lease-back contracts. This means that the property is sold and to another party and then leased by the former owner-occupier. This generates quick cash flows and increases flexibility. The main motivation of owner-occupiers are a good value for money, security, fitness for use of the building and correct image (Carmona et al., 2002).

Developers

Developers play a significant role in area transformations. They develop mostly, but not exclusively, buildings within the context of the current market. Due to their expertise in the market, they are skilled to estimate the current value of the market and detect hotspots. Often developers initiate projects and are involved until completion after which they sell the building to investors. Developers usually aim for high profit on the short-term. The types of developers range from combinations with investors and builders to banks and sometimes architects (van 't Verlaat & Wigmans, 2011). Developers operate on their own risks and expenses. Furthermore, cooperation with investors are common to realize and finance projects and reduce market risks. The process for developers typically starts with calculating the residual value of the existing building or land which is based on the estimated benefits and costs of the project, using discounted cash flow models. This way of calculating the value can be an obstacle because residual value differs from market value, which is normally used by owners or investors.

Design professionals

Urban designers and architects usually operate by order of public or private parties. Moreover, they can also act as developers, owners/investors and initiators of a project. Their role is to design an area or a building according to a contractually defined brief from their clients. The challenge is to creatively transform the defined requirements into a spatial design. In most cases, urban designers and architects work closely together with developers or public clients to define the program of requirements. Their work has a long-lasting impact on the overall project. Design professionals can be involved in all phases of the process but their most active time is during planning. Besides of earning money, designers pursue reputation and wish to leave an impression.

Contractors

Contractors are building companies and are responsible for the actual construction of buildings, infrastructure and public space. Additionally, various sub-contracting parties and consultants are also part of this group. They operate by order of public or private parties and are active during the realization phase. Moreover, they can also be passively involved during the planning phase in advising roles or during the maintenance phase in case of bigger repair works. Their liabilities are limited to the execution on the construction site.

Housing associations

Especially in the Netherlands housing corporations play an important role for facilitating social housing. Housing associations are organisation that provide affordable housing for low-income groups, elderly, disabled and status-holders. Around 34% of the total housing stock and 75% of all rented houses in the Netherlands are owned by housing associations (Government of the Netherlands, n.d.-b; Remøy, 2010). Their responsibilities changed in recent years, due to the shift from government directed towards market-oriented housing development (van 't Verlaat & Wigmans, 2011). According to the new Housing Act 2015, housing associations must clearly separate social activities and commercial activities. Thus, the commercial entity operates in free market conditions and housing associations have become private parties. They can play a very active role in transformation processes.

Users

Various types of groups use urban areas. Residents occupy houses for living and employees use offices, shops or industry for working. They can either rent real estate or own it themselves (see Owner-occupiers). All user groups are of utmost importance for a transformation project. They determine local preferences and quality as well as

quantity of demand. The interests of both current and future occupiers must be taken in account to assure that the area will be embraced and not abandoned. In addition, visitors come to an area for shopping, leisure or only for transit to another destination. As consumers they contribute to the local economy.

Citizens and Interest Groups

This group comprises different types of stakeholders. These can be local communities or representatives, organised civic societies, voluntary interest groups or environmental organisations (van 't Verlaat & Wigmans, 2011). The interests of these groups can differ significantly, and they tend to have a reluctant attitude towards change. In many cases current occupiers are opposed to changes and fear about their future. As they have the power to cause long delays of the transformation, it is important to take their objectives into account, anticipate their actions and maintain good communication.

Pioneers

The first occupants of areas to be transformed are often creative communities, start-ups, scale-ups, small shops, restaurants and cafés. These groups are attracted by cheap and flexible rents and make use of abandoned spaces. Pioneers are also called place-makers as they significantly contribute to creating an image of the area and raising awareness. They can also form communities or establish networks to become a stronger voice and in this case exert great influence on the overall development. Typically, pioneers are interested in maintaining the original character of an area and oppose too much commercialisation.

The following table provides an overview of all introduced stakeholders. This is based on the research by Carmona et al. (2002) about motivations and views regarding urban design and development and the book by Franzen et al. (2011).

Table 4 Stakeholders in urban area transformations

Stakeholder	Role	Objective	Concern for better urban design
Public parties			
Municipality	Facilitate legal framework and processes (zoning plan, building permit)	Protect local amenities, deliver planning gain, meet planning policies, respect broad public interest, low environmental impact	Highly concerned but frequently unable to articulate requirements or concerned to the extent that wider economic and social goals are not compromised
Province	Facilitate legal framework (e.g. environmental law); role differs in every province	Protect provincial amenities, meet planning policies, respects broad public interest, low environmental impact	Concerned if better urban design adds to provincial image, adds social and economic benefits; differs in every province
Government	Facilitate legal framework (e.g. environmental law and building decree)	Protect national amenities, meet planning policies, respect broad public interest, low environmental impact	Concerned if better urban design adds to national image, adds social and economic benefits
Private parties			
Investors	Long-term investment in real estate	Good liquidity, easy / cost effective to maintain, profitable over the long term	If a market exists and therefore if design adds to profits and reduces running costs over time
Owner-occupier	Long-term investment in real estate and end-user	value for money, flexible, secure, functional, correct image	insofar as better urban design creates a more efficient work environment and is affordable
Developers	Development of real estate and short-term investment	buildable, marketable, profitable, quickly delivered, profitable	If better urban design adds to either marketability or profitability
Design professionals	Design of urban area or real estate	meets brief, satisfies client, individually designed, innovative, reputation	depends on training, but too often concerned for building design at the expense of urban design
Contractors	Construct real estate, infrastructure and public space	meets brief, satisfies client, profit, reputation	If better urban design adds to profitability
Housing associations	Provide social housing	Affordable housing and Long-term investment	Concerned with a long-term interest, if design adds to society and profits, and reduces running costs over time

Users	Occupy and use real estate, facilities and public space	High spatial quality, security, functionality, comfort, accessibility, facilities	Concerned if better urban design adds to image of the location and accessibility
Citizens and interest groups			
Pioneers	First occupiers of the area and place-makers	Protection of authenticity of the area, cheap and flexible lease, creative and innovative atmosphere	Highly concerned if better urban design improves living quality and adds social benefits
Amenity groups		Contextually compatible in design and uses	Highly concerned, but often broadly conservative in outlook
Local communities		Reflecting local preferences and protecting property values	Highly concerned but would often prefer no development at all

Organisational forms and management theories

In the traditional approach of area developments, municipalities had an active and leading role while private parties facilitated developments by managing and delivering individual projects within the urban area. The change of roles throughout the last decades not only caused a shift in power but also requires new collaborative arrangements. The traditional, hierarchical, top-down approach is not applicable anymore.

The trend towards an organic approach implies a shift from direct government control towards **governance**. Direct governmental control via hierarchical bureaucracies decreased while indirect control via diverse non-governmental organisations increased. Governance is a form of organized collective action with an indirect control by multiple stakeholders towards a specific goal and is based on network management (Heurkens & Hobma, 2014). Therefore, it is facilitated by negotiations instead of administration. It is a much looser process of multi-stakeholder involvement with interest solutions that compromise rather than exclude each other (Stewart, 2003). Actors depend on each other as they all obtain exclusive knowledge, information and means. Crucial for the success of governance is the comprehensive effort of managing networks that consist of various actors including public and private actors (Heurkens & Hobma, 2014). Therefore, public-private cooperation based on partnerships can facilitate governance (Klijn & Teisman, 2003). In this regard, governance is nowadays in many cases better suited for complex urban area developments than government.

In spite of the benefits of governance, the flat hierarchy, openness and multitude of actors increase complexity of the process through scale uncertainty, strategic uncertainty, institutional uncertainty, evaluative uncertainty and cognitive uncertainty (Koppenjan & Klijn, 2004). This asks for competencies of **process management** and the traditional project management approach on its own is not sufficient anymore (Bueren et al., 2016). "Process management in terms of urban area development refers to managing activities at the scale of a district or neighbourhood within the range of a single project having its own defined objectives." (Franzen et al., 2011). It provides a framework and has the important task of establishing an effective decision-making environment. Nonetheless, project management is still a crucial element to realise individual projects and should thus be part of process management. The following table summarizes the elements of organisation management, project management and process management.

Table 5 Elements of organisation management, project management and process management (Franzen et al., 2011)

	Organisation management	Project management	Process management
Definition of the problem / solution	Clear	Clear	Indicative
Result	Certainty on achievements and costs	Less certainty on achievements and costs	Uncertainty on achievements and costs
Time path	Continual	Clear end	Open-ended
Production	Within line	In temporary organisation	In inter-organisational arenas
Management	Homogeneous in culture and interaction	Heterogeneous in culture and interaction	Heterogeneous, ambiguous and dynamic in culture and interactions

Another school which is based on organisation theory is new public management (NPM). According to this theory, governments should primarily formulate policies and clear objectives while private actors should be responsible for the implementation. Autonomous organizations should create a distance to politics and therefore reduce its

influences. Civil society should be seen as customers and therefore be placed in the centre of all endeavours. The main objectives are an improved efficiency, professionalized management and closeness of services to society (Heurkens & Hobma, 2014). The following table provides a comparison between NPM and governance.

Table 6 Conceptual characteristics of New Public Management and Governance (Heurkens & Hobma, 2014)

Characteristics	New Public Management	Governance
Conceptual origins	Organisation theory	Management theory
Public-private relations	Hierarchical, role division	Horizontal, role interdependency
Public-private roles	Performance-oriented tasks	Interaction-oriented tasks
Public-private collaboration	Contracts, client-contractor	Partnerships, actor networks
Public-private management	Individual activities	Collective activities
Urban development	Project-oriented	Process-oriented

Although these organizational and managerial theories seem to be mutually exclusive, this is not the case. Despite their differences, there can be valuable planning practice elements from traditional government, project-oriented new public management and network-based, process-oriented governance. Similar to process management and project management, which are both necessary in UAD, a combination of organizational and managerial roles can lead to a more successful process (Heurkens & Hobma, 2014). It is therefore useful to carefully evaluate the benefits of each approach and dare to take different perspectives. In the end, formal contractual agreements between public and private actors are necessary, however, informal collaborations can play a decisive role for a successful outcome.

Forms of cooperation

The previously introduced theories also shape the forms of cooperation between actors in urban area transformations. Depending on land positions, land can be operated in form of private exploitation, public exploitation or public-private cooperation (Huijsmans, 2018). Factors that determine the collaboration structure are inter alia land positions, financial means and decisions about risk distribution (Maat, 2013). Formal collaboration is a way to combine capital, share risks, join specialized expertise and to gain a stronger position.

Private exploitation

Urban developments can be executed as private sector-led. This can be further categorized as developer-led, investor-led, community-led or corporation-led, with the first two being most common (Heurkens & Hobma, 2014). According to their traditional roles, developer-led projects are characterized by a short-term perspective. This approach is becoming increasingly popular in Dutch developments (Huijsmans, 2018). Investor-led projects have a focus on the long term and thus the interest in good design and quality is naturally high. This requires involvement in early stages of the project. A private party can get involved in an area development and receive a land position by acquiring land, by collaborating with other private or public parties, or by attending a tender procedure. This brings responsibilities for developing land and real estate and operating real estate, including holding all inherent risks. Private-private partnerships are collaborations of two or more private parties.

Public exploitation

Public exploitation is typically performed when the government or municipality wishes to achieve specific goals though intervening in the market. The form of intervention depends on the type of land policy the public authority adapts. By using an active land policy, the municipality acts as a market player and obtains decision-making power through private-law instruments. The first step is to acquire land ownership. In most cases, the municipality prepares the land and concludingly transfers it to private parties for real estate development, attached to certain conditions. This is a way to steer more directly on developments compared to land-use plans. By using a passive land policy, the municipality limits itself to public-law instruments (see Table 3) and takes a supervisory, regulatory role. The public body provides the framework for private-sector developments which ensures that all risks lie with market parties. The municipality remains responsible for management of land and public spaces. Some Dutch municipalities such as Amsterdam, Den Haag and Utrecht use a system of urban land leasehold (Huijsmans, 2018).

This means that land is owned by the municipality and rented to private parties while the real estate properties are privately owned.

Public-private cooperation

Collaboration can also be formed between private and public parties in form of a so-called public-private partnership (PPP). "A PPP is an institutionalised form of cooperation of public and private actors who, on the basis of their own indigenous objectives, work together towards a joint target, in which both parties accept investment risks on the basis of a predefined distribution of revenues and costs." (Nijkamp et al., 2002). Thus, a PPP requires mutually coordinated agreements and objectives within an institutional framework between the involved public and private parties. There is not one type of PPP but rather a spectrum of different forms. Those variations differ in the degree of power obtained by either public or private parties (Bennett et al., 2000; Heurkens, 2012). This means that every situation needs a tailor-made approach as roles and interests of involved actors differ in each case (Franzen et al., 2011).

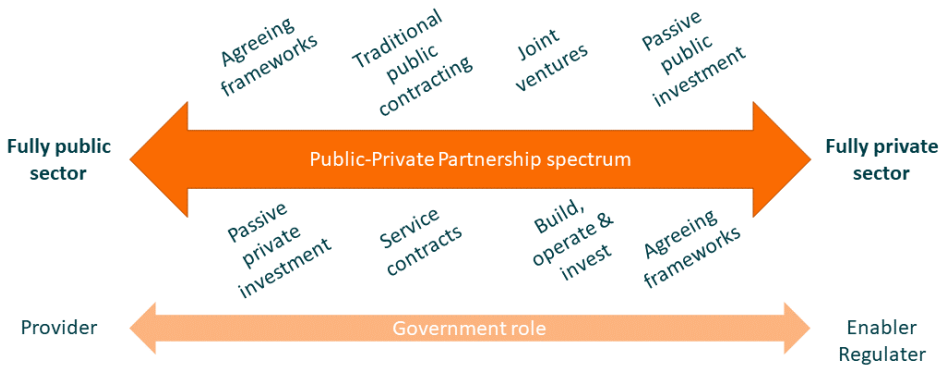


Figure 28 Public-private partnership spectrum (adopted from Heurkens, 2012)

Reasons to form a PPP can be manifold and are based on mutual added value (Klijn & Teisman, 2003):

- Governance theory:
  - ➔ Efficiency (business thinking)
  - ➔ Effectiveness (policy implementation through projects)
  - ➔ Innovation (finance/market knowledge)
- New public management theory:
  - ➔ Flexibility (react to changing economic/political circumstances)

In case of a PPP in form of a joint venture, an own company is established by both public and private parties, also called land management company. A joint venture acquires land, develops buildings and public space. After completion public space is transferred to municipalities and buildings to private parties for maintenance. This is a way for municipalities to obtain private-law instruments and actively ensure the implementation of municipal ambitions. Private parties benefit from having a bigger influence on zoning plan changes and building permit procedures. Both sides can use joint ventures to share risks and financial means. Moreover, it is recognized for its efficient and effective decision making. Despite the benefits, experiences show that problems can occur like a clash of interests between parties, incompatibility of value systems, bias or distrust and inability to cope with dynamics in politics or markets (Heurkens, 2012).

3.3 RISKS

The high complexity, the huge scale and the interconnection between individual developments increase the impact that risks can have for urban area developments. For instance, if developments are executed consecutively, a delay in the first project directly affects the start of the second project. As unpredictable events can impact on time, cost and quality, a thorough risk management is necessary. To put it like this: "If the project is the process of reduction of uncertainty through time, then, in a profound sense, managing risk and uncertainty is at the heart of the management of projects" (Winch, 2010).

3.3.1 Definition risk and uncertainty

Risk in the real estate sector is no clearly defined term. It is generally recognized that there is a link between risks and uncertainty. Typically risks have a negative connotation and are associated with higher costs, delays and failure to satisfy quality requirements (Smith et al., 2014). Table 7 shows an overview of different definitions of risk and uncertainty from literature. For this paper, based on the presented literature research, risk is defined as a situation that can cause a threat or opportunity in consequence of uncertainty. This emphasizes that, despite general conception, risks can cause negative but also positive impacts with the first being addressed as 'risk or thread' and the second as 'opportunity' (Akintoye & MacLeod, 1997; MacCrimmon & Wehrung, 1986; March & Shapira, 1987).

To further clarify terminology in the field of risk management the definitions from the International Organization for Standardization ISO31000 are consulted. A 'risk source' is an element that has "the intrinsic potential to give rise to risk". The 'risk event' is "the occurrence or change of a particular set of circumstances"; and the 'risk consequence' is the "outcome of an event affecting objectives" (ISO, 2009). In other words, a risk source is a condition that could generate a risk event which will then cause a risk consequence. A risk (source) response is the activity to cope with the risk. The following figure shows how risk source, risk event and risk response relate through time.

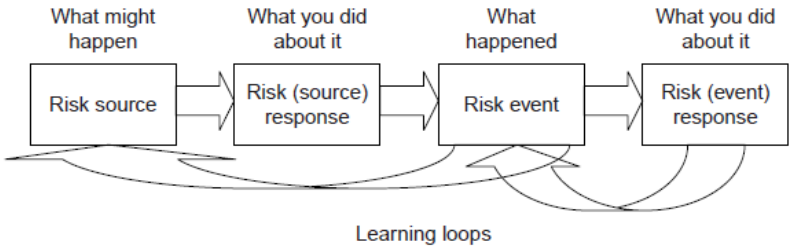
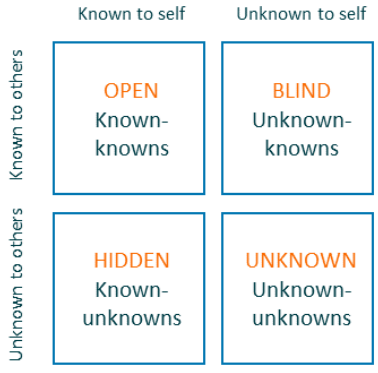


Figure 29 Understanding risk through time (Winch, 2010)

Uncertainty can be defined as the lack of information or knowledge without awareness of it. Uncertainty about the outcome exists in any risk situation, whilst the difference between risk and uncertainty is measurability (Webb, 2017). The relation of risks and uncertainties becomes clear when placing them in the so-called Johari window (Luft & Ingham, 1961).



This matrix consists of four cells based on which information is known to yourself or to others. Known-knowns are risks per definition, the risk source is identified and a probability for the risk event can be assigned, so they can be measured. The other three categories are the cognitive condition of uncertainty. Known-unknowns are uncertainties where risk sources are identified but no probability can be assigned, so the risk cannot be measured. Unknown-knowns are uncertainties where the risk source is known by somebody and probability can be assigned, but the information is hidden and kept privately. Unknown-unknowns, also called 'black swans', is the condition when the risk source is not identified by any party and the risk event cannot be known (Winch, 2010).

Figure 30 Johari window (own ill. based on Winch, 2010)

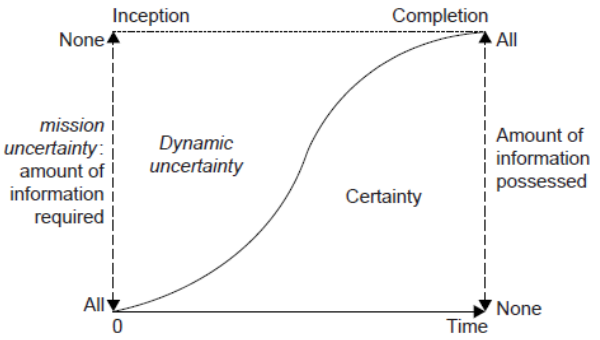


Figure 31 The project process as the dynamic reduction of uncertainty through time (Winch, 2010)

Throughout the process of a project a dynamic reduction of uncertainty happens (Winch, 2010). This means that the closer the project comes to completion, the more information about it is possessed and the more certainty is gained (Figure 31). Uncertainty poses a challenge as information is required to make certain decisions during the process, while this information might not be available yet. Uncertainty is linked to internal complexity of a project which depends on the number and nature of project elements and interactions between them (Cleden, 2017). By reducing uncertainty, better management decisions can be made and the chances for project success increase (Cleden, 2017).

Table 7 Definitions risk and uncertainty

Author	Risk definition	Uncertainty definition
Winch (2010)	A stage where there is a lack of information, but by looking at past experience, it is easier to predict the future. Events where the outcome is known and expected.	Uncertainty is a part of the information required in order to take a decision. The required information consists of the amount of available information and uncertainty. The level of uncertainty will decrease the further a project is proceeding throughout the lifecycle.
Cleden (2017)	Risk is the statement of what may arise from that lack of knowledge. Risks are gaps in knowledge which we think constitute a threat to the project.	Uncertainty is the intangible measure of what we don't know. Uncertainty is what is left behind when all the risks have been identified. Uncertainty is gaps in our knowledge we may not even be aware of.
(Webb, 2017)	Risk is a situation in which some objectives information is possessed about what the outcome might be. Risk exposure can be valued either positively or negatively.	A state of incomplete knowledge about some proposition
Cooper (2005)	Risk is exposure to the consequences of uncertainty.	-
ISO (2009)	effect of uncertainty on objectives	-
Tan and Makwasha (2010)	possibility of loss or gain as a result of uncertainty	a range of values for a certain quantity where probabilities are unknown
Kaplan and Garrick (1981)	a set of scenarios, each of which has a probability and consequence	risk= uncertainty + damage
Van Asselt (2000)	risk is a kind of attribute ascribed to the unknown future: the real dangers and hazards are only known afterwards	-
Gehner (2008)	A risk is the probable negative impact on the expected value of a real estate development project caused by uncertainty about an event or events that might occur and/or the reduced ability to influence the events, after an actor has irrevocably allocated his scarce resources to that project.	-

3.3.2 Risk management

A way to deal with risks is risk management. It is the sum of coordinated activities to direct and control risks (ISO, 2009). The purpose of risk management (RM) is the identification and evaluation of risks and the coordinated application of resources to minimize their impact or probability. Furthermore, it is not only used to prevent risks but also to optimize opportunities. Risk management is a continuous process that should be performed throughout the whole project as part of the decision-making cycle (Winch, 2010). Risk management consists of several parts.

According to the standard ISO 31000, these three parts are principles, framework and process. The first part is the establishment of principles to make risk management effective (ISO, 2009). These are rules which an organisation must comply to at any time and at all organisational levels when using risk management. Secondly, the framework of RM is defined which provides the necessary foundation and organisational arrangements. This defines *how* RM is performed within an organisation through time. The third part is the actual risk management process, where most research and practice is focused on, which includes several tasks. The standard ISO 31000 recommends the following tasks: (1) establishing the context, (2) risk assessment which includes identification, analysis and evaluation, and (3) risk treatment. Monitoring and review close the cycle of risk management in a repetitive manner. Furthermore, communication & consultation should be an integral part of the process. Generally, in literature four basic steps of the RM process are usually defined: (1) identification, (2) assessment, (3) risk response and (4) monitoring (Cooper, 2005; Gajewska & Ropel, 2011; PMI, 2000). It is generally accepted that risk monitoring and review are a crucial part. Due to the uniqueness of the specific context of each project, the task 'establishing the context' is considered important for risk management. Thus, the following four steps are explained in more detail: establishing the context, risk assessment, risk response and risk review.

First, the context of the whole project must be established to plan the risk management approach. This includes the external and internal parameters which must be taken into account (ISO, 2009). The external context is determined by the cultural, social, political, legal, regulatory, financial, technological, economic, natural and competitive environment. Key drivers and trends, as well as stakeholders and their objectives influence the context. The internal context regards organisational aspects such as roles, policies, information systems, and relations. Furthermore, the scope of risk management should be defined, as well as an agenda of risk management activities and available resources.

The second step is the risk assessment which includes identification, analysis and evaluation of risks and risk sources. Although it is impossible to identify all potential risks, the list should be as complete as possible. Consecutively, these risks are analysed regarding their consequences, impact and expected likelihood of occurring. This can be done in a qualitative manner with a risk probability and impact assessment, for instance in the form of a matrix or a risk register. Moreover, a quantitative analysis can be applied for a numerical evaluation where tools can be used like Monte Carlo simulations, event tree or decision tree analyses, and scenario simulations (Gajewska & Ropel, 2011). In a simplified way, risk is defined as the function of probability times impact (Gehner, 2008). All risks can then be evaluated whether they are manageable or non-manageable. Manageable risks are risks that actors feel comfortable bearing, based on their level of impact and probability. This means that either the probability and impact are relatively small, or that the probability and/or impact can be significantly reduced through known actions by the concerned actor.

The following step is risk response planning that identifies ways to reduce risks and to prioritize reduction measures. Four strategies can be applied: (1) avoidance by withdrawing from the project, (2) reduction by optimizing or mitigating risk sources, (3) sharing by outsourcing risks or insuring for it, or (4) retention by accepting the risk and adjusting the budget and schedule accordingly (Potts & Ankrah, 2008).

Finally, risk review is the continuous monitoring and review of risks. All risks must be controlled through time and continuously re-assessed. A risk register can be used as a tool for risk review where all previously analysed aspects are included. These steps should be performed repetitively throughout the process.

The following figure gives an overview of all steps of the risk management process and typical methods used in each step. This is an own illustration based on the model by Gajewska and Ropel (2011), Gehner (2008) and the RM process by ISO (2009).

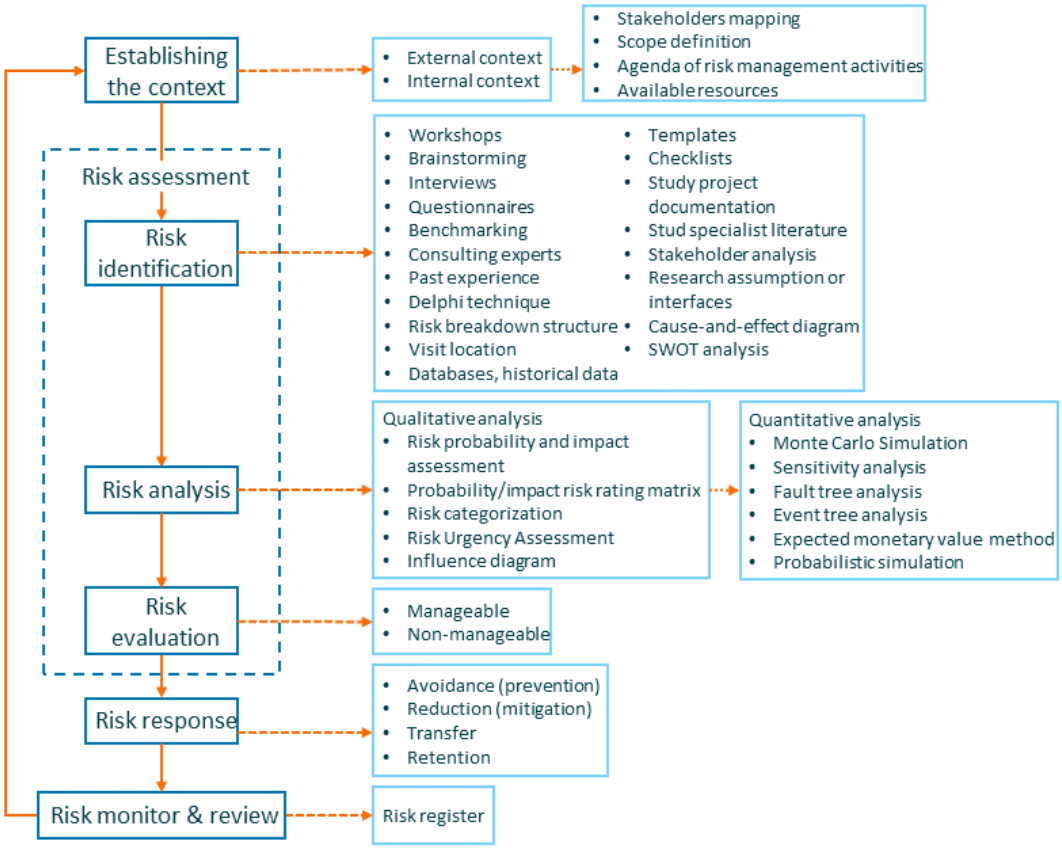


Figure 32 Risk management steps and methods (own ill.)

Despite its generally accepted benefits, risk management can be an intricate process. Identifying risks can never be complete due to the uncertain nature of risks. Real estate and area developments are non-frequent processes in which risks are taken in a dynamic decision making context which means that results can be influenced during the process (Gehner, 2008). Therefore, risks also occur in a non-frequent manner which makes their assessment a difficult task since statistical information about the occurrence and impact is often not available. Furthermore, estimating the impact of a risk event can be challenging, particularly regarding intangible assets. Thus, experts must rely on subjective estimates. Moreover, quantitative risk analysis should only be performed if complete input data is available, otherwise the outcome is insignificant according to the principle of 'garbage in, garbage out'. According to Gehner (2008), quantitative risk analysis is significantly less used in practise than qualitative.

3.3.3 Categorization of risks

Throughout the risk management process, it is useful to categorize risks in order to receive a better overview. Various risk categories can be found in literature: technical, financial, legal, political, physical, social, organisational, functional, environmental, executional, logistic and design are only some examples (Gehner, 2008; Love et al., 2002; Remøy, 2010). For this research the following categories are chosen:

- **Planning risk**: risks related to planning aspects such as design, ambitions, vison, program, etc.
- **Financial risk:** risks that directly relate to the return on invested capital
- **Economic risk** (macro): risks related to general economy and economic changes
- **Market risk** (meso): risks related to local markets

- **Area risk** (micro): risks that are directly related to developments of or within the overall area
- **Legal risk:** risks that cause legal consequences such as lawsuits
- **Political risk**: risks related to local, provincial or national politics and political changes
- **Organisational risk:** risks related to human factors, inter- and intra-organisational structures
- **Executional risk**: risks related to executional or technical aspects during construction
- **Environmental risk**: risks related to environmental influences like soil, air, weather, flora and faun

Another form of categorization is the direction of risks towards actors who are called risk owners. These are actors who possess "the accountability and authority to manage a risk" (ISO, 2009). Risk owners should take an active role in the risk management process and it is their responsibility to deal with risks. If actors face a manageable risk, they can become risk owner by accepting it. The risk response is thus retention or reduction by taking mitigating or preventative actions. If the risk is non-manageable for an actor, the risk should be contractually transferred to other actors who can better manage it and thus make them risk owner. This is the risk response form of transfer. If no actor has the capability of managing a risk, it is best to avoid it entirely and step out of the project if necessary. A stakeholder risk allocation matrix can be used to direct risks to be optimally managed, as exemplarily shown in Figure 33 (Irimia-Diéguez et al., 2014).

Stakeholders / Type of risk	Public sector	Management company	Construction company	Shareholders	Financial institution	Consultants
Design	✓	✓		✓		✓
Legal/political	✓	✓		✓		✓
Contractual	✓	✓		✓		
Construction			✓			
Operation		✓	✓			
Labour		✓	✓			
Clients/users/society	✓	✓				
Financial/economic		✓		✓	✓	✓
Force Majeure	✓	✓	✓			

Figure 33 Transfer of risks to stakeholders (Irimia-Diéguez et al., 2014)

3.3.4 Diversification of risks

Although it is impossible to eliminate all risks in a project, there are certain ways to reduce risks. As previously explained, risk management is one method to minimize negative impacts and the probability of risks. In addition, diversification is a way to spread and balance out risks.

In the field of finance and investments, risk refers to the possibility that the actual return of an investment differs from the expected return. There are two types of risks: Systematic and unsystematic risks. These vary in the possibility to be diversified. Systematic risks are also called market risks, undiversifiable risk and volatility and are those risks that are inherent to an entire market (Investopedia, 2018b). These cannot be avoided completely and are unpredictable. Examples are economic recessions, socio-political changes, inflation, interest rate changes or war. In contrast, unsystematic risks – also called non-systematic risk, specific risk, diversifiable risk and residual risk – only affect specific assets. This allows to mitigate these risks through diversification. To achieve that, an investment portfolio should contain a variety of different types of investments that belong to different sectors, industries and regions, that vary in the type and degree of risks, have different market capitalizations and vary in the length of holding. Diversification does not guarantee against loss; however, it mitigates the overall risk of a portfolio, balances out loss and helps to achieve financial long-term gains.

An efficient portfolio consists of a combination of assets that ensures the best expected return on investment at a given level of risks; or the other way around, the lowest possible risk at a given expected return. Investors who are faced with high risks require high returns, while low risks are associated with low returns. The risk-return-tradeoff represents the balance between the wish to achieve the highest possible return with the lowest possible risk. As shown in Figure 34, the efficient frontier identifies those portfolios that offer the highest expected return for a specific level of risk – which is defined as standard deviation (Hodnett & Hsieh, 2012). Thus, to achieve an optimisation of risk-return-tradeoff, a portfolio should be created that lies on the efficient frontier line.

The level of risk that a company is willing to accept is determined by their risk profile. This consists firstly of the risk appetite which is "the amount and type of risk that an organisation is willing to take in order to meet their strategic objectives" (Institute of Risk Management, 2019). Secondly, the risk tolerance determines the type and degree of risks a company can take on with their given means.

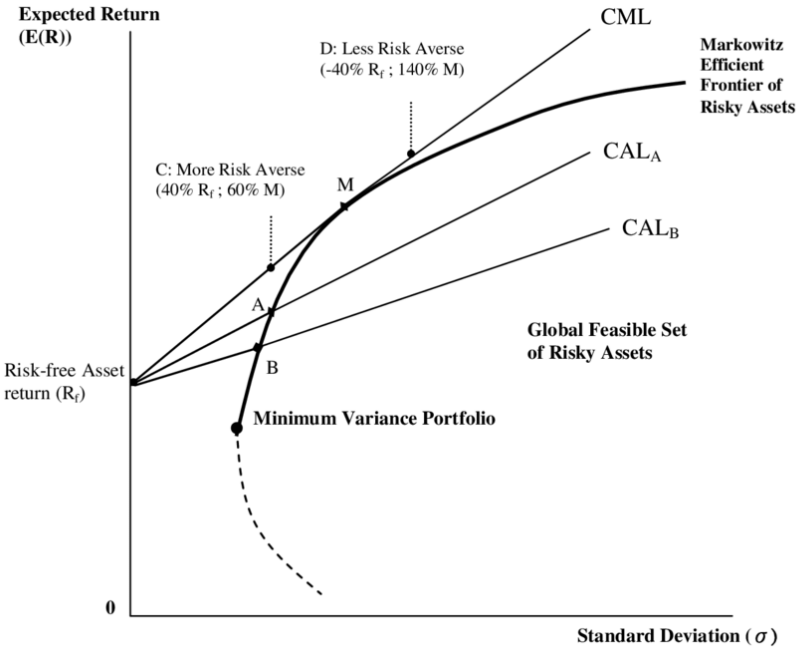


Figure 34 Efficient frontier (Hodnett & Hsieh, 2012)

3.4 SUCCESS FACTORS

The central purpose of the previously explained risk management is to achieve a successful outcome. Naturally every actor who invested time, money or other means in a project strives for success. First of all, it must be defined what exactly that means in order to be able to achieve it. As success is an ambiguous concept and has different definitions for different actors, there is not one explanation.

3.4.1 Definition success

Generally, success is associated with the iron triangle, also called project management triangle or triple constraint (Gentile et al., 2016; McGhee & McAliney, 2007; Newell & Grashina, 2003). Thus meaning, a successful project is delivered according to schedule, within the budget, at a reasonable quality and within the defined scope. Success for urban area transformations in a broader sense could also be measured with the concept of highest and best use (HBU) for land. This concept strives for maximum productivity and aims to identify that specific function for land or a building that has the highest value of its usage (Munizzo & Musial, 2010). Therefore, an urban area transformation could be labelled successful if HBU is achieved for every plot and building. This statement should be taken with caution, as this could lead to the creation of monofunctional areas if the HBU requires the same function for every plot. This can be prevented by considering the long-term perspective, where success is not achieved in case of monofunctional areas since this again reduces the value for use, and HBU is no longer fulfilled.

It is advisable to define success in the beginning of a project and to communicate objective of all parties. Although no objective criteria exist that can measure or ensure success, several questions help to specify the concept for each individual project (Hobma, 2011):

- *Successful process or successful product?*
  Although the outcome fulfils the goals, the process might not have been smooth; or the other way around, despite a successful process, the outcome might not be satisfying.
- *Success for shareholders or stakeholders?*
  Each actor perceives success differently.
- *Which criteria for success do we wish to adopt?*
  Different criteria can be used to measure success, like financial, environmental, cultural or simply 'change' of the original state.
- *When do we measure success?*
  An unsuccessful project can sometimes turn into a success in retrospect.
- *Are we successful when we have achieved our goals?*
  Every actor has different goals which can be official or unofficial and furthermore can change throughout the process.

Success can be promoted through certain factors. However, a clear distinction must be made between criteria of success and success factors; the former being criteria to measure success and the latter being criteria that promote success. Success factors increase the possibility of success however do not guarantee it and are thus probabilistic rather than deterministic (Hobma, 2011). On the opposite site of the spectrum are failure factors which promote failure. According to Hobma, the same variable can be a success factor or a failure factor, depending on which side of the range it lies. For instance, the factor 'communication' can be good or bad, and thus be a success factor or failure factor.

3.4.2 Levels of success factors

One method of analytical classifications of success factors is the distinction in three levels. The levels differ in the ability of certain stakeholders to actively steer on them. The following table gives an overview of those three groups with examples from practice (Hobma, 2011). The first group are exogenous, background factors and are linked to the context of the project. The second group are necessary conditions that must be fulfilled to possibly achieve success but are not enough on their own. Failure to consider these factors can directly lead to an unsuccessful project. Finally, critical success factors are more abstract and challenging to be grasped, yet relevant for the chance of success. It should be noticed that the levels of factors interact with each other and boundaries are blurry, particularly between veto criteria and critical success factors. It is crucial to be aware of all those levels of success factors and to create strategies to direct them or to increase the possibility of achieving them.

Table 8 Examples for success factor levels (based on Hobma, 2011)

Level of success factors	Ability to be directed	Examples
Context variables	cannot be directed	economic climate, political climate, cultural background, demographics, changes in legislation and regulations
Veto Criteria	can be directed	timely land acquisition, analysis of economic feasibility, sound scope assessment, unambiguous marketing, independent sub projects, sound financial engineering, correct risk identification and allocation, clear strategy for dealing with soil pollution, early inclusion of market players, well defined go/no-go moments, actor analysis, early involvement of interest groups, coherence between various public authorities, clear defined public interests, clear distinction and definition of various public roles, sound contracts and agreements, flexible contracts between public and private parties, setting up a municipal project team
Critical success factors	difficult to direct	involving actors and co-creation, trust and openness between parties, leadership, change of image of the area, reduction of complexity, proactive policy makers, good and 'modern' designers

3.5 SUMMARY

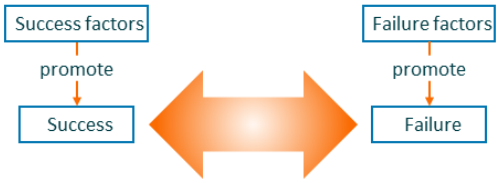
This chapter demonstrated why urban area transformations are highly complex processes and why this make management of risks and success factors important. The theoretical framework established and described all important concepts and their relations to operationalize them for this research.

The problem of obsolete areas can be solved through a structural, area-oriented transformation approach. Urban area transformation is a deliberate development with a long-term perspective to strategically improve the economic, physical, social or environmental conditions. It is often driven by social urgency and/or potential and can be initiated and steered on by public or private parties. Urban area transformation falls under the umbrella term 'urban area development'. (Ch.3.1)

Every urban area transformation is determined by its individual context. Thus, an integral part of the process is establishing the context of the project in the beginning. The context was analysed through four variables: process, place, product and person. For this research, the process is structured in phases and milestones, the place is a monofunctional urban area, the product is a mixed-use urban area and person are all involved actors. (Ch.3.2)

Next to the context, risks and success factors can significantly influence the process and the outcome and decide upon success or failure. Risk are defined as situations that can cause a threat or opportunity in consequence of uncertainty. Risk management is a powerful tool to cope with risks, to minimize their impact or probability and to maximize opportunities (Ch.3.3). Success factors are those factors that promote success. However, success itself is an ambiguous concept and has a different meaning for different actors. Therefore, it is necessary to communicate the definition of success in the beginning of a project (Ch.3.4).

It became apparent that risks and success factors are interlinked with each other. Success is located on one side of the spectrum and failure on the other side which can be promoted by success factors and failure factors respectively.



In the light of the previously explained theories, risks can be placed between those sides, as a risk event determines whether a situation can have a positive impact and lead to an opportunity, thus in the extreme case turn into success, or has a negative impact and cause a threat and lead to failure.

Success factors are those factors that promote success and therefore it can be concluded that success factors contribute to reducing negative impacts or the probability of risks and to increasing opportunities. Following the same logic, failure factors promote failure and contribute to increase negative impacts or the probability of risks and decrease the chance for them to turn into opportunities.

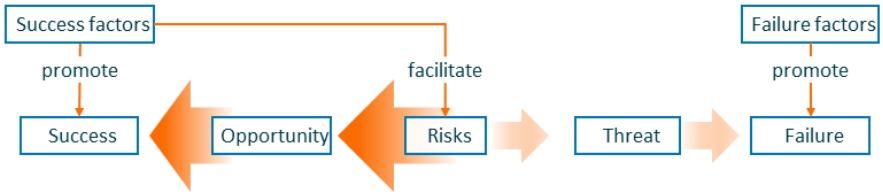


Figure 35 Relation risks and success factors (own ill.)

Resulting from those considerations, Hypothesis 1 is defined:

> Success factors increase the possibility to turn risks into opportunities or to minimize their negative impact and probability.

Since risk management is a tool for reducing impacts and probability of risks and increasing opportunities, this suggests that success factors should be an integrated part of RM. A preliminary framework is developed that includes the assessment of success factor in the risk management process. The first task remains 'establishing the context' as this provides the base for any further steps and is likewise important for success factor assessment. For this step, the 4Ps model can be a useful tool. The second task is the parallel assessment of risks and success factors. How exactly those tasks correlate will be elaborated in the empirical research. This hypothesis and the preliminary framework will be tested in the following empirical research within real-life cases. The results from empirical and theoretical research will be combined in the last part DELIVER to develop the final framework.

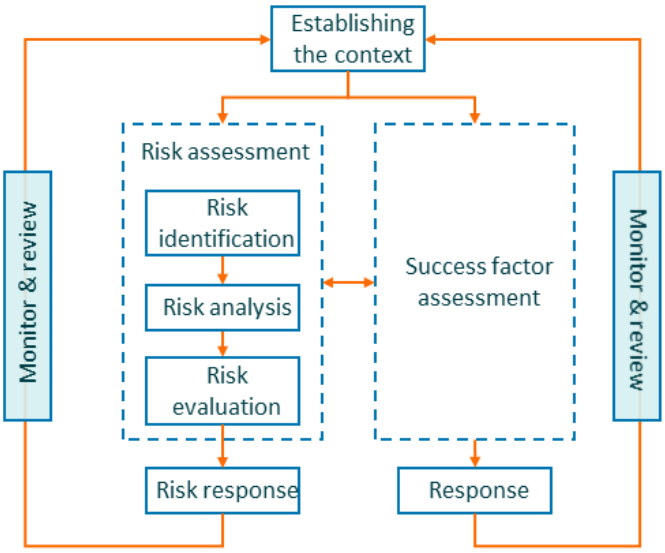


Figure 36 Preliminary framework risk & success factor management (own ill.)

Empirical Research

4 EMPIRICAL RESEARCH

This chapter describes the empirical research which is based on case analyses of two urban area transformations, namely Binckhorst in Den Haag and Strijp-S in Eindhoven. The chosen cases are first studied as within-case analyses. Both cases are introduced with a focus on the context variables. Semi-structured interviews with experts are used to identify risks and success factors.

4.1 CASE STUDY INTRODUCTION

Two urban area developments are selected for case study analyses. They follow a different development approach, are located in different cities and are currently in a different phase. The Binckhorst area in Den Haag is developed as an organic approach. This development is in an early stage and only a few plots are already completed or under construction. In contrast to that, Strijp-S in Eindhoven is transformed in an integrated approach within a PPP and approximately half of the area is already completed. Firstly, background research was conducted, followed by semi-structured interviews with experts who are actively involved in the transformation of these areas. The focus of the interviews was on risks and success factors. This helped to identify, categorize and evaluate them. All interviews are analysed within each case and conclusions are drawn. The collected results are summarized in tables and noteworthy outcomes are explained in more detail.

4.2 CASE 1 – BINCKHORST

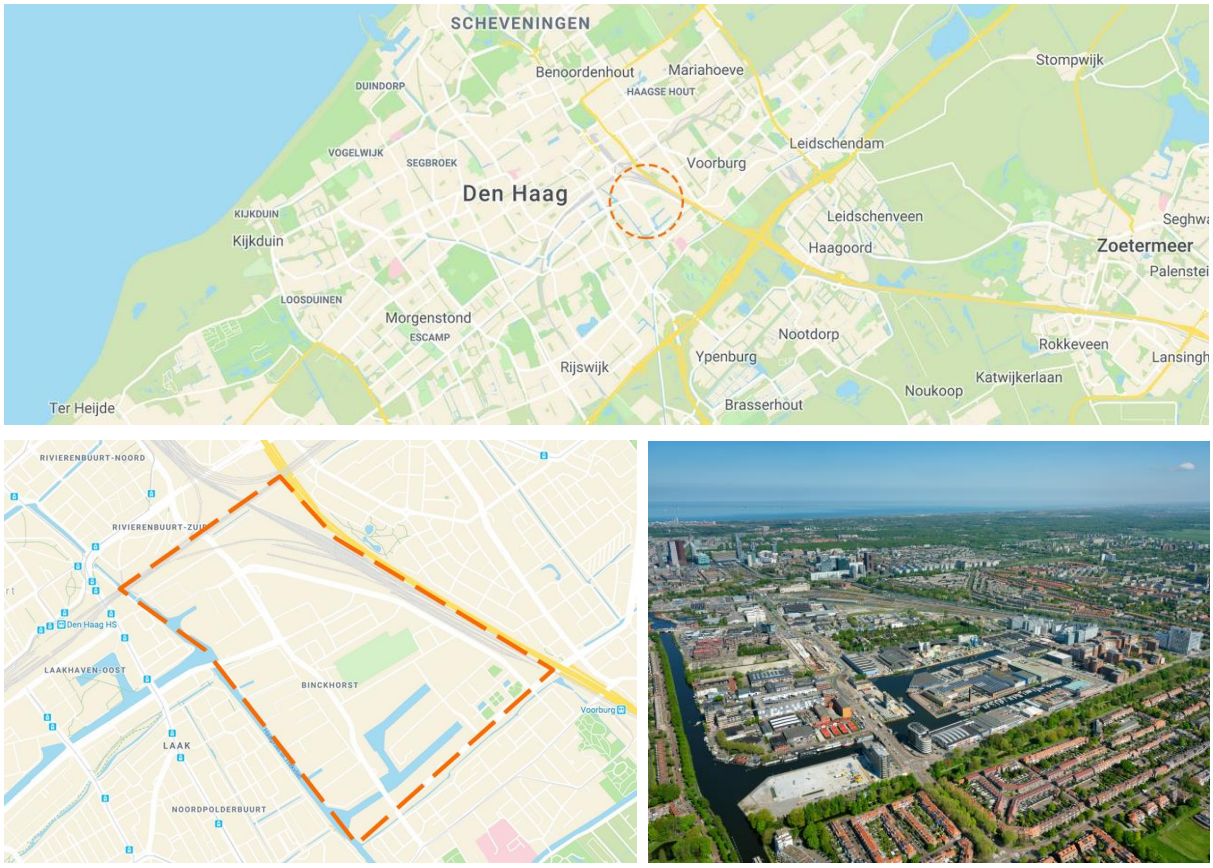


Figure 37 Map Den Haag and Binckhorst (Snazzy Maps, 2019)

Figure 38 Binckhorst bird's eye view (Gemeente Den Haag, 2018)

4.2.1 Context: Case description

Table 9 Factsheet Binckhorst (own table)

Name	Nieuw Binckhorst
Municipality	Den Haag, district Laak
Surface	146 ha
Residents	1,790 (Allecijfers.nl, 2018b)
Former functions	50% offices, industry, workshops, retail, showrooms, small residential area and St Barbara cemetery
Geographical characteristics	Close to city centre, surrounded by railways Den Haag – Gouda, Amsterdam – Rotterdam, the Trekvliet, the Broeksloot and the A12
Start transformation	~ 2006
Development Approach	Organic approach
Goal	Creating a vibrant, dynamic living and working environment for start-ups, innovative and creative companies with raw edges and high-quality public spaces while preserving the special character; Binckhorst as the new entrance to the city with a regional orientation, as a significant economic factor for the city, as an inviting, characteristic residential area and testing ground for sustainability and greening (Gemeente Den Haag, 2018)
Planned functions	Residential: 2025: 5,000 dwellings, 30% social housing (by 2025) Offices: Current 250,000 m^2 must stay, additional 10,000 m^2 Creative industry: 791,000 m^2 for creative industry (Gemeente Den Haag, 2017)
Expected completion	~ 2038 (Gemeente Den Haag, 2018)

Binckhorst is considered to be *the* hotspot area in Den Haag right now for new developments and transformation. The former monofunctional industrial and business park in the south-east of Den Haag attracts new businesses and creative industries with its rough character (Gemeente Den Haag, 2012). The area offers a great variety of business categories and physical appearances. Factories, car dealers and printing companies settled in Binckhorst because of its good accessibility close to the city centre and its port. Around 50% of the real estate is occupied by offices and the other half is used for industry, workshops, retail, showrooms and housing. There is a large railway yard in the north-west; the southern part of the district is dominated by the ports with large-scale concrete plants and an asphalt factory. These functions are zoned sites and environmentally sensitive functions are not possible within the noise contours (Gemeente Den Haag, 2012). Furthermore, there is a small residential area and the St Barbara cemetery in the centre of the area. Nowadays the legacy of the industrial generation is being reused by young entrepreneurs. This mix of small- and large-scale functions create Binckhorst's unique character.

The area is part of the district Laak and adjoins Leidschendam-Voorburg and Rijkswijk. The name of the area originates from the still existing Binckhorst Castle (*Kasteeltje Binckhorst*) which was built in 1308. The district is located in the former Binckhorst polder which belonged to Voorburg until 1907 (Gemeente Den Haag, 2012). After a boarder change and the transition of Binckhorst to the municipality Den Haag, the development of the business park started. An important step was the construction of Binckhorsthaven in the 1930s. Primarily industrial and craft functions settled in the area in the following decades and since the end of the Second World War infrastructure has been gradually expanded. In the 1970s the gas factory was closed which was the start of a more mixed business park development. The first office buildings were constructed in 1980 and several high-quality office buildings were added in the 1990s. Around the turn of the millennium the area was trapped in a downward spiral. Growing and capital-rich companies relocated to the outskirts of the city and vacancy increased while the level of investments in the area dropped. Additionally, an extensive use of space, limited parking capacity, soil pollution and environmentally harmful companies reduced the location's attractiveness.

Phases

Generally, it became clear that the overall process cannot be divided in distinct phases. Instead, each individual plot follows its own phasing. This observation aligns with the previously described theory on area development phases with the concurrency of multiple projects (Ch.3.2.1). No statement can be made regarding later phases, realization and maintenance, since the development process is not yet in this stage.

Initiation

In 2002 the first ideas for transforming the area arose. The structural vision 2020 (*Structuurvisie 2020)* for Den Haag published in 2005 considered Binckhorst to become a new part of the city centre due to its central location and the appealing connection to water (Gemeente Den Haag, 2005). In accordance with the structural vision, OMA designed a master plan which was finished in 2009 and intended the development of 7,000 homes, 200,000 m^2 of office space and a large city park (Binckhorstdefilm, 2018). The master plan implied the relocation of most companies that are currently in the area which caused disquiet amongst the current users. To actively steer on the development, the municipality intended to acquire as much land as possible. For this purpose, a consortium was established between BPD, Bouwinvest and the municipality in form of a PPP in 2006 (BPD, 2007). However, when the economic crisis hit, Bouwinvest had to leave the consortium and the PPP was terminated. BPD sold back its land to the municipality. A large-scale development according to the original master plan was no longer feasible (Mensink, 2016).

After this set back, a new approach was needed. Instead of a definite final picture as outlined by the master plan, the emphasis shifted to organic development. Small-scale developments initiated by market parties were encouraged to score results in the foreseeable future. Furthermore, existing qualities should be embraced instead of relocating current companies. This was manifested in the area vision (*Gebiedsaanpak Binckhorst*) by the municipality in 2011 (Gemeente Den Haag, 2011). The plan should offer clarity and security for companies and investors and function as a steering instrument for initiatives from market parties. The municipality adopted a facilitating role and focused on investing in public spaces and infrastructure.

Furthermore, a budget was approved in 2011 to support small initiatives in the area (Mensink, 2016). The SVN's financing fund is an incentive instrument and granted seven million euro in the region of Den Haag to support parties with a detailed business plan (Nelen, 2017).

However, a stagnation of developments occurred and market parties required more guidance from the municipality. As a response to that, a new land use plan with extended reach (*Bestemmingsplan met verbrede reikwijdte*) was established in 2017 and published in November 2018 to provide a main line for the development (Gemeente Den Haag, 2017). After its entry into force, the successor of this plan will be called environmental plan (*Omgevingsplan*). This land use plan is a pilot in the Netherlands. It defines a program and rules for the whole area instead of defining it for each plot and thus should provide flexibility for own initiatives and a natural growth. The decision for this pilot environmental plan was made during the economic recession when it was not possible for the municipality to steer the development in another way (Interviewee 5, 2019a). Due to the complexity of an organic area development it is not possible to draw up one final picture but instead the focus was put on short-term developments.

Feasibility

The feasibility phase of the area development started with the transformation of the former SDU location on Binck Eiland and the Maanplein. The development collective Binck Zuid B.V. established by BPD, Local and VORM won the tender and designed a collaborative vision for a mixed-use area. Construction at the Binck Eiland started with the building De Bink in the third quarter of 2017 and has been completed in the beginning of 2019 (Interviewee 4, 2019a).

Meanwhile, in September 2016 Borghese Real Estate and the development company COD acquired the Maanplein building complex in a limited tender. They transformed the former office buildings with 80,000 m² space into 600 to 700 homes and 35,000 m^2 working space, retail and leisure (Borghese Real Estate, 2017). The municipality required a mix of function on a building level and so the focus was put on living and working. The first residents moved in the new apartments at Maanplein in summer 2018. Further developments are planned that serve as creative and innovative examples such as Frank is een Binck or ZIP2516. Various plots are currently in the stage of tender, transfer or preliminary design.

A central element for the transformation of the Binckhorst is the construction of the Rotterdamsebaan. This will become the new connection road between junction Ypenburg (A4 / A13) and the ring road of Den Haag. Construction started in 2014 and the planned completion is July 2020. This road with the tunnel running halfway through the Binckhorst district will increase accessibility of the area and thus marks an important element in the process.

Milestones

Although no distinct phases can be defined, certain milestones are crucial for the overall process and impact the whole development process. Similar to the phases, there are general and project-individual milestones. The latter are for instance the acquisition of land, making a reservation, applying for a building permit, starting construction and the sale to investors or private owners. The main general milestones are shown below.

More milestones are expected for the coming years. Various building activities will start 2019/20 which will function like a catalysator for the development process of the area. The road project Rotterdamsebaan will be completed in 2020 and make Binckhorst the new entrance to Den Haag's central business district. Furthermore, great attention is payed to the introduction of public transport like a tramline from Voorburg to the central station which should further stimulate the area transformation.

It can be concluded that milestones are more important than phases for this urban area transformation, as phases are mainly individual and each plot is in a different phase, whereas certain milestones regard the whole transformation process.

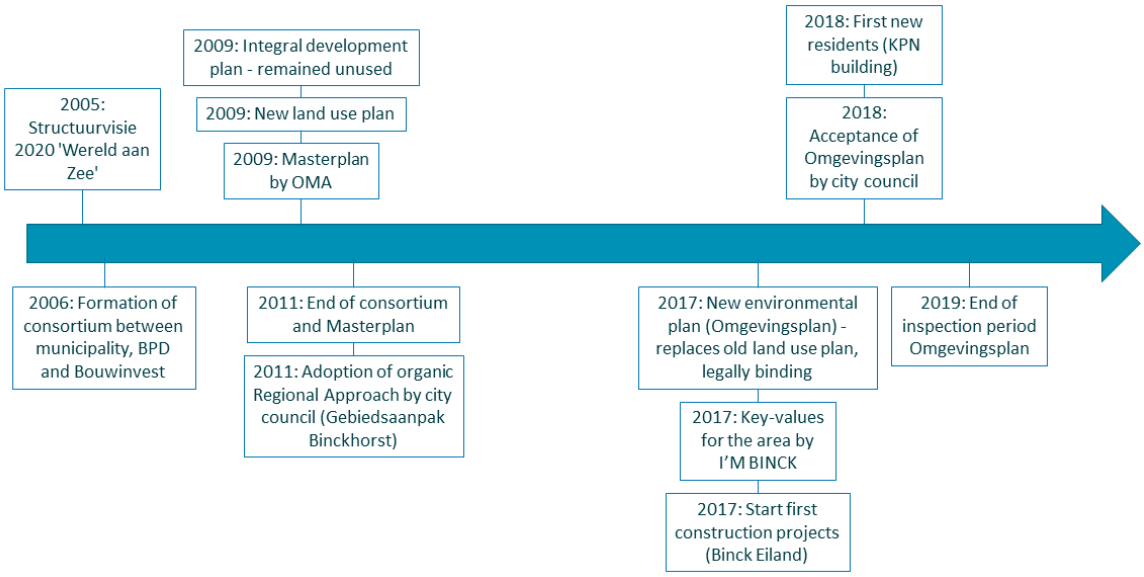


Figure 39 Milestones Binckhorst (own ill.)

Actors

A great variety of actors are involved in the transformation of Binckhorst due to its organic development approach. Here the main players, their role within the process and their objectives are introduced.

Municipality

The municipality Den Haag took a major part in the initiation of the area transformation by commissioning the master plan. In the originally integrated approach within the consortium, the municipality had an active and directing role. After the financial crisis, they took on a facilitating and reactive role and development was left to market parties. According to the municipality, they own around 1/3 of the ground, 30 buildings and 200 rentable units where they can steer on the development through tender (Huijsmans, 2018). Another third is left to market parties through leasehold contracts and the rest is owned by private parties.

The municipality is responsible for providing a guideline for the development of the area. The adopted steering tools are the area vision *Gebiedsaanpak Binckhorst* and the *Omgevingsplan*. The latter is the only legally binding tool that is used in order to enable an organic and flexible development. Furthermore, the municipality grants building permits based on reservations that have to be filed as part of the Omgevingsplan in order to obtain a stake of the overall defined functions. Furthermore, they assess whether an environmental impact report must be completed by the developers. Another important responsibility is the development of public space and infrastructure.

In accordance with the new vision of the land use plan with extended reach, the municipality strives to ensure high accommodation quality, safety and sustainability by embracing existing qualities and temporary use and allowing space for innovation and creativity.

Market parties

In line with the organic approach, market parties obtained freedom to initiated developments and incorporate own ideas. However, in the years between 2011 to 2017 the vision of the municipality was unclear and the wish for more clarity and guidance arose. This resulted in the establishment of de Stadsmakers (city makers) as a joint initiative by several highly involved market parties. The purpose for this network is to be one voice and facilitate communication amongst each other and with the municipality (Interviewee 1, 2019; Interviewee 3, 2019a). Together they made a quality agenda 2016 (*Kwaliteitsagenda*) with five quality characteristics of the area that should be maintained. Furthermore, a collaborative vision was designed with the slogan "Hâh ut râh" (keep it raw) and 10 development principles. The land use plan with extended reach incorporated those 10 principles. However, it was perceived as difficult to use and conflicted with some previously stated objectives from market players. Furthermore, since the land use plan is a pilot, the stated rules changed several times throughout the process, and it was unclear how to apply for reservations.

Pioneers

The original master plan with the intention to relocate companies caused confusion and insecurity for current tenants and companies. As a response to the uncertain future developments, I'M BINCK was founded as an independent, bottom-up initiative of entrepreneurs by Sabrina Lindemann. The purpose for this initiative is to join forces, increase cohesion, reinforce each other and provide a platform for communication between all actors. This is facilitated through monthly network meetings and the Round Table where problems and solutions can be discussed. All various stakeholders can come together including developers, users and the municipality, and they collaborate with de Stadsmakers. Their objective is to create a resilient Binckhorst with a long-term perspective by fully exploiting its existing potentials. Their slogan is: together we make the Binckhorst (*samen maken we de Binckhorst*). Furthermore, I'M BINCK contributes place-making activities by organising the annual I'M BINCK festival.

4.2.2 Risks

The first Delphi round was executed in form of semi-structured interviews with six experts involved in this case. A detailed description about the method was given in Ch.2.2.2. The interviewees were asked to indicate the main risks in this project. After receiving first answers, the respondents were given a list with different risk categories to stimulate further answers.

A detailed table that presents all identified risks in form of a risk register can be found in Appendix III, p.130. This summarizes all mentioned risks by experts for each risk category. Furthermore, it states which actor is directly affected by it, during which phase it is most likely to occur, and the possible impact it can have. Additionally, for some risks a possible strategy was mentioned, how to respond to risks. Those cells that are left blank indicate that no information was given for this aspect during the interviews. It must be noted that the phase only state when a risk is most likely to occur, however, due to the uncertain character of risks this only serves as an indication. Moreover, although typically certain actors are directly affected by risks, in most cases other actors are also indirectly affected. Finally, due to the interconnection of risks, the division into risk categories is indefinite.

To conclude, all actors face different risks at different stages of the process. Naturally, every interviewee has a different perspective on risks, depending on their individual role. This risk register reveals that certain risks are plot specific, such as ground pollution, while others regard the whole area, such as economic recession. The latter ones are systematic risks, also called market risks, and cannot be diversified. The following paragraphs elaborate on noteworthy findings.

Risk management

All interview respondents agreed that risks can have tremendous impact on projects. Nevertheless, most experts stated that they do not conduct risk management in a structured or formal way. Few parties make scenario analyses, use checklists or company internal systems. In some cases, complex projects are believed to be too

dynamic and too unique to apply risk management systems. Another reason is the size of the company which, when too small, risk management is seen as not feasible or unnecessary. Thus, the assessment of risks is primarily based on experience, communication within the project team, the company or with collaborating parties and gut feeling. There is no risk management for the whole area, although it was recognized that a business case for the overall process should exist and would be beneficial to manage costs and benefits for society.

Biggest risks

All market parties stated that currently the biggest impact comes from the uncertainties regarding the pilot land use plan and environmental risk of air and noise pollution caused by heavy industry. However, the degree of impact from environmental risks depends on the individual location. Furthermore, everyone agreed that economic changes on a global, national or local level can have a significant impact and is highly unpredictable. Other risks that are perceived as unpredictable are politics, residents, decisions by the municipality or central government and generally financial risks.

It is noteworthy that particularly those risks that are stated to have a high impact are also recognized for the positive impact they can have. For instance, developments of local markets or economy, political changes or the land use plan can either become a success factor or a failure factor. Although risks are generally perceived as a threat, some experts think of risks as opportunities if managed right. Even in the case of negative impact, every experience is a learning process for future projects.

Land use plan with extended reach

The land use plan with extended reach, generally called *Omgevingsplan*, is seen as a big risk by all market parties. It is unclear how reservation procedures work, how reservations are granted and what happens if there are reservations for more than 5,000 houses (which is expected to happen). Although this plan facilitates the organic development with its flexibility, more direction was wished for to reduce uncertainty, especially in the beginning. Furthermore, some projects started before the introduction of the new land use plan and it is not clear in which degree these projects must comply to the new requirements. It is also said that the plan lacks internal coherence and had been changing throughout the process. For instance, the rule of 30% social housing used to be much lower which has a big influence on developers' business case. On the one hand, flexibility and openness for innovation that creates opportunities was perceived as very positive. On the other hand, this approach might lack control to match supply with demand and to successfully combine all various functions.

Risks related to number and organisation of actors

The fragmented ownership within the area increase the chances of speculative behaviour, opportunists and free-riders. Nevertheless, it reduces certain other types of risks. For instance, bankruptcy of one party has less impact on the overall area development and is better balanced out in case of multiple owners. Most experts perceived the high number of actors in the area as a factor that increases risk and certainly complexity, but also brings more opportunities. It can become a success factor that leads to more variety, discussions, solutions and more innovative ideas. Regarding the question whether a PPP reduces risks, the common opinion was that it neither increases nor decreases risks. However, a PPP might face different types of risks at different times. Furthermore, the economy is thought to influence whether a PPP is preferable or not. Every expert agreed that a PPP would not be feasible for the whole Binckhorst area due to its size.

Speculation & free-rider

Speculative behaviour is perceived as a big risk which results from the highly fragmented ownership. It drives up prices and reduces transparency due to a high frequency of transactions of buildings. This can give a wrong picture of the actual value of properties, land and of the market in general and increase uncertainty for all actors. For speculative or unexperienced developers it might be difficult to create a feasible business case, and in the worst case results in bankruptcy. Bankruptcy and the high frequency of transactions block development of the affected plots. As a result from increasing prices, current users might be forced to leave the area which will mainly affect small businesses, creative industries and start-ups who cannot afford high rents. However, it is exactly these users that create the authenticity and unique, rough character of Binckhorst. Ch.1.3.3 explained how speculative behaviour can contribute to a quantitative mismatch between demand and supply and thus cause structural vacancy. Current users and pioneers can be safeguarded by rules stated in the land use plan such as 30% social housing and high standards for energy regulations that deters speculative developers. Furthermore, some experts anticipate a next economic recession in the coming years which also alleviates speculations.

Free riders are seen as less influential for the overall development and difficult to be grasped. Free riders are actors who benefit from collective or public goods or the efforts of others without contributing their fair share. Certain parties supply public goods at their own expense such as infrastructure, public space or the general improvement of a neighbourhood in terms of living quality and market attractiveness. It is almost impossible to exclude parties that act as free riders from the generated benefits. This can be seen as an issue of mutual cooperation in perspective of game theory, in particular, the prisoner´s dilemma (Stanford Encyclopedia of Philosophy, 2003). In the classical prisoner´s dilemma with two actors, there cannot be free riding, due to mutual monitoring. However, when the number of actors is big enough, it becomes difficult and even impossible to monitor the actions of each individual and free riders become a problem (Hume, 1978). Self-interest typically trumps common interests and it might be implied that all members try to free ride and therefore no effort is initiated at all. However, this is usually not the case in an area development. It is argued that the invisible hand stimulates competitiveness and parties with a stake in an area development would pursue their own interests, which is the development of their project to generate benefits for themselves, like a return on investment. This in turn promotes the common interests (Smith, 1776). Although the free rider problem does not hinder a development per se, it still is a strategic risk and a failure of the private and social decision-making in collaborating towards a common, optimal solution (Faludi, 2013). Thus, the chances for parties that act as free riders is naturally higher in a situation with fragmented ownerships. This can cause mistrust and conflicts amongst actors and therefore can be a risk.

Influences of the financial crisis

The financial crisis in the years 2008 to 2010 had a significant impact on the area development. Due to the crisis it was not feasible anymore to develop the area by one party in an integrated approach. A reduced attractiveness in investing in developments caused a value decrease and loss of investment in the area. This led to a change in approaches towards an organic development. The fragmented ownership is perceived more resilient and adaptable to economic changes. The aftermath of the crisis still affects the market. A lack of capacity of human labour in the real estate sector cause delays in deliveries and continuously rising prices. The public sector suffers a staff shortage which causes delays in handling applications for building permissions and preparing plans. In case of a future economic recession it is expected that developments will slow down again and investments in public spaces, transport or facilities will stop. Nevertheless, this could also create benefits, for instance to reduce speculations and to better maintain the area's authenticity.

Sources for delays

Most interviewee stated that speed of development is highly important right now, as the economy is still booming. However, certain factors cause delays. As previously explained, the aftermath of the economic crisis reduced labour capacity. Additionally, the internal complexity of the municipality due to its various departments makes it difficult to incorporate all opinions into one plan, which reduces the speed of procedures. On top of that, political elections happen every four years which can cause a change of political direction and delays due to staff turnover. The lack of public facilities such as schools was also mentioned as a factor that restrains people to move to the area. Finally, general factors like unexpected environmental conditions, free riders and speculators or bankruptcy of developers can always cause delays. Moreover, most properties are currently occupied and thus cannot immediately be transformed.

Potential strategies

In most cases, experts mentioned not only risks but also strategies to reduce or to react to specific risks, as shown in the risk register. Generally, communication and good collaboration amongst all actors is mentioned as a way of reducing risks and achieving success factors. Particularly early and frequent consultation with the municipality can reduce uncertainty. Most interviewees emphasized the importance of speed at this stage. The economy is still booming but the next recession can again slow down developments. Furthermore, right now the awareness that 'something is happening' in the area is high which on the one hand attracts developers and investors to invest in the area, and on the other hand pushes demand from companies and individuals to move to the area. This awareness about activity is stated as an important success factor that benefits the transformation of the area.

4.2.3 Success factors

The last part of the interviews focused on success factors. The factors mentioned that promote success were coherent amongst interviewees and no contradictions occurred. It is noteworthy that most success factors were mentioned in relation to risks as approaches to minimize risks. Insofar, no distinction was made by interviewees between potential strategies to respond to risks and success factors. All mentioned factors were grouped into the following eight groups. The detailed list can be seen in Appendix IV, p.131.

1. Create awareness and place-making
2. Speed of development processes
3. Good collaboration
4. Favourable conditions
5. Coherent urban plan and vision
6. Good urban program and the right mix
7. Informal platform and consciousness of the area
8. Use existing strength of the area

The most mentioned success factor was good communication amongst all actors. It can reduce conflicts, steer innovation and facilitate solution-finding between the old and the new market, between public and private actors, between companies and residents. The organisation I'M BINCK functions as a platform for this dialogue and is perceived as positively by all actors. Above all mentioned factors, establishing a mixed-use area is significantly believed to contribute to success. All respondents agreed on the importance of mixed-use to create a dynamic, lively, sustainable, self-reliant area which is ready for the future. The mix must not only be implemented on an area but also on a building level and throughout the day. Urbanisation brings new opportunities to re-develop and improve existing cities rather than expanding on green-fields. This factor is not explicitly included in the list of success factors as mixed-use is defined as the product of urban area transformations for this research.

The results show that success factors can be achieved or steered on by different actors. Some can only be achieved in combination of everybody, and some are directed to certain private parties or to the municipality. Most respondents mentioned success factors that *can* be directed and therefore belong to the levels of success factors 2 and 3 (see Ch.3.4.2). From these observations it can be concluded that success factors of level 1 — context variables — are mostly not perceived as success factors since they cannot be directed.

4.3 CASE 2 – STRIJP-S

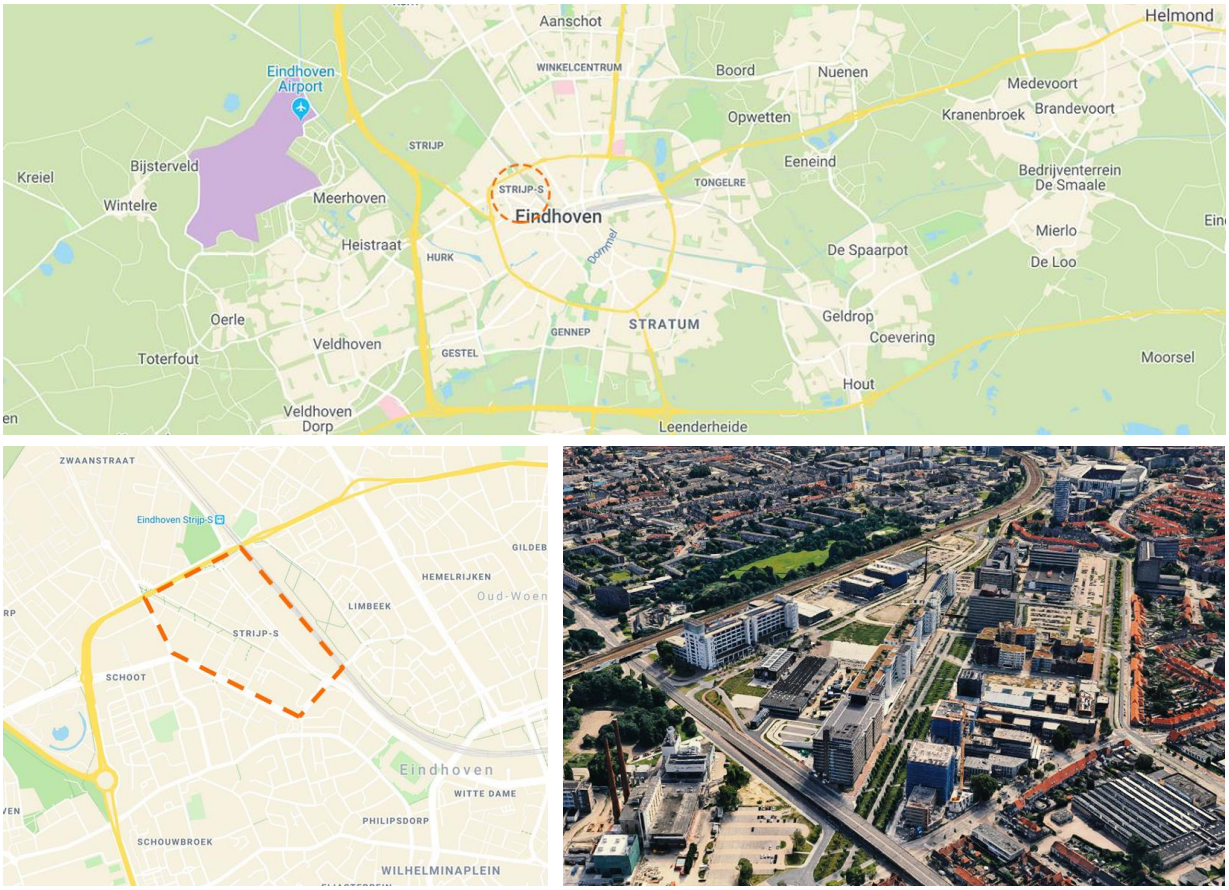


Figure 41 Map Eindhoven and Strijp-S (Snazzy Maps, 2019)

Figure 40 Strijp-S bird's eye view (Google Maps, 2019)

4.3.1 Context: Case description

Table 10 Factsheet Strijp-S (own table)

Name	Strijp-S
Municipality	Eindhoven, district Strijp
Year of construction	1891
Surface	27 ha
Residents	1,435 (Allecijfers.nl, 2018a)
Former functions	Philip's Campus with 330,000 m² industry and office buildings (Strijp-S, 2018)
Geographical characteristics	Located in the north-west of Eindhoven, within the ring road. Surrounded by the Beukenlaan, part of the ring road, the trainline Eindhoven – Tilburg/Hertogenbosch and the Kastanjelaan
Start transformation	2002
Development Approach	Integrated approach
Goal	Developing a mix of working, living, learning and leisure facilities within a combination of existing and new buildings; an area for cultural and social innovation, design, creative entrepreneurship and education, for creative and high-tech companies, start-ups and scale-ups
Planned functions	4,000 houses, 90,000 m² office space, 20,000 m² commercial space 10,000 m² facilities (catering, design, clusters, shops, culture, creative), 30,000 m² optional and 135,000 m² GFA national monuments (Strijp-S, 2018)
Expected completion	2030 (Beernink & Hulshoff, 2016)

For Eindhoven, Philips is what BMW is for Munich or General Motors is for Detroit. The company shaped the city and significantly contributed to its growth throughout the last century. For a long time known as the 'forbidden city' the 27ha Philips campus Strijp-S used to be a fenced area, closed off from the public. After the departure from Philips the former monofunctional area could breathe new life and was turned into a creative, mixed-use area. The development started in 2002 and is expected to be completed in 2030 with around 4,7 million square feet floor space and a total investment of more than one billion euros (Beernink & Hulshoff, 2016).

The area is shaped by its characteristic white, industrial buildings from Philips with nine listed monuments. The core of the area is a central axis of monumental buildings, along with a green strip that form the Torenallee, and a central public square. Nowadays 30 - 40% of the area transformation program is realized and includes dwellings, office space, retail, restaurants, cafes, a cultural centre, an urban sports hall and the central square (Interviewee 5, 2019b). The area is part of the Brainport region Eindhoven as a living lab where design and technology come together. Various cultural, social and musical events are hosted at Strijp-S which attract millions of visitors per year and put the area back on the map.

History

Philips settled in Eindhoven in 1981 and started out with the production of glass and light bulbs. Consequently, Eindhoven became known as the 'city of light'. In 1916 the first factory was built on Strijp-S (Strijp-S, n.d.). The company expanded to produce ceramics, plastic and later X-ray machines, radios, razors, televisions and other electrical equipment. With the rise of the company, Philips increasingly engaged with social projects such as the building of dwellings, schools, educational and medical services, shops, sports- and recreational amenities and green spaces. In 1910 the realization of Philipsdorp started as a complete new neighbourhood for their employees (Havermans et al., 2008). Philips built a state in the city and Eindhoven became a company town. This is quite unique in the Netherlands where the focus has mostly been on trading rather than producing (Interviewee 5, 2019b). The company recovered fast after the Second World War and expanded production further until their peak in the 1970s with 41,000 employees in Eindhoven and 10,000 at Strijp-S (Havermans et al., 2008; Strijp-S, n.d.). Strijp-T and Strijp-R were erected at the other side of the ring road and further locations were planned but never realized. The names of those locations would spell 'STRIJP' together (Interviewee 7, 2019).

In the late 1970s the decline of Philips began, and they had to close or sell out activities. Properties outside the core-business were disposed and dwellings were transferred to housing associations during the 80s. In the late 90s, Philips decided to gradually leave Eindhoven. Since the turn of the millennium, unemployment and huge vacancy problems had been raising the question about the future of Strijp-S.

Phases

Initiative

The first plans about re-developing the area were drafted by Philips and the municipality Eindhoven in 2000 (Interviewee 3, 2019b). A master plan was made by the urban architect Riek Bakker and his office BVR. Based on this plan, a tender for the sale of Strijp-S was commissioned by Philips in 2001 that asked investors to present a plan and a financial offer (Interviewee 6, 2019). VolkerWessels won the tender with the urban vision by West 8. In order to share financial capital, to spread risks and to give the municipality a directing role, the public-private partnership Park Strijp Beheer (PSB) was founded between the municipality Eindhoven and VolkerWessels in 2002. Due to tax reasons, the municipality signed a purchase agreement for the whole area with Philips and directly transferred it to the joint venture in 2004. Philips signed a sale-lease-back contract to move from the site step by step. The vision by West 8 was further devised and accepted as the urban plan by the city council in January 2002. The development was executed together with Spoorzone BV which is a cooperation between VolkerWessels and ING RED, the housing corporations Trudo and Woonbedrijf, and Koning Beleggingen BV (Strijp-S, n.d.). In 2005 70 - 80% of the plots, including both land and buildings, were sold to the selected private developers (Interviewee 4, 2019b). Two years later a plan of approach (*Plan van Aanpak*) was formulated: "Intensification of art and culture at Strijp-S as the center of Brainport" (Herbestemming.nu, 2013). In 2008 the zoning plan was adopted, according to the urban plan.

Feasibility

In 2006 the redevelopment process started. The existing buildings were temporarily rented out to around 500 companies of various sizes, mainly from creative and technology sectors. Due to this arrangement companies benefitted from flexible lease contracts and affordable rents which generated cashflows for the developers even

before construction activities started. This was an advantage particularly in the lights of the economic crisis, and furthermore attracted the first pioneers to the area. During the crisis the demand for office space, apartments for sale and high-segment rents was low and therefore the original plan and the phasing was adopted accordingly (Interviewee 7, 2019). Generally, there was little building activity during the crisis period and the decision was made not to demolish most of the existing buildings but rather to wait and maintain them (Interviewee 6, 2019).

The whole transformation process is not divided in phases through time but in space. Phase 1 *de Kastanjevelden* is developed by the housing corporation Woonbedrijf. Phase 2 is called the Triangle (*Driehoek*) and includes four monuments along the central avenue, the Klokgebouw and the central square and is owned by the housing corporation Trudo. Phase 3 along the railway tracks is transformed by Spoorzone BV for commercial functions and higher segment apartments. The definite plan for phase 4 is yet to be determined (Strijp-S, 2018).

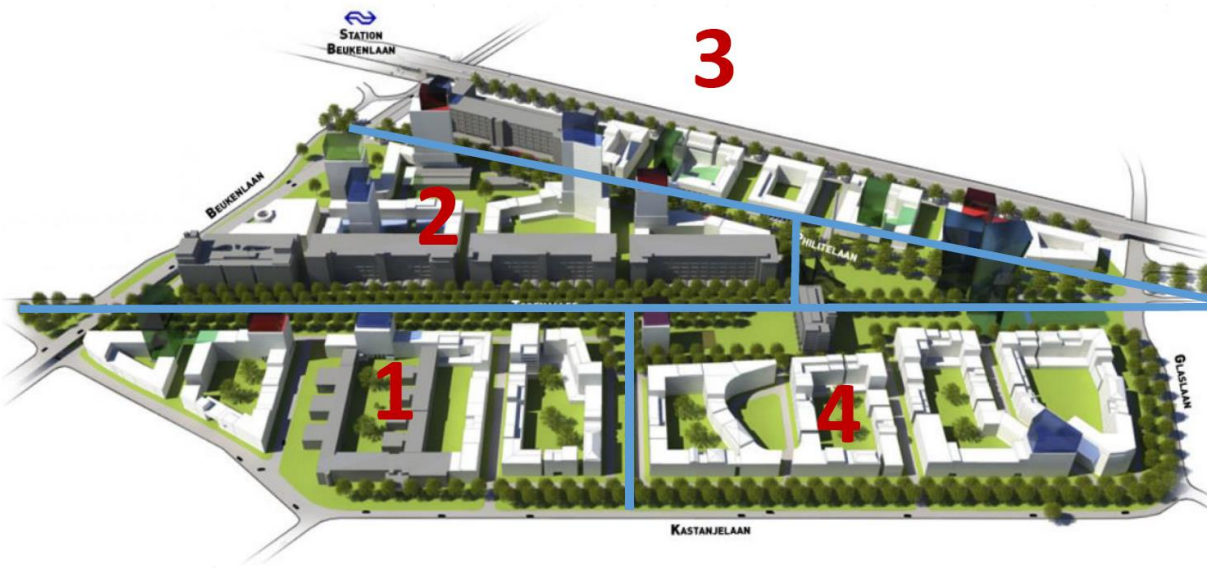


Figure 42 Development phases Strijp-S (adopted from Strijp-S, 2018)

Realization & Maintenance

Currently, 30 - 40% of the program is realized and the transformation of all monumental buildings is completed. In the coming years intense building activities are expected and all remaining buildings will be built in the next five years (Interviewee 7, 2019). Each building project is managed individually and there is no wholistic time management. However, the Board of Inspiration provides a platform to discuss the progress. The expected total completion of Strijp-S is 2030.

Vision

PSB is the managing party and defined the vision for the area. Three themes were formulated for Strijp-S. The first goal is to create a small super-village with a high level of activities on the ground floor and in public spaces, a focus on walkability and bike-ability, human scale and a mix of housing, working, education and leisure. The second theme is Strijp-S as a living lab within the high-tech region Eindhoven. In combination with the Eindhoven University of Technology and technology companies, the whole process of high-tech development will be covered in the city. Strijp-S facilitates the last step of this process where new ideas are tested in practice. This should offer room for experiments, new services and pilot projects to design a more efficient urban space. The third theme is to create an ecosystem with a focus on communities and quality of life that stimulates and inspires people. The whole approach is increasingly turning into a bottom-up approach (Interviewee 5, 2019b).

These goals are realized by maintaining buildings with industrial, architectural value and monumental character as central elements. In total 130,000 m^2 of the 330,000 m^2 existing space will be kept. Furthermore, the temporary letting of existing buildings attracted pioneers and generated early cash flow. Another feature is the physical and mental openness for everybody to contribute new ideas. Innovation was further established through four new

companies founded by PSB: Office-S, Mobility-S, iCity and Sanergy. This was a way to explore new solutions for office space renting, parking systems, smart infrastructure and energy.

Milestones

The whole process is characterized by milestones and decision-moments. Most milestones are general ones that regard the whole area development, due to the integrated approach. Additionally, individual milestones mark the process of every individual development project, which are not listed here. Although these are not defined as milestones, two other events are worth mentioning. In 2013 Strijp-S won the Dutch Gulden Feniks award in the category 'Area Transformation' and one year later the transformation was awarded as winner of the Auroralia Award for sustainable light system.

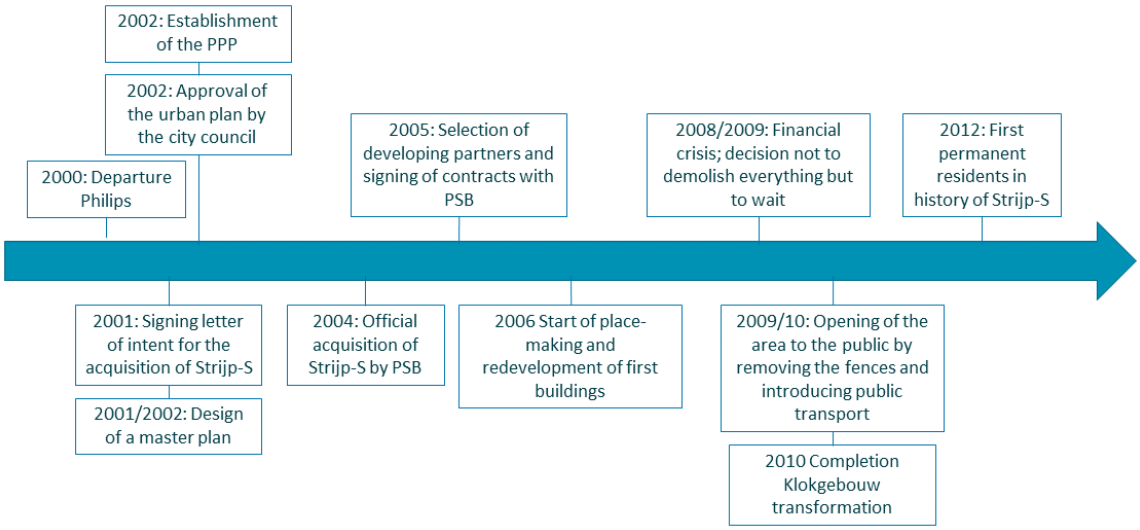


Figure 43 Milestones Strijp-S (own ill.)

Actors

Municipality

Due to the historic importance of Philips for the city Eindhoven, the municipality had a great interest in Strijp-S and decided to take an active role in its re-development. As partner in the public-private partnership PSB they owned the whole area in the beginning which gave them private-law control in addition to public-law instruments. This enabled to directly steer on the development, to select developing parties and to ensure the achievement of the municipal ambitions. The public body naturally has a long-term interest in the area development and aims to create a high-quality urban environment.

Market parties

The second partner of the PPP is VolkerWessels, an internationally operating construction company with the official name Royal VolkerWessels Stevin N.V. They approached the municipality to form the joint venture as a means of joining capital resources and sharing risks. The VolkerWessels group is responsible for construction and the realization of real estate. PSB selected three parties to acquire and develop the area which was split in sub-areas. The two housing corporations Sint Trudo and Woonbedrijf focus on the development of social housing and public activities. Spoorzone is a collaboration between Stam + De Koning Bouw BV (SDK), which is part of the VolkerWessels group, and ING RED. Another important market actor is the urban design & landscape architecture office West 8 who developed the urban plan and acts as supervisor for the whole development. With Adriaan Geuze as the main project manager they have great influence on the design of the area and are consulted by the municipality regarding building permits. Finally, Philips is the party that initiated the whole development by leaving the area. Additionally, they are responsible for cleaning the soil from pollution (Interviewee 3, 2019b). Further market parties such as contractors are involved in the execution of projects.

Pioneers

A crucial role is played by the early-adapters of the area. During the financial crisis new developments were postponed and existing buildings were temporarily rented out. These cheap, flexible spaces with a rough character were occupied by creative industries, start-ups and scale-ups of high-tech sectors, small shops, restaurants and cafés. This turned out to be a win-win situation: cheap and flexible space for the needs of those users that can hardly be found elsewhere, and cash-flows for the developers from the beginning on before new construction started. Furthermore, pioneers contributed significantly to the authenticity of the area and shaped its creative, innovative character. They were the first occupants and facilitated place-making which is why they are also called place-makers.

Collaboration

The public-private-partnership significantly shapes the collaboration between actors and acts as the main initiator. The huge size of the area made it unfeasible for one party to develop the area alone. Due to the complete ground position by PSB it is possible to steer on the development and implement the master plan easily. The ownership, responsibilities and risks are split to equal shares, 50/50, amongst VolkerWessels and the municipality Eindhoven. As the main managing party they are responsible for the urban plan, for infrastructure and for preparing the grounds (Interviewee 3, 2019b). Formally, Park Strijp Beheer B.V. is the operating company and Park Strijp C.V. was founded for holding the grounds and buildings.

The board of inspiration was established as a platform for the main actors to discuss strategies and main decisions. The board is a form of informal relationship between PSB, the developing parties and West 8 that comes together four times a year (Interviewee 4, 2019b). As each project is managed individually, this platform is a way to aline strategies, to discuss problems and to find joint solutions. Adriaan Geuze who acts as the supervisors has to approve all plans that then receive building permits by the municipality. Therefore it is beneficial for all parties to discuss plans upfront.

Plus-packages

To further steer on innovations in the area, Park Strijp Beheer B.V. established four new companies. Office-S is a rental company for the temporary use of existing office spaces. Mobility-S was introduced to provide a smart parking system which is based on sharing parking plots to reduce the total amount needed. The company iCity experiments with smart urban infrastructures and connectivity, for instance with streetlamps and cameras. The energy company Sanergy provides geothermal heat. Additionally to the extraction of heat from ground water, this system is used in an innovative way to clean ground water from pollution (Interviewee 7, 2019). These companies are financed by the cash flow from rental incomes of temporary office space (Interviewee 5, 2019b). The area development benefits from these locally oriented companies through a guaranteed turnover and the specialised knowledge of involved parties. Moreover, these companies are a way to continue the brand Strijp-S after the PPP ceases to exist (Huijsmans, 2018).

4.3.2 Risks

For the semi-structured interviews about Strijp-S with seven experts, the same approach was used as for Binckhorst. The central questions regarded which risks can occur during the project. Again, they were given a list of risk categories after their first answers to stimulate further results. For a detailed description of the method see Ch.2.2.2. The complete risk register, which can be seen in Appendix V, p.133, presents all mentioned risks by experts. The same notes apply for the risk register as explained for the Binckhorst case, see Ch.4.2.2.

Based on the results it can be concluded that every party owns different risks which can occur in different stages of the process. Furthermore, some risks are market risks that cannot be diversified, and some risks are plot specific, likewise to the risks in Binckhorst. It is noteworthy that most risks in the end lead to a financial risk because they cause additional costs and delays — and time is money. Generally, it is perceived that financial risk used to be higher in the beginning of the development; especially in the light of the financial crisis. However, Park Strijp Beheer reduced their risk by early signing purchase agreements with developers before the crisis. Nowadays, as the development progressed and value has been created, the financial risk is seen as lower. Furthermore, risks that are well manageable are not perceived as risks and the stated biggest risks are those which

are least controllable such as environmental and economic risks. In the following paragraphs other noteworthy findings are explained.

Risk management

The responses show that risk management is conducted in a classical way for the re-development of Strijp-S. There is no shared risk management for the overall area development. Each party is responsible for their own projects and thus executes risk management per construction project, with the primary focus on financial risks. Most interviewees base risk management on experience, intuition and communication within the project team or with collaborating parties. Additionally, some companies use company internal systems such as checklists or scenario analysis. However, most respondents stated that they do not use any system for risk management.

Risks related to number of actors & PPP

Regarding the question whether it is more or less risky if the area development is managed by a limited number of actors, respondents had different opinions. Some stated it is indeed less risky as all plots and the whole management is in the hands of a few actors and thus the process can be controlled without interventions from outside parties. Furthermore, communication is easier and actions of all parties are more transparent. This reduces legal risks amongst parties and prevents speculations. The limited number of owners also enables to create a financial business case and diversify risks over the whole area. This means that some plots can be developed with marginal or no profit, while others generate bigger cash-flows. Such an approach is not possible in an area with fragmented ownership.

In contrast to that, some interviewees consider the limited number of actors neither more nor less risky for the process, however, certainly less complicated, for instance due to easier communication. It was stated that not the number, but the types of actors and the mix is decisive.

Forming a PPP is generally seen as a way to reduce risks. The financial risk of buying a whole area can be shared equally between both parties. Despite this, the financial risk remains high in the beginning due to the size of the area. This can be further reduced by splitting and selling the land shortly after acquisition. Due to the involvement of the municipality, political and legal risks are reduced as procedures like building permits and zoning plan changes are in line with their interest. Discussions are generally more transparent and less commercial with the public actor on board. Furthermore, the implementation of the urban plan, the achievement of a high quality and the preservation of the area's authenticity can be controlled directly within a PPP.

Speculation

Speculative behaviour is currently no major risk for Strijp-S. The limited number and the types of owners, the clear vision and urban plan reduce the risk of speculation. The development of plots can be controlled by their owners who have a long-term interest in the area, especially the municipality and housing corporations. They do not focus on profit and are thus able to focus more on quality. However, the future is unpredictable, and plots might be sold to private investors who are more interested in commercial exploitation which creates speculations. This could cause a price increase which threatens the authenticity of the area and activity of the ground floor which is rooted in pioneer users who cannot afford high-segment rents. Although speculation is manageable within the area, this is not true for speculation in the market which can cause a general price increase of houses on a local, provincial or national level.

Influences of the financial crisis

The financial crisis slowed down the development of the area and the originally planned completion shifted from 2020 to 2030. During the crisis only a few houses were built, and the risk profile of the plans were improved by adopting to the changing demand. For instance, the size of apartments was reduced to better match demand and to increase profit. Furthermore, the phasing of the overall area development was altered to start with social housing and low-rent segment, which still had a high demand. The development of offices, apartments for sale and high-rent segments were postponed. Moreover, the original plan intended the construction of 5,100 parking places, of which 4,700 underground, which was a huge financial risk for developers during that time (Interviewee 4, 2019b). Thus, the originally planned underground parking was removed and a shared parking solution was introduced, financed by a parking fund.

Although any economic recession is a risk, it turned out to be an opportunity for Strijp-S. The urban plan was adopted to be more organic and more existing buildings were maintained. This enabled the temporary use of

space which generated cash-flows and caused an image-push for the area. Furthermore, the parking concept was changed from traditional to an innovative, shared parking system which reduced the total amount of parking space needed. These changes proved to be beneficial for all involved actors thus far.

Despite these opportunities, the aftermath of the crisis still affects developments. Currently economy is thriving and the level of construction activities is high. Due to the lack of capacity resulting from the economic crisis, supply cannot cope with the speed of development, and thus delivery times are uncertain and prices increase.

Potential strategies

The main strategies that were mentioned to cope with risks are adaptability & flexibility and the ability to turn a risk into an opportunity. This mainly regards the urban plan which is designed to be adaptable throughout the long period of time. *"It is not about being the biggest or strongest, but how to be the most responsive to changes. One thing is for sure, everything will be different than we though, so embrace the change*." (Interviewee 5, 2019b).

Other strategies were frequently mentioned to reduce risks. For instance, the investment in place-making such as festivals, exhibitions, music events, etc. increases the awareness amongst society and investors and puts the area on the map. This attracts pioneers to occupy the area. Renting existing buildings is a way to further steer on the attraction of early-adapter, to generate a cash-flow before the start of new constructions and to cause an image push for the area. Above all, a shared, long-term vision for the area amongst the main actors contributes to success.

4.3.3 Success factors

The second part of the interviews regarded success factors. The same procedure was applied as for Binckhorst: all mentioned success factors were listed and combined in groups. The same conclusions can be drawn as in the previous case study regarding success factors: No difference is made between success factors and strategies to cope with risks by the interviewed experts. Furthermore, only one success factors that *cannot* be directed and thus belongs to level 1 success factors was mentioned (suitable demographics). The following list shows all generated success factor groups and the complete list can be seen in Appendix VI, p.134.

1. Right project team
2. Mix of everything
3. Flexible master plan
4. Maintain existing buildings
5. Branding and place-making
6. Software & innovation
7. Good urban design

4.4 SUMMARY

This chapter presented the within-case analysis of two case studies, Binckhorst and Strijp-S. Firstly, the context of each case was described. Secondly, 13 semi-structured interviews were held to identify risks and success factors, and to complete the case descriptions.

Binckhorst is developed in an organic approach. The municipality steered on the transformation by the implementation of a pilot land use plan with extended reach and implementation is left to market parties. Strijp-S is developed in an integrated approach by a public-private partnership. The whole area was acquired at once from the former owner Philips and then split into sub-areas which were sold to developing parties. The goal for both areas is to create a vibrant mixed-use neighbourhood for living, working and leisure with a special focus on attracting start-ups, scale-ups and creative industries. These are two different ways to transform an area and thus to solve obsolescence.

Appendix III and Appendix V present the outcomes for each case in form of a risk register that summarize all identified risks. Furthermore, Appendix IV and Appendix VI show all mentioned success factors of each case. In

the following chapter, these results will be compared by means of a cross-case analysis and validated through a second Delphi round.

In light of these results, some conclusion can be drawn regarding the relation of risks and success factors. It became apparent that success factors are essentially the same as potential strategies to cope with risks. Therefore, this empirical research supports the Hypothesis 1. However, this result is yet to be confirmed in the cross-case analysis in Chapter 5.

Success factors increase the possibility to turn risks into opportunities or to minimize their negative impact and probability.

Furthermore, based on the observations made in both cases, the following hypotheses can be defined. These hypotheses and the findings regarding risks and success will be tested in the next chapter by means of a cross-case analysis and the consecutively second Delphi round in form of a questionnaire.

Hypothesis 2:	Well manageable risks are not perceived as risks and the least controllable risks are perceived as the biggest risks.
Hypothesis 3:	Highly fragmented ownership within the area increases the chances of speculative behaviour, opportunists and free-riders.
Hypothesis 4:	A limited number of actors makes the process less complex but not necessarily less risky.
Hypothesis 5:	A mix of different types of actors makes the process less risky.
Hypothesis 6:	Informal collaboration via networks makes the process less risky.
Hypothesis 7:	The economy can influence which organisational structure, e.g. PPP or private sector-led, is best suitable for an area development.
Hypothesis 8:	The economy can influence which approach, e.g. integrated or organic, is best suitable for an area development.

Data analysis

5 DATA ANALYSIS

This chapter builds on the previous within-case analyses of Binckhorst and Strijp-S with a qualitative cross-case analysis and a quantitative data analysis. First, the contexts of both cases are compared in order to determine comparability of the cases and generalizability of the outcomes. In the next step, risks and success factors are compared to detect similarities and differences. The results are used as input for the second Delphi round in form of a questionnaire. The aim of this chapter is to test the previously defined hypotheses and to determine which risks and success factors influence the process and how they can be managed.

5.1 CROSS-CASE ANALYSIS

First, it is important to detect the contextual differences and similarities of the two cases to see if, how and in what extend lessons learned at Strijp-S can be applied to Binckhorst or to other cases. For that purpose, the comparability of each context variable is analysed.

In the second step, the risks and success factors are compared. All information about those variables gained from the semi-structured expert interviews are analysed in a comparative manner. This method detects similarities and inequalities in both variables and helps to determine which results are generally valid for other cases.

5.1.1 Context

The selected cases have several similarities and differences that make Strijp-S a suitable case for Binckhorst to learn lessons from. Both cases classify as urban area transformations with the aim of re-developing an obsolete district into a mixed-use area. Both areas have a central position within the city, target a mixed group of users and functions, and a mix on different levels. They differ in the development stage they are currently in which allows that Binckhorst can learn from the experiences already gained in Strijp-S. Nonetheless, certain aspects differ which must be taken into account when comparing risks and success factors in the next step. The following table presents the contextual cross-case comparison. The degree of similarity of each aspect is analysed and shown as a colour code: green indicates a high, orange a medium and red a low degree of similarity.

Table 11 Context comparison Binckhorst and Strijp-S (own table)

	Binckhorst	Strijp-S	Similarity
Development approach	Organic	Integrated	●
Process			
Timespan in which area becomes available	Bit by bit over a long period	At once	●
Phases	No clear overall phases	Phases in space, not in time	●
Milestones	General milestones and individual milestones	General milestones	●
Place			
Type of area	Industrial, office and harbour area	Philips factories and offices	●
Former functions	Industry, offices, workshops, services, living	Industry and offices	●
Initial situation	Occupied with some vacant buildings	Largely vacant	●
Size of area	146 ha	27ha	●
City size	Den Haag: 98km², 533,000 inhabitants	Eindhoven: 89km², 229,000 inhabitants	●

Position in the city	Adjacent to city centre	Adjacent to city centre	
Distance to city centre	2,5km - biking distance	1,6km - walking distance	
Product			
Target groups	Companies: mixed, start-ups, scale-ups, creative industry, Residents: mixed	Companies: start-ups, scale-ups, creative and high-tech industry, Residents: mixed, students and empty-nesters	
Planned functions	Living, working (offices, service and industry), leisure	Living, working (offices), education, culture, leisure and events	
Levels of mixed-use	Combination of > 3 functions; mix horizontally, vertically and through the day; density, optimization of space use and close-grained; diversity of people and landscapes	Combination of > 3 interacting, integrated and mutually supporting functions; mix horizontally, vertically and through the day; density, optimization of space use and close-grained; diversity of people and landscapes	
Person			
Ownership	Fragmented, multiple owners	All in one hand, one owner	
Forms of formal collaboration	Only amongst individual market parties	PPP	
Forms of informal collaboration	Network for all actors, and for market parties	Platform for main actors	

Development approach: The most crucial difference is the development approach. Binckhorst follows an organic approach which means that a high number of actors are involved, no formal collaboration on a large scale exists, and each plot has its own phases. Strijp-S is characterized by its integral approach within a PPP, so it has a limited number of actors, and a wholistic phasing is possible.

Process: In the beginning, the ownership of Strijp-S was in one hand. Thus, the area could be transferred in one transaction and development could start at once. This also enabled a planned phasing which is done in zones. Binckhorst has no phasing and every plot is developed at a different speed. General and individual milestones are apparent in both cases; however, Strijp-S is characterized by more general milestones than individual ones due to the limited ownerships and the close relation between individual developments and the overall area.

Place: Strijp-S was an exclusively industrial and office area, while Binckhorst already had a high mix of functions including heavy industry, service functions, shops, living and a harbour. The position within the city and the type of city is similar in both cases, although the distance to the city centre from Binckhorst is regarded biking distance, while at Strijp-S it is in walking distance. This influences the connectivity and accessibility of the area. The main inequality is the size of both areas and that Binckhorst was a mostly occupied area from the beginning on while Strijp-S was vacant. Therefore, for the former a long time span is required until plots become available for development and the overall transformation has a later expected date of completion.

Product: Both developments aim for a similar end-result. A mix of users and functions will be established in both cases that fulfils all criteria of mixed-use. However, due to the integrated approach at Strijp-S it is possible to better achieve an interaction, integration and mutually support of functions. Furthermore, it is feasible to better spread activities throughout the day. Moreover, Strijp-S focuses more on high-tech and creative industries and attracts younger residents. Currently the biggest group of residents is of the age 25 - 45 with 66%, followed by 22% of the age 15 - 25 (Allecijfers.nl, 2018a). In Binckhorst the biggest group is as well of the age 25 - 45 with 51%, but the second group is of the age 45 - 65 with 27% (Allecijfers.nl, 2018b).

Person: Binckhorst is characterized by highly fragmented ownership. Formal collaboration is established between individual private parties, for instance for the development of Binck Eiland. Informal collaboration happens through the network platform I'M BINCK and de Stadsmakers. In contrast, Strijp-S was acquired by the PPP Park Strijp Beheer. Furthermore, the board of inspiration serves for informal collaboration.

Concludingly, despite their similarities, the crucial differences in the developing approaches and the starting position of the place influence the results gained of this research. Therefore, when analysing risks and success factors, these differences must be considered to ensure validity of the outcomes.

Comparison theoretical and empirical research

In this paragraph the results from the empirical research are compared with theory regarding the context. Looking at the context analysis in Table 11, it is apparent that the two cases fulfil all typical characteristics of integrated vs organic urban development approach, as defined by Buitelaar et al. (2014) (Ch.3.1.3). The following figure shows how Binckhorst and Strijp-S fit in this comparison. Despite this juxtaposition, the development approach of each case is not black or white. Therefore, the arrows indicate that each aspect is defined as a point on a scale that ranges from both extremes and the boundaries are fluent.

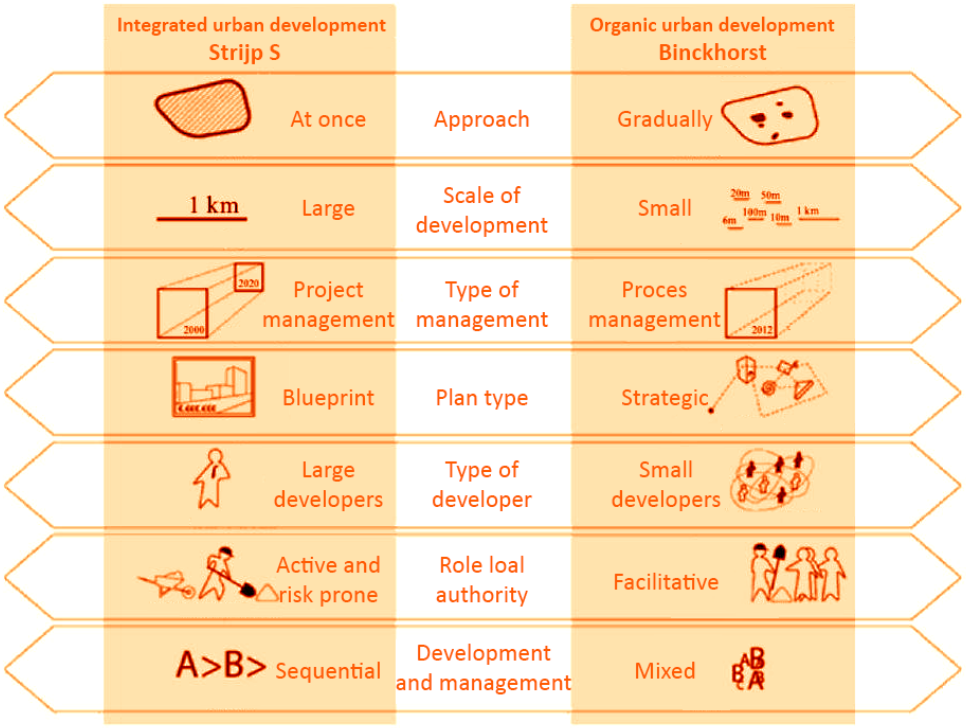


Figure 44 Integrated vs organic development approach (adapted from Buitelaar et al., 2014)

Binckhorst was originally intended to be developed in a more integrated approach, which changed towards an organic approach due to the financial crisis. Comparing to Strijp-S which has a different size, perhaps the scale of Binckhorst was simply too big, and it might have been feasible if the area was smaller. The bigger an area is, the higher the financial and organisational means needed. At a certain size the re-development becomes unfeasible and too risky for one party. Furthermore, the fragmented ownership increased the complexity and costs to obtain complete ownership. It can be concluded that areas that are very large and have a fragmented ownership are better developed in an organic approach.

- Organic development approaches are better suited to diversify financial risks for large-scaled areas and highly fragmented ownerships.

On the other hand, integrated development can be a less complex approach, as everything is in one hand and ownership is limited to a few parties. This enables to easier design and implement a vision for the area, to better spread risks amongst actors and plots, and to plan sequential phasing. Furthermore, it reduces organisational complexity and facilitates easy and direct communication amongst actors.

- Integrated development approaches enable to share financial risks and to reduce organisational complexity due to limited ownership.

Although Strijp-S was originally designed according to a traditional, blueprint masterplan, this approach changed towards a more organic and flexible urban plan. The reason for this change was again the financial crisis. Both

cases show that economy can influence which development approach is best suited. An economic recession can cause a change of approach, and a change of the municipal role. Based on those case studies, organic developments seem to be better suited during economic downturns. The higher flexibility enables easier adaption to changes. Furthermore, the division in smaller units and a fragmented ownership diversify certain risks better over the whole area.

- Organic development approaches are better suite during economic recession due to diversification of certain risks.

As may be deduced from the above discussion, the following finding can be formulated:

> The best approach in which an area is developed depends on the area's history, the location, the desired outcome, the economy, and is always case-specific.

5.1.2 Risks

After establishing the contextual similarities and differences of both cases, a cross-case analysis on risks can be performed. For this purpose, the risk registers of both cases are compared. First, those risks that were stated in both cases were detected. Interestingly, the analysis shows that most stated risks apply to both cases, despite their contextual differences. From the 32 risks in Binckhorst and the 24 risks in Strijp-S, 18 risks were identical.

In the second step, the risks that differed between the two cases are detected. Each of those risk that were only mentioned in one of the cases was analysed regarding its general validity for urban area transformations. Certain risks might only be case specific whilst others can be generally valid. It is crucial to determine those risks that are case specific which will not be included in the final risk register. Some risks have general validity after re-phrasing them to more general terms. Therefore, in the following paragraphs all risks that were only mentioned in one of the cases are analysed regarding their general validity. Some risks are re-phrased, and some are considered not to be generally valid and thus not included in further analysis.

Risks that were only stated in interviews regarding the Binckhorst development

1. *Existing hazardous functions*
   Existing functions like heavy industry and harbour functions can cause air and noise pollution. These factors are already included in the list of general risks. Moreover, conflicts can arise between the interests of the old and the new market in case of an incompatibility within the same area. This is a risk that can generally occur in all urban area transformations with existing occupiers. In most re-development cases, areas are occupied, and Strijp-S is rather unique in that regard. Thus, this risk is added.
   ➔ Incompatibility of existing and future functions (Planning)

2. *Not enough demand after completion*
   This risk is similar to 'wrong estimation of future demand'. However, those risks differ in the reach. 'wrong estimation of future demand' only regards the developed area. In contrast, an imbalance of supply and demand can be caused by area-external factors and disturb the balance of the local market. This impact reaches further than the area in question. Therefore, this risk concerns the local market.
   ➔ Supply-demand imbalance (Market)

3. *Unbalanced mix of functions*
   There is always the risk that the mix of functions is unbalanced, e.g. too much residential compared to offices. Those effects are only visible years or decades after completion. Even in integrated transformation approaches, where the outcome is more controllable, future developments are never completely predictable. This can cause unemployment, shortage of housing, or a lack of liveliness in the area. Therefore, this risk will be added.
   ➔ Unbalanced mix of functions (Area)

4. *Restrictions for existing companies due to new developments*
   Existing companies can experience restrictions of their business operations by new developments in case of incompatibility. This falls in the same aspect as 'Incompatibility of existing and planned functions'.

5. *Change of political direction and municipal plans*
   The political direction of a city can always change after local elections. In Dutch municipalities, elections take place every four years. The political direction can determine whether a development project is supported or not and in which way. Even within PPPs, politics can have great influences.
   ➔ Change of local political direction (Political)

6. *Controversy with adjacent municipalities*
   This risk can occur if the area to be developed is located adjacent to a neighbour municipality or if another municipality has reasons to be interested in the development. Although this risk depends on the individual case, it will be added as it should be considered in any case.
   ➔ Controversy with adjacent municipality (Political)

7. *Lack of employee capacity*
   A lack of employee capacity can always occur both in public and private sectors. Particularly, during and after economic recessions the probability of this risk increases. The whole Dutch real estate sector experienced delays and price increases due to a lack of employee capacity after the last crisis. This can impact the speed of processes and prices and will therefore be added.
   ➔ Lack of employee capacity (Organizational)

8. *Internal complexity of municipality*
   The internal complexity of public bodies or private companies can create a lack of transparency and confusion about responsibilities and opinions. As every municipality consists of various departments, and often companies have complex internal structures, this risk is generally valid.
   ➔ Internal complexity of municipality or companies (Organizational)

9. *Image damage*
   The damage of a party's image or reputation can lead to distrust amongst society or collaborating parties and the loss of orders. This is a serious risk, however, it is usually the result of flawed performance. While one's own work can be managed, often the performance of collaborating partners cannot. Nonetheless, the work of collaborating partners can likewise affect one's image negatively. Thus, this risk will be included and combined with the risk 'Selection of unsuitable partners'.
   ➔ Unsatisfying performance of collaborating partners (Organizational)

10. *Discovery of protected flora and fauna*
    Naturally protected animals or plants can always happen to be found in the area to be transformed which can cause delays. Therefore, this risk is generally applicable.
    ➔ Discovery of protected flora and fauna (Environmental)

11. *Infrastructure and traffic*
    Although a poorly designed infrastructure and parking plan can cause traffic problems and air pollution, this falls under the risk 'wrong estimation of future demand'. If the future demand is estimated correctly, infrastructure, parking and traffic can be managed by means of a good urban design.

Risks that were only stated in interviews regarding the Strijp-S development

1. *Too much supply within a short time period*
   In case of too much supply of real estate within a short time period, the market might be oversaturated. This is essentially the same as 'supply-demand imbalance'.

2. *Unpredictability of pioneer users*
   In general, the behaviour of users is unpredictable and social, economic or personal changes can cause them to relocate. The resulting change of user types can bring new requirements for the properties. This is part of 'wrong estimation of future demand'.

3. *Legal conflicts amongst parties*
   Conflicts can occur in every project where people with different opinions work together. This can lead to legal consequences in the extreme case. Due to the immense impact a lawsuit can have on time and money, this risk will be added.
   ➔ Legal conflicts amongst parties (Legal)

4. *Clash of opinions*
   Similar to the previous risk, a clash of opinions can occur in any form of collaboration. However, this is a natural part of working with multiple actors. The actual risk are legal actions, so 'legal conflicts amongst parties'.

5. *Management of prices set*
   The determination of prices by contractors or developers is part of every project. A risk results if the

determined price does not cover the costs plus a profit. Thus, this belongs to the risk 'revenues don´t cover expenses'.

6. *Flooding*
   This is a rather specific risk and can be generalized as natural disasters which can occur in any case. As natural disasters can have an immense impact on developments by causing delays, damage and extra costs, this risk will be included.
   ➔ Natural disasters (Environmental)

Finally, based on the outcomes of the previous analyses and considerations, all risks can be combined in one risk register that includes the following columns: (1) risk category, (2) risk, (3) actor, (4) phase, (5) impact, (6) potential strategy. This register can be seen in Appendix VII, p.135 and includes all risks that were stated in both cases and the ones that were previously generalized. The additional information on each risk regarding *actor, phase, impact* and *potential strategy* were combined from both cases. These risks will be analysed regarding their probability and impact in the quantitative validation.

5.1.3 Success Factors

The last part of the cross-case analysis is the comparison of success factors. The same procedure is used as for risks and likewise the overview of all success factors (Appendix IV and Appendix VI) are compared. It is evident that the success factor groups in both cases show strong analogies. For instance, the success factor groups 'create awareness and place-making' and 'branding and place-making' are identical. In response to that, the regarding categories were merged and similar success factors were combined to one factor to clear double entries. Two success factor groups were only mentioned in one of the cases, namely 'speed of development processes', which relates to the economy, and 'favourable conditions', which regards contextual conditions. Due to the enormous influence of economy on development processes, which is proven in both cases based on the influence of the last economic crisis, the following success factor group is added: 'Adapt to economic changes'. The group 'favourable conditions' is also added, as factors such as the political climate can have a huge impact. Moreover, all success factors are analysed regarding their level of success factors. These are (1) context variables, (2) veto criteria, and (3) critical success factors, as explained in Ch.3.4.2. Due to the blurry boundaries between those levels, it is possible that a factor can apply to more than one level. These results are presented in Appendix VIII, p.136.

Comparison theoretical and empirical research

Looking at the generated risk register (Appendix VII) with regard to the theory about risk diversification (ch3.3.4), it is apparent that some risks only affect certain plots, some affect the total area and some the whole market. This observation is particularly notable in the context of an area scope (compared to a plot scope), since it is possible to diversify and balance out certain risks when managing them in an area approach. Those risks that are non-systematic can be diversified. Consequentially the overall risk of an area portfolio can be mitigated, and losses can be balanced out. Market specific risks are also called systematic risks and cannot be diversified. In the context of area transformations, area specific risks can neither be diversified within the scope of the area. However, those risks that are plot specific can possibly be diversified within the area. As a response to this consideration, another aspect will be added to the final extended risk register 'scope' where the level of diversification is assessed. This is done by estimating whether a risk is market specific, area specific or plot specific.

Regarding levels of success factors, the theory defines three levels of success factors (Hobma, 2011). The analysis of success factors shows that most mentioned factors belong to level two and three, which can be directed by actors. In contrast, out of the total 41 factors only 6 factors are context variables, which are not directable. Examples are the political climate or economic development – neither can be influenced by individual actors. It can be concluded that professionals mainly define success factors as factors that can be directed by them or other actors within the area development.

Comparing the previously generated list of success factors with the list of risks, it is apparent that the 'possible strategies' for each risk resemble the stated success factors. To give an example, for risk 1 '*wrong estimation of future demand*' actors stated the potential strategy '*flexible urban plan with a wide mix of functions; considering*

changing plans especially after certain external events'. This corresponds to the following identified success factors:

- '*Design an adaptable and flexible urban plan*' (SF group 3)
- '*Create a well-balanced mix of interacting and integrated functions, users and programs, horizontally, vertically and throughout the day'* (SF group 4)
- *'Consider a change of approaches during economic changes, e.g. from integrated to organic development'* (SF group 7)

Thus, those success factors are the same as the potential strategies and therefore help to minimize the impact or probability or to increase opportunities of the risk '*wrong estimation of future demand*'. Every identified success factor can be related to identified risks in this way. It can be concluded that one or more success factors can be linked to one or more risks and vice versa. This observation confirms the link between risks and success factors as stated in Hypothesis 1 through empirical research: Success factors increase the possibility to turn risks into opportunities or to minimize their negative impact and probability.

In the light of these considerations, the final list of success factors can be extended and complemented with those factors that were named as 'potential strategies'. Furthermore, it will be analysed whether patterns occur about which success factors can be linked to which risks. For instance, it could be assumed that risks with a high impact or high probability relate to the levels 'critical success factors' or 'context variables'. Since success factors of these levels are difficult to be directed or not directable, they might relate to risks that are perceived as less or not manageable. This assumption can be tested after analysing the risks further and establishing the impact and probability which will be done in the following sub-chapter.

The results of the previous considerations will be used to generate the extended risk register which will be presented in Ch.6.1.

5.2 QUANTITATIVE VALIDATION

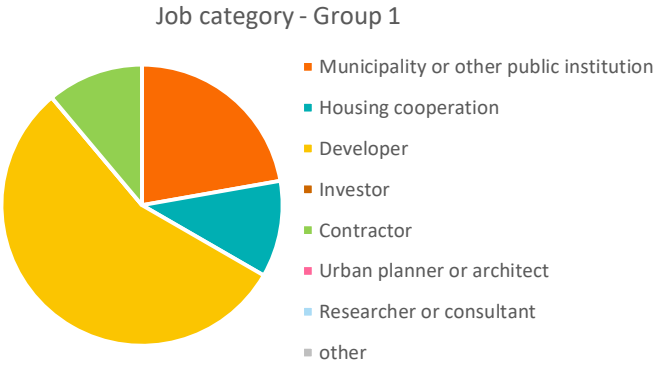
After the previous cross-case analysis, the results are tested in a second Delphi round. As explained in detail in Ch.2.2.2, an online questionnaire was prepared to be filled in by two different groups. For the full survey see Appendix IX, p.138. After analysing the outcomes, two results were obtained. On the one hand, a comprehensive overview of risks is generated which are analysed regarding impact and probability. On the other hand, lessons learned are defined. This is used to formulate general advice and for the final framework design.

The survey focused on risks and risk management. Success factors were deliberately not a main subject for the survey, since the previous interviews already provided extensive information and furthermore showed that success factors are qualitative variables and cannot be quantified. Thus, there is no need for further quantitative analysis.

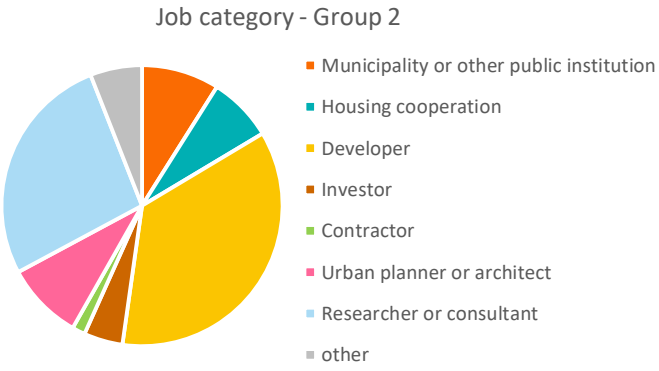
The questionnaire consisted of four parts. The first part asked for general personal background of the respondents. This ensured the representativeness of the sample and that it corresponds to the population. The following part dealt with the general use in practise of risk management. In the third part respondents were asked to evaluate all risks which were collected in the first Delphi round, regarding probability and impact. All risks were grouped in risk categories which enables to directly compare risks with each other but still to remain clarity and to avoid one big list. Additionally, the first respondent group was asked to indicate in which phase each risk is most likely to occur. The other aspect of the risk register regarding *actor* was not subject of the survey, as this was already sufficiently established in the interviews since these were held with a great variety of actors. The aspect *potential strategies*, likewise to success factors, are not suitable for quantitative analysis. The fourth and final part of the questionnaire covers the relation between risks and success factors and tested hypotheses made in previous chapters.

Personal background respondents

Group 1: The first group consists of all experts that were interviewed in the first Delphi round. Responses were received from actors of four different job categories with most respondents being developers. 78% of the experts have working experience in the field of more than 10 years and 22% of less than 5 years. The expertise of 33% of the respondents is equally focused on area development and real estate development, another 44% only focus on area development, and 22% focuses more but not exclusively on real estate.



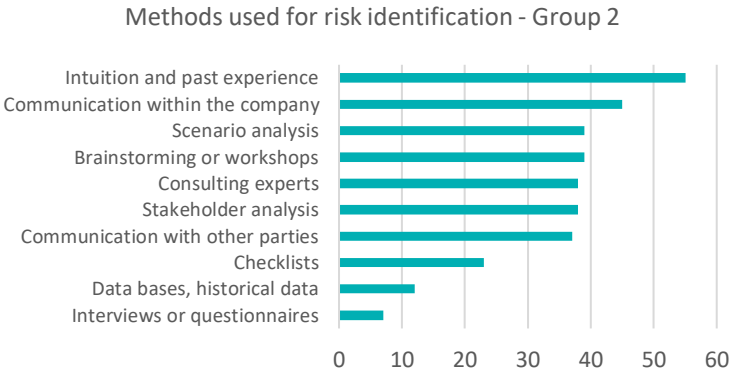
Group 2: The second group consists mainly of developers followed by researchers or consultants, and urban planners or architects. This can be explained by the fact that most identified risks regard developers. Therefore, it is consequential that people from this profession can best evaluate those risks. Most respondents have working experience of more than 5 years: 36% between 5 and 10 years, 24% more than 10 years, and 40% less than 5 years. The mean result regarding the expertise of the respondents lies equally between real estate development and area development.

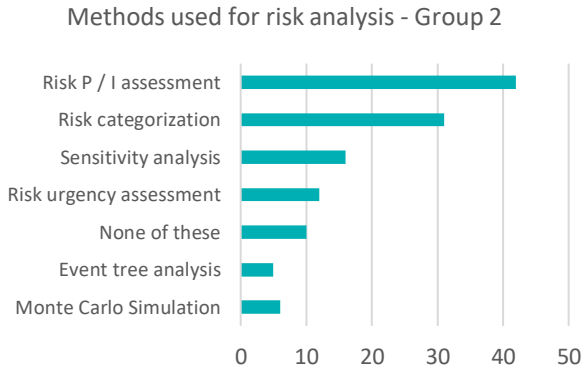


Risk management

Group 1: Risk management is mostly perceived as a useful tool. 78% agree that risk management is useful in complex projects and 22% strongly agree. 67% state that it is even necessary in complex projects and 33% strongly agree. Furthermore, only 11% agree that it is too complex or too time consuming. In contrast, 67% disagree that it is too complicated or too time consuming. The results show that the first and third step of risk management is performed most often, followed by risk identification. The last step, risk review, is executed least often. The mostly used methods to identify risks are consulting experts, intuition & past experience and communication within the company. The most commonly used methods to analyse risks are risk probability and impact assessment, risk categorization and on the third position 'none of these'.

Group 2: The second group has a similar perception of risk management. The mean results are the same as in group one but the spread of results is wider due to the higher number of answers. On average, most people agree that it is useful in complex projects (51%) and strongly agree that it is necessary in complex projects (52%). Furthermore, most people disagree that it is too complicated (48%) or too time consuming (60%). However, it was also stated in additional comments that the usefulness of risk management depends on the extend and way in which it is implemented. The results show that the typical steps of risk management are used in decreasing order, so the first step is performed most often and the last one least often. The following graphs show which methods are mostly used for the tasks of risks identification and risk analysis.





The three most used methods for risk identification are the same as for group one, as well as the two least used methods 'data bases, historical data' and 'interviews or questionnaires'. The result that most respondents prefer 'intuition and past experience' to identify risks, corresponds to the answers from the previously held interviews. For the task of risk analysis, the primary method is again risk probability and impact assessment, followed by risk categorization. These methods are qualitative methods. Thus, the observation that qualitative risk analysis methods are used more often than quantitative ones matches with literature (Gehner, 2008). As a quantitative method, Monte Carlo Simulation is recognized to be a useful tool for risk analysis in literature (Loizou & French, 2012), however, only 9% of the respondents use it in practice. Furthermore, 15% off all respondents in group two do not use any of the given methods for risk analysis. One respondent stated to use the RISMAN method. This was originally a tool for risk analysis and later adjusted to be a comprehensive risk management method which is primarily used in the Netherlands.

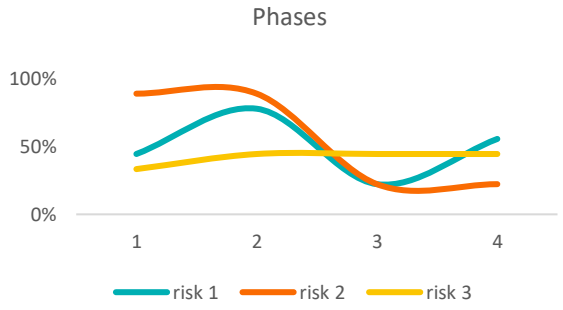
Risk analysis

The third part of the questionnaire serves the purpose to analyse all risks that were identified in the previous case studies. According to the formula Risk = Probability x Impact (Gehner, 2008), the respondents were first asked to rank the probability of occurrence of each risk, and second to rank the impact each risk can have in case of the risk event. A five-level Likert scale was used to indicate those variables. For the probability the scale ranged from 'almost never' to 'almost certain'; and for the impact it ranged from 'very low' to 'very high'. The results were used to generate impact-probability matrices. This is a way to easily identify the weight of each risk and to compare them with each other. Those risks that fall in the upper right quadrant are the most severe ones and the risks in the lower left quadrant the least severe ones. Moreover, group one was asked to indicate in which phase of the process each risk is most likely to occur. This gives an indication about when risks must be dealt with. The phases are (1) initiative, (2) feasibility, (3) realization and (4) maintenance. All risks are grouped in risk categories, namely planning risks, financial, economic & market risks, area risks, legal & political risks, organisational risks, executional & environmental risks. Some risk categories were combined in one section in the survey to ensure a balanced number of risks per section. The following paragraphs show the results obtained from the survey from both groups.

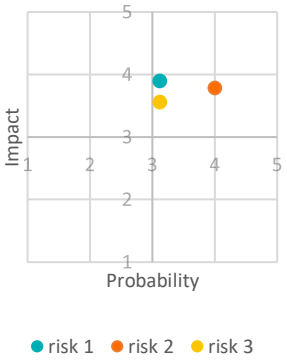
Planning risks

Risk 1: Wrong estimation of future demand
Risk 2: Incoherence and changes of plans by municipality
Risk 3: Incompatibility of existing and future functions

Naturally, planning risks are most likely to occur during the feasibility phase, which includes definition, design and preparation tasks, and least likely during realisation. The first risk has another peak in the maintenance phase, since it is only after completion that the impact of a wrong estimation of future demand becomes visible. Both respondent groups agree that 'incoherence and changes of municipal plans' has the highest probability and is the biggest risk of this category, followed by 'wrong estimation of future demands'. These results correspond to the outcomes of the conducted interviews, where changing and incoherent municipal plans was perceived as one of the biggest risk.



Group 1:



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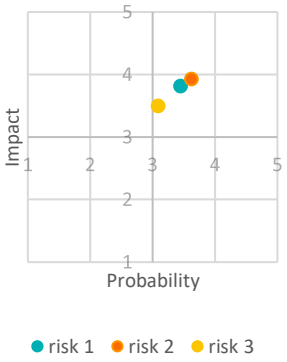
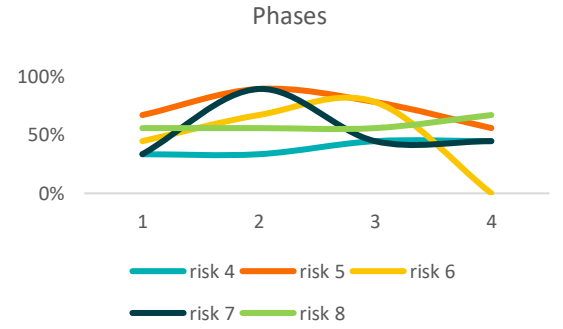


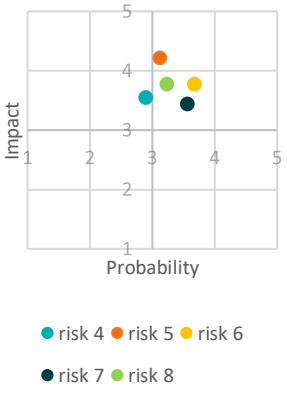
Financial, economic & market risks

Risk 4: Revenues don´t cover expenses
Risk 5: Economic recession
Risk 6: Increase of construction prices
Risk 7: Speculation
Risk 8: Imbalance between supply and demand

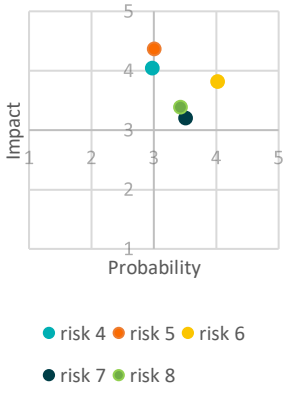
Most risks of this category can occur rather equally in most phases. Exceptions are risks 6 and 7. An increase of construction prices is most severe during realisation and has no impact during the maintenance phase. Speculation has a peak during feasibility. Comparing both groups, the risks are more agglomerated in the matrix in group one and more spread out in group two. The risk of an economic recession is perceived as having the biggest impact by both groups in this category. Overall, only risk 28 'natural disasters' has a bigger impact, according to group two, but a lower probability. This result correspond to the observations gained from the previous interviews where most experts stated that the economy has the biggest impact and is the least predictable risk. An increase of construction prices has the highest probability, as this risk is currently happening. This was also confirmed by experts during the interview.



Group 1:



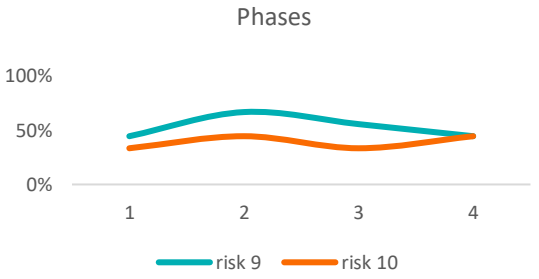
Group 2:



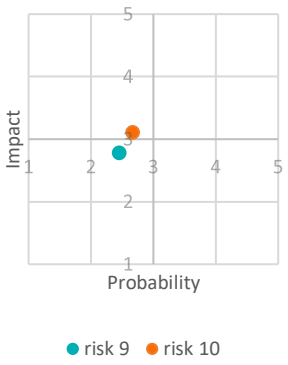
Area risks

Risk 9: Loss of authenticity and unique character of the area
Risk 10: Unbalanced mix of functions

Both area-related risks are perceived less severe compared to the previous risk categories, and are located in the upper-left quadrant. The loss of authenticity and unique character of the area is ranked with a comparatively low probability and impact, although some experts stated during the interviews that this is the biggest risk. Thus, the qualitative data does not correspond to the quantitative results. Both risks can be influenced to a certain extend by some actors, for instance through the land use plan and overall vision. It can be assumed that they are perceived less severe because of their directability.



Group 1:



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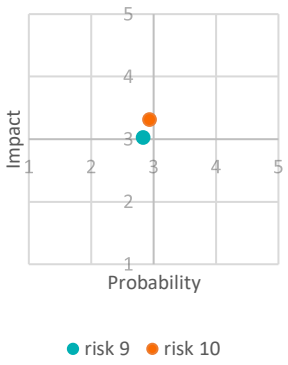
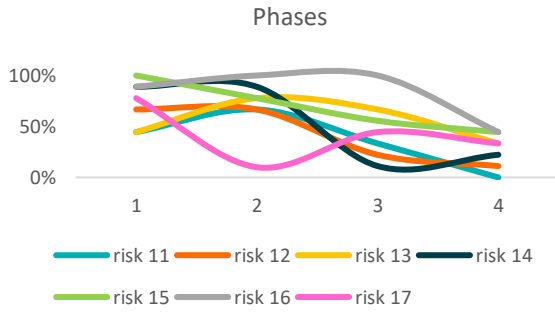


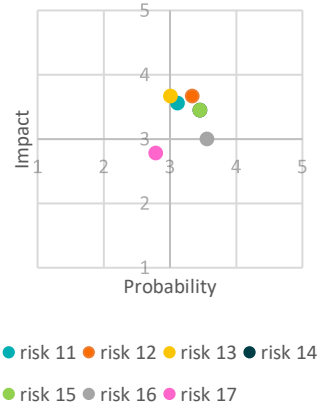
Legal & political risks

Risk 11: Objections to building permits
Risk 12: Objections to zoning plan changes
Risk 13: Legal conflicts amongst parties
Risk 14: Controversy with or within municipality
Risk 15: Change of local political direction
Risk 16: New policies from central government
Risk 17: Controversy with adjacent municipality

The results show that risks 11, 12 and 14 are most likely to occur in the first two phases of the process and less in later phases, since they relate to preparation procedures. Generally, the risk 'controversy with adjacent municipalities' is perceived as the least severe risk amongst all categories. The reason for that might be that this risk can only occur in specific cases, namely if the area to be developed abuts the border of another municipality. The risk that differs most between both groups is 'new policies from central government', whereof group one evaluated the probability higher than group two. Furthermore, this is the risk that occurs most likely throughout all phases of the process. Group two ranked the risk 'objections to zoning plan changes' as the biggest risk in this category. Perhaps it is perceived slightly less severe by group one since this risk was limited in the development of Strijp-S due to the PPP. Both groups agree that legal conflicts



Group 1:



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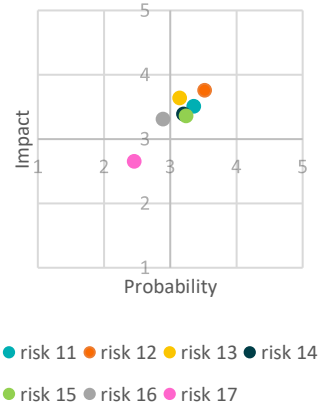
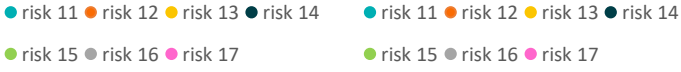


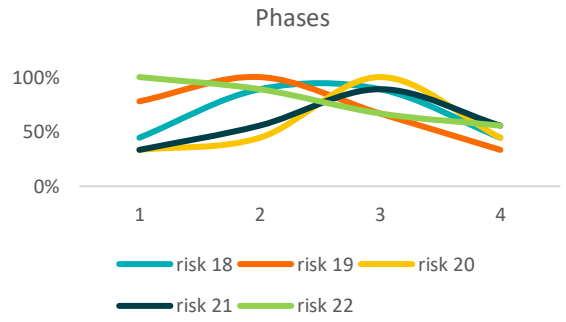


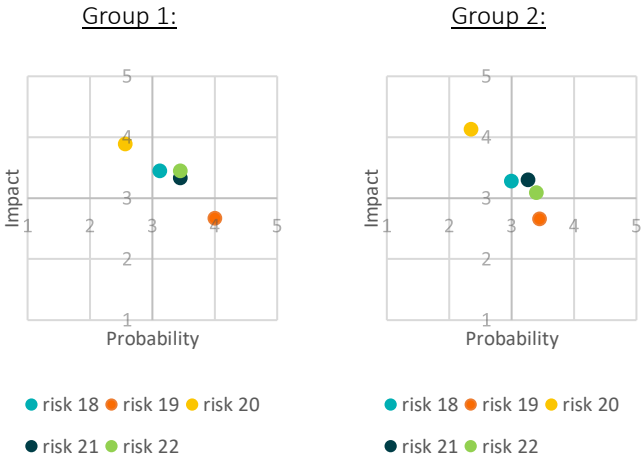
amongst parties can have a high impact, mainly during the feasibility phase. This result matches previous expectations, as lawsuits can cause long delays and immense costs.

Organisational risks

Risk 18: Unsatisfying performance of collaborating partners
Risk 19: Changes of personnel
Risk 20: Bankruptcy of a company
Risk 21: Lack of employee capacity
Risk 22: Internal complexity of municipality or companies.

This category relates to the human factors. An unsatifying performance of parters is more severe during feasibility and realisation. The risk 'changes of personnel' has a comparatively low impact but a high probability. This is not surprising due to the high number of involved actors in development projects and the resulting high frequency of changing personnel. The risk of bankruptcy is generally perceived to have the highest impact within this category but the least probability. It is most likely to occur during realisation, since typically the biggest investments have to be made during this phase. A lack of personnel becomes most visible during realization, since a high amount of labour is needed for construction tasks. The internal complexity of municipalities or companies is most severe during initiation. This can be explained since during initiation the vision is created and the higher the organisational complexity, the more difficult it is to come to a joint vision.

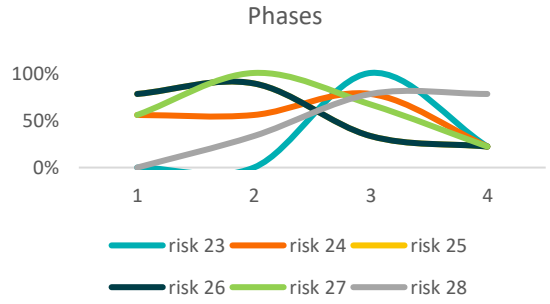




Executional & environmental risks

Risk 23: Accidents during construction
Risk 24: Ground pollution
Risk 25: Noise pollution
Risk 26: Air pollution
Risk 27: Discovery of protected flora and fauna
Risk 28: Natural disasters

The risks of this category can be divided into two groups: risks 26 and 27 are most likely to occur in the first two phases of the process since they relate to preparation tasks, while risks 23, 24 and 28 are more likely to occur during realisation as they relate to construction tasks.



Generally, 'natural disasters' is ranked to have the highest possible impact but the lowest probability. Therefore, this risk has the biggest contrast between impact and probability of all risks. Moreover, ground pollution is the biggest risk of this category. Comparing both groups, air pollution is perceived more severe by group one and the discovery of protected flora and fauna more by group 2. This can be explained by the fact that both Binckhorst and Strijp-S have to deal with the problem of air pollution but no serious issues with flora & fauna occurred.

Group 1:

Group 2:

Concludingly, the overall biggest impact have risk 5 'economic recession' and risk 28 'natural disasters'. Group one ranked risk 5 on the first place and risk 28 on the second, group two ranked them in reverse order. Both risks can affect tremendous, overarching effects for a whole market. The highest overall probability has risk 6 'increase of construction prices'. This corresponds to the current market developments as construction prices have been increasing continuously in recent years. For group one the highest probability have risk 2 'incoherence and changes of plans by municipality' and 19 'Changes of personnel'. This can be explained because risk 2 already occurred several times in Binckhorst and risk 19 happens in a frequent manner in a project with such a long time horizon. Group two ranked risk 6 on the first place.

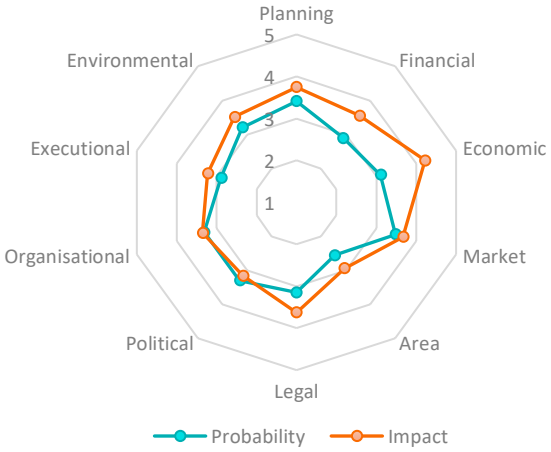
In order to determine the overall biggest risks, the following formula is applied: Risk = Probability x Impact. The overall biggest risk combined for both groups is risk 6, as it has the highest probability and a relatively high impact (6th place). This result might be surprising, since risks are generally associated with uncertainty, however, the increase of construction prices is already happening and therefore certainty is obtained. The second place is taken by risk 2 'incoherence and changes of plans by municipality' and the third place by risk 12 'objections to zoning plan changes' – with both having a relatively high probability and impact likewise. The overall smallest risk is risk 17 'controversy with adjacent municipality' since this can only affect very few cases.

The biggest risk for group one is risk 2: 'incoherence and changes of plans by municipality'. Comparing this result with the qualitative data, most experts involved in Binckhorst stated that inconsistency and incoherence of municipal plans, particularly regarding the *Omgevingsplan*, is one of the biggest risks. In contrast, during the interviews regarding Strijp-S this was not mentioned as a risk. The second biggest risk is risk 6 'increase of construction prices'. The overall least serious risk is risk 9 'loss of authenticity and unique character of the area'. This result is surprising since most actors in both cases stated that this can be a serious problem. Perhaps it is ranked low because the loss of authenticity is not measurable or quantifiable. Furthermore, the second smallest risk is risk 28 'natural disasters', despite its high impact level.

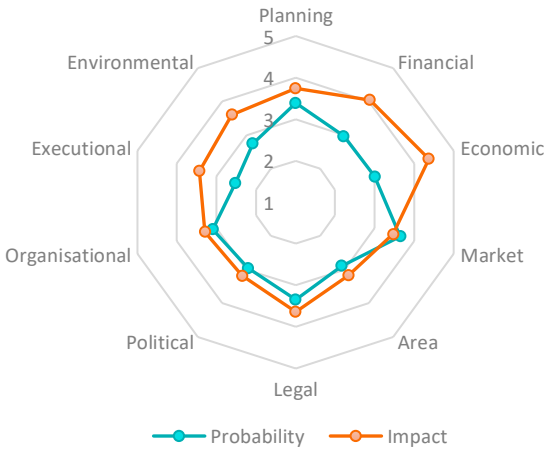
For group two the same risks (2 and 6) occupy the first two places for the overall biggest risks, however, in the reverse order: risk 6 is the number one and risk 2 the number two. The least severe one is risk 17 and risk 28 likewise.

To conclude this risk analysis, all risk categories are compared with each other. The following spider diagrams show the results from both groups. Generally, economic risks have the biggest impact which corresponds to the weight of the risk 'economic recession'. This can be explained because economy is not influenceable by individual actors and yet has enormous, overarching effects on area transformations. Furthermore, both groups state that market risks have the highest probability. This is caused by the high fluctuation of local markets and the currently rising construction prices. The overall least severe risk categories are area and executional risks. These risks are manageable by individual actors and can be reduced by thorough upfront planning and accurate execution.

Group 1:



Group 2:

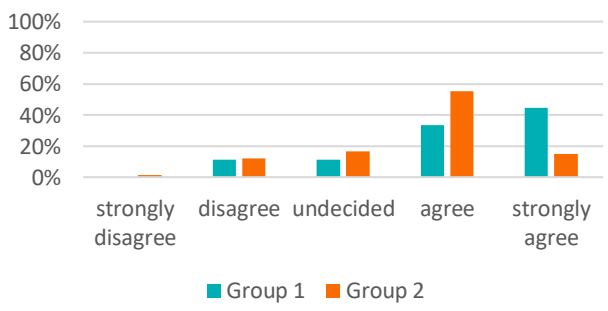


Therefore, the results show that Hypothesis 2 is partly proven to be correct. The least controllable risks are economic and market risks since they are not influenceable by individual actors, no matter how powerful. These risk categories are perceived as the biggest risks both regarding the estimated impact and probability. In contrast, well manageable risks are area and executional risks since they can be managed by the responsible actors. These are perceived least severe; however, it is not true that they are not at all perceived as risks.

Furthermore, the results show that the risk of economic recession has the second highest possible impact on urban area transformations. This proves that economy has a huge influence on the development process, as indicated in Hypotheses 7 and 8. However, theses hypotheses are further tested in the following part of the survey.

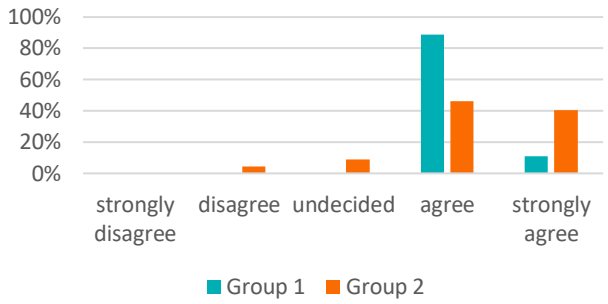
Risks and success factors

In the last part of the survey respondents were asked to evaluate statements that were generated based on the previously held expert interviews and defined as hypotheses. A five-level Likert scale was used to indicate the degree of agreement, ranging from 'strongly disagree' to 'strongly agree' with the option 'undecided'.

Statement	Result
"Risks can also have a positive impact and become an opportunity." On average most respondents agree to this statement. 70% of group 2 and 77% of group one agree or strongly agree. This result corresponds with the definition of risks as supported by literature in ch.3.3.1: *"risk is defined as a situation that can cause a threat or opportunity in consequence of uncertainty."* – even though risk is often perceived with a purely negative connotation.	

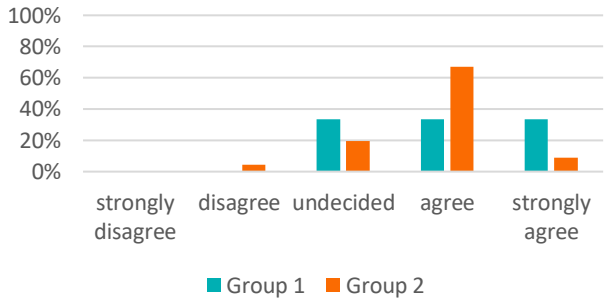
"Depending on how well risks are managed, this can determine the success or failure of the project."

100% of all respondents in group one and 86% of group two agree or strongly agree with this statement. This result matches the considerations as previously concluded regarding the relation between risks and success factors and is the base for the following statement.



"Success factors can help to minimize the impact or probability of risks."

On average most respondents agree to this statement. 67% of group two agree and 9% strongly agree. In group one 33% agree and 33% strongly agree, while 33% are undecided. This result matches the conclusions drawn in chapter 3. Therefore, Hypothesis 1 is definitively proven to be correct.



The following questions regarded the relationship of organisational forms to risks. The table below summarizes the results for the evaluation of statements which were defined as hypotheses in previous parts of this research. The mostly given answer is highlighted in green.

	A limited number of actors makes the process less complex		A limited number of actors makes the process less risky		A mix of different types of actors makes the process less risky		Informal collaboration via networks makes the process less risky.		Formal collaboration (e.g. joint venture) makes the process less risky.	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
strongly disagree	11%	3%	11%	6%	22%	1%	0%	6%	0%	6%
disagree	11%	9%	11%	39%	44%	28%	22%	16%	44%	16%
undecided	11%	6%	33%	21%	0%	28%	22%	27%	33%	33%
agree	67%	67%	44%	28%	33%	37%	44%	42%	22%	40%
strongly agree	0%	15%	0%	6%	0%	4%	11%	9%	0%	4%

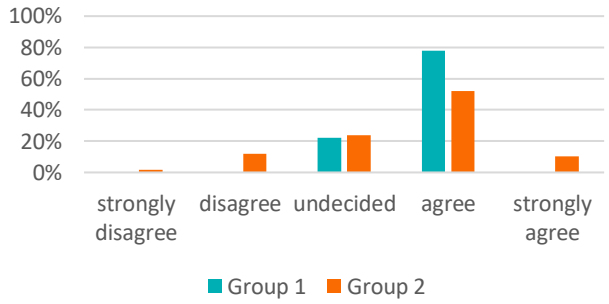
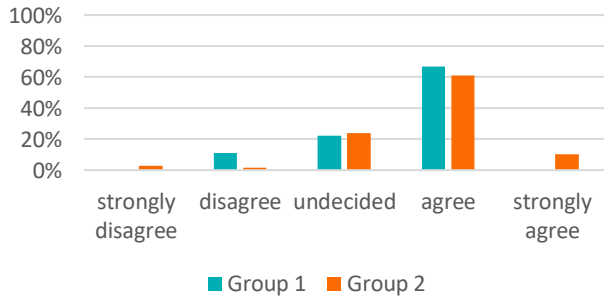
Statement 1 & 2: On average, both groups agree to the first statement that the limited number of actors makes the process less complex. However, only group one agrees further that it also makes the process less risky (44%), while group two mostly disagrees to the second statement (39%). The spread of the answers to the second statement is relatively high and 33% of group one and 21% of group two are undecided. These results suggest that the statement 2 is not easily answerable and is probably case-dependent. This outcome validates Hypothesis 4 that a limited number of actors makes the process less complex but not necessarily less risky. Due to the discrepancy between both groups regarding statement two, this hypothesis should be further tested in order to provide a definite proof.

Statement 3: 44% of the respondents from group one disagree and 22% strongly disagree that a mix of different types of actors makes the process less risky, while 33% agree. Moreover, 37% of group two agree, 28% are undecided and 28% disagree. The spread of the answers from group two is relatively high. It can be assumed that not only *a* mix of different types of actors makes the process less risky, but it needs to be the *right* mix. The results

are insignificant and therefore Hypothesis 5 cannot be validated. It must be further investigated whether it is true that: "The right mix of different types of actors makes the process less risky".

Statement 4 & 5: On average, most respondents from both groups agree that an informal collaboration via networks makes the process less risky. Therefore, this result validates Hypothesis 6 that informal collaboration via networks makes the process less risky. In contrast, most respondents of group one are undecided or disagree that formal collaboration, for instance through joint ventures, make the process less risky. 40% of group two agree to this statement and 33% are undecided. Those results show that informal collaboration is regarded more effective to make the process less risky than formal collaboration.

The final questions are used to test Hypothesis 7 and Hypothesis 8 which regard the influence of economy on the process structures and the development approach.

Statement	Result
"The economy can influence which organisational structure, e.g. PPP or private sector-led, is best suitable for an area development." Most respondents of both groups agree to this statement. In group one 78% agree which is more than 52% in group two. This is probably because group one consists of experts from Binckhorst and Strijp-S which both experienced the shift of organisational structures during the last economic recession. This result proves the observations made from the case studies and therefore validates Hypothesis 7.	
"The economy can influence which approach, e.g. integrated or organic, is best suitable for an area development." Likewise to the previous statement, most respondents — more than 60% in both groups — agree to this statement. In group two 10% strongly agree, while in group one 11% disagree. This suggests that there are other factors next to economy that influence the choice of approach as well. This outcome corresponds to the observations made based on the case studies and proves Hypothesis 8.	

5.3 SUMMARY

This chapter started with a cross-case comparison of Binckhorst and Strijp-S regarding their context. The gained insight about comparability of those cases was necessary for the consecutive comparison of risks and success factors.

The comparison between empirical research and theoretical framework showed that the best approach in which an area is developed depends on its history, the location, the desired outcome, the economy, and is always case-specific. It also showed that organic development approaches are better suited to diversify financial risks for large-scaled areas and highly fragmented ownerships. Furthermore, organic approaches are better suite during economic recession due to the diversification of certain risks. In contrast, integrated development approaches enable to share financial risks and to reduce organisational complexity due to limited ownership.

The cross-case analysis detected those risks and success factors that are valid for both cases. This was used as input for the questionnaire with is a quantitative approach to analyse risks, as part of the risk management process. As a result, the generated risk register of both cases can be complemented with quantitative assessment of probability and impact.

Furthermore, the questionnaire tested previously generated hypotheses which provide necessary insight to give final advice and to design the framework for risk and success factor management. All hypotheses are shown below with comments about their validity. Concludingly, Chapter 6 will present all final outcomes of this research.

Hypothesis 1 is proven to be correct. This statement was generated based on conclusions drawn from the theoretical framework. Concludingly it was proven by within-case analyses, cross-case analysis and the questionnaire.

> Success factors increase the possibility to turn risks into opportunities or to minimize their negative impact and probability.

Hypothesis 2 could only partly be validated. The second part of this statement, that least controllable risks are perceived as the biggest risks, was proven by the results of the questionnaire. However, the first part, that well manageable risks are not perceived as risks, is not correct since well manageable risks *are* perceived as risks, although as less severe risks. Therefore, a review of this hypothesis was necessary.

> Risks that can be influenced by individual actors are perceived as less severe; risks that are not controllable are perceived as highly severe risks.

Hypothesis 3 was not tested in the questionnaire as this question is better suited for a qualitative analysis and needs more explanation. However, the qualitative analysis based on expert interviews supported this hypothesis. It is recommended to conduct further discussions with experts on a different case to provide a final validation.

> Highly fragmented ownership within the area increases the chances of speculative behaviour, opportunists and free-riders.

Hypothesis 4 was validated by the results of the survey. Most respondents agreed that a limited number of actors makes the process less complex. The answers to the question whether it also makes the process less risky were unclear, which proves that less complexity does not necessarily lead to less risk.

> A limited number of actors makes the process less complex but not necessarily less risky.

Hypothesis 5 could not be validated with the survey. The results are insignificant and no explicit common answer was obtained. Thus, a mix of different types of actors does not necessarily make the process less risky, however, it can be assumed that the *right* mix (or possibly 'a balanced mix') of different types of actors makes the process less risky. Therefore, this hypothesis is re-phrased and further research is needed to validate this statement.

The right mix of different types of actors makes the process less risky.

Hypothesis 6 was validated. The results of the survey showed that informal collaboration is perceived as positively to reduce risks in the process. In contrast, opinions differ whether formal collaboration reduces risk. Therefore, informal collaboration is perceived as more effective than formal collaboration to reduce risk, which is added to the statement.

Informal collaboration via networks is more effective than formal collaboration to make the process less risky.

Hypothesis 7 was validated by the results of the survey and most respondents agreed that the economy influences which organisational structure is best suited for an area development.

The economy can influence which organisational structure, e.g. PPP or private sector-led, is best suitable for an area development.

Hypothesis 8 was proven to be correct and most respondents agreed that the economy further influences which approach is best suited for an area development. This result corresponds with the observations made from both case studies.

The economy can influence which approach, e.g. integrated or organic, is best suitable for an area development.

Results

6 RESULTS

This chapter presents the final results of this research. The outcomes are threefold. Firstly, the extended risk register is presented. This provides a detailed overview of all identified and analysed risks and success factors in urban area transformations, and how they relate to each other. Secondly, the newly developed framework is completed and its application in practice is explained. Thirdly, advice is given. This is general advice, based on the defined hypotheses, and specific advice for the development of Binckhorst, based on lessons learned from Strijp-S.

6.1 EXTENDED RISKS REGISTER

The first goal of this research was to identify and analyse risks and success factors that influence the process of urban area transformations from monofunctional to mixed-use areas. An extended risk register was created that combines all risks and success factors which is presented in *Table 12*. The extended risk register is linked to a success factor register that provides additional information, see *Table 13*. This tool can be used as a checklist to monitor and review risks, to link them to success factors in order to mitigate risks, and to increase awareness.

The extended risk register comprises the following information: (1) risk categories, (2) risks, (3) actors, (4) phases, (5) scope which gives information about the level of diversification, (6) quantitative probability, (7) quantitative impact, (8) probability times impact, (9) success factors, (10) an indication about which level of success factors they belong to, and finally (11) an evaluation and (12) response.

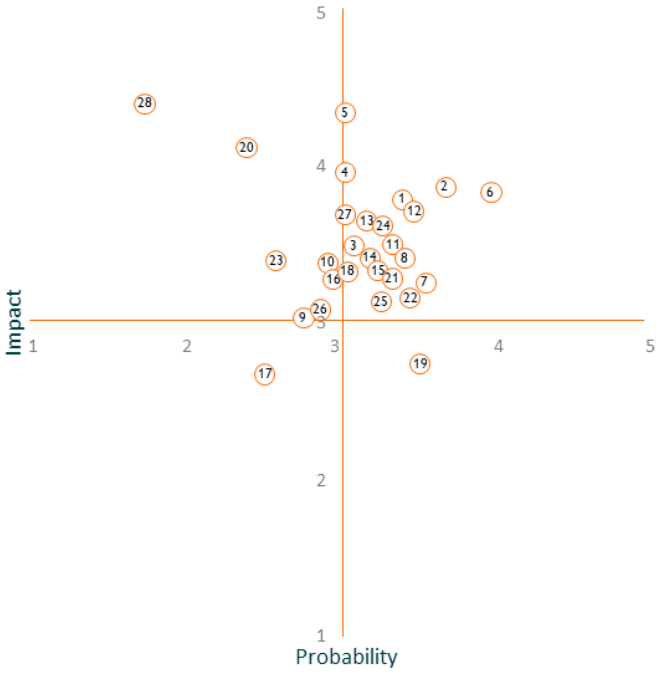
The risks and risk categorisation are based on expert interviews. The link to actors is made based on which types of actors mentioned each risk. The estimation in which phase each risk is most likely to occur is based on the questionnaire by using the threshold of 50% of the answers as a minimum to be included in the list. Additionally, the scope with the level of diversification determines whether risks are plot specific, area specific or market specific. This is based on financial investment theory regarding diversification within portfolios which was translated to urban area transformations. The quantitative assessment of probability and impact relates to the outcomes of the questionnaire and includes the answers of both groups. The results of each group were multiplied by a factor based on the number of respondents and then added up, to ensure a balanced weight of both groups. On account of these results, the following column 'P x I' calculates probability times impact and indicated the overall weight of each risk. The outcomes show:

- The biggest potential impact has the risk 'natural disasters', followed by 'economic recession' and 'bankruptcy of a company'
- The highest probability has the risk 'increase of construction prices', followed by 'incoherence and changes of plans by municipality' and 'changes of personnel'
- The overall biggest risk is the 'increase of construction prices' followed by 'incoherence and changes of plans by municipality' and 'economic recession'

Furthermore, all risks can be placed in a probability-impact matrix. This analysis shows which risks are more severe and indicates what the possibly best risk response might be.

- Risk 1 Wrong estimation of future demand
- Risk 2 Incoherence and changes of plans by municipality
- Risk 3 Incompatibility of existing and future functions
- Risk 4 Revenues don´t cover expenses
- Risk 5 Economic recession
- Risk 6 Increase of construction prices
- Risk 7 Speculation
- Risk 8 Imbalance between supply and demand

- Risk 9 Loss of authenticity and unique character of the area
- Risk 10 Unbalanced mix of functions
- Risk 11 Objections to building permits
- Risk 12 Objections to zoning plan changes
- Risk 13 Legal conflicts amongst parties
- Risk 14 Controversy with or within municipality
- Risk 15 Change of local political direction
- Risk 16 New policies from central government
- Risk 17 Controversy with adjacent municipality
- Risk 18 Unsatisfying performance of collaborating partners
- Risk 19 Changes of personnel
- Risk 20 Bankruptcy of a company
- Risk 21 Lack of employee capacity
- Risk 22 Internal complexity of municipality or companies
- Risk 23 Accidents during construction
- Risk 24 Ground pollution
- Risk 25 Noise pollution
- Risk 26 Air pollution
- Risk 27 Discovery of protected flora and fauna
- Risk 28 Natural disasters



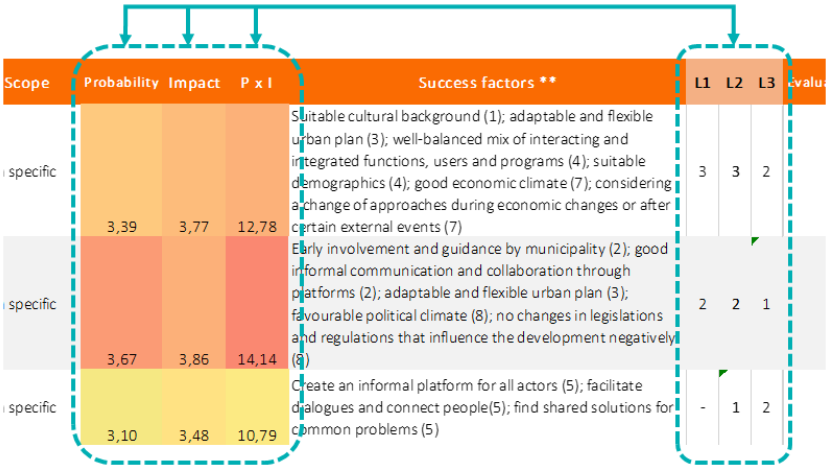
The success factors are again based on interviews in addition to own correlations drawn between risks, potential strategies and success factors, as a result of my analyses. This accounts for the fact that potential strategies are essentially the same as success factors and thus both are included and linked to risks. The number in brackets after each success factor indicates to which success factor group it belongs to, which enables to easily compare them to the success factor register for more information.

Furthermore, an indication is given how many success factors of each level are linked to each risk in the 10th column. This allowed to detect patterns about which types of success factors can be linked to which types of risks. Particularly, the correlations between the directability of success factors with impact, probability and diversification of risks was analysed. This analysis proved that patterns exist between the directability of SF and the type and degree of risks.

- The higher the potential impact of a risk is, the more likely it depends on success factors that *cannot* be directed by individual actors.

- The less a risk can be diversified within the area, the more likely it depends on success factors that *cannot* be directed by individual actors.

This result was obtained through the following calculations. First, a ranking was made to classify each risk in high, medium and low degree regarding PxI, impact and probability respectively. Then the percentage of occurrence of each level of SF linked to each risk was determined. The analysis showed that the five biggest risks, in terms of probability times impact, relate to 67% of all level one SF; and the six risks with the biggest impact even relate to 76% of all level one SF. Furthermore, 57% of all level one SF relate to market specific risks, 38% to area specific risks and 5% to plot specific risks.

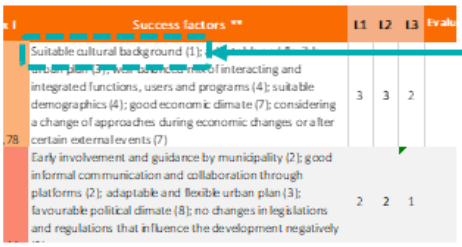


Scope	Probability	Impact	P x I	Success factors **	L1	L2	L3	Evalu
specific	3,39	3,77	12,78	Suitable cultural background (1); adaptable and flexible urban plan (3); well-balanced mix of interacting and integrated functions, users and programs (4); suitable demographics (4); good economic climate (7); considering a change of approaches during economic changes or after certain external events (7)	3	3	2	
specific	3,67	3,86	14,14	Early involvement and guidance by municipality (2); good informal communication and collaboration through platforms (2); adaptable and flexible urban plan (3); favourable political climate (8); no changes in legislations and regulations that influence the development negatively (8)	2	2	1	
specific	3,10	3,48	10,79	Create an informal platform for all actors (5); facilitate dialogues and connect people(5); find shared solutions for common problems (5)	-	1	2	

The last two columns ‘evaluation’ and ‘response’ are intentionally left blank as these are to be filled in by the person using this risk register. For evaluation it should be indicated which risks are manageable or non-manageable which depends on the available means and the risk appetite of the individual assessor. In response to the evaluation, it can be determined how to react to each risk. This can be (1) avoidance, (2) reduction, (3) transfer to other parties, or (4) retention.

The success factor register can be consulted for more detailed information. Furthermore, it can be used separately as a guide and increases awareness about factors that promote success in urban area developments. The categorization into success factor groups helps to improve clarity. The level of success factors indicates to which degree each factor is directable. Furthermore, it is assessed by whom each factor can be directed. These estimations are based on theory regarding success factors (Hobma, 2011) and expert interviews.

Extended risk register



	Success factors **	I1	I2	I3	Evalu
	Suitable cultural background (1); [illegible] of interacting and integrated functions, users and programs (4); suitable demographics (4); good economic climate (7); considering a change of approaches during economic changes or after certain external events (7)	3	3	2	
78	Early involvement and guidance by municipality (2); good informal communication and collaboration through platforms (2); adaptable and flexible urban plan (3); favourable political climate (8); no changes in legislations and regulations that influence the development negatively	2	2	1	

Success factor register

Success factor group	Success factors	Level of SF I	II	III	Directable by whom
1. Create awareness & place-making	Show consumers, investors and developers that 'something is happening' by hosting events and promoting first completed developments		x	x	Area manager, municipality, developers, pioneers
	Show municipal commitment by making investments in the area, publishing an urban vision and defining the zoning plan		x		Municipality
	Attract pioneers to the area			x	Municipality, developers
	Respect the story of the place and its immaterial heritage		x		Everybody
	Implement public facilities and public transport as soon as possible and open the area for the public		x		Municipality
	Ensure a continuity of the brand of the area			x	Everybody
	Suitable cultural background	x			–

Application in practice

The extended risk register can be used by every expert who works in the (re-)development of an urban area. This are particularly municipalities, developers, area managers, urban planners and architects, contractors and investors. The main audience are those actors who are interested in the overall area or in several parts or plots within the area. This overview increases awareness about potential risks and strategies to cope with them – in form of success factors. It must be noted, that this tool cannot be used as a ready-made risk register for any case. To apply it to other situations, the register can be seen as a toolkit where some aspects can be applied directly, that can be extended unlimitedly and adapted dynamically to the case-specific context to manage risks in area transformations. The newly developed RSFM framework provides guidance how create a case-specific extended risk register, as presented in the following sub-chapter.

Risk category		Risk	Actor	Phase	Scope	Probability	Impact	PxI	Success factors (success factor group) **	L1	L2	L3	Evaluation* Response*
Planning	1	Wrong estimation of future demand	Developers, investors	Initiative, feasibility, maintenace	Area specific	3,39	3,77	12,78	Suitable cultural background (1); adaptable and flexible urban plan (3); well-balanced mix of interacting and integrated functions, users and programs (4); suitable demographics (4); good economic climate (7); considering a change of approaches during economic changes or after certain external events (7)	3	3	2	
	2	Incoherence and changes of plans by municipality	Developers, urban planners	Initiative, feasibility	Area specific	3,67	3,86	14,14	Early involvement and guidance by municipality (2); good informal communication and collaboration through platforms (2); adaptable and flexible urban plan (3); favourable political climate (8); no changes in legislations and regulations that influence the development negatively (8)	2	2	1	
	3	Incompatibility of existing and future functions	Developers, municipality, non-footloose companies	Feasibility, maintenance	Area specific	3,10	3,48	10,79	Create an informal platform for all actors (5); facilitate dialogues and connect people(5); find shared solutions for common problems (5)	-	1	2	
Financial	4	Revenues don´t cover expenses	Developers, contractors, investors	Maintenance	Plot specific	3,01	3,96	11,93	Good formal collaboration and contractual management (2); avoid speculative behaviour (2); good economic climate (7); sell building in an early stage (7)	1	2	1	
Economic (macro)	5	Economic recession	Everybody	Always	Market specific	3,01	4,32	13,02	Leave undetermined space to be filled later (6); try to maintain existing buildings (6); lease existing buildings temporarily at low price to generate early cash-flows (6); good economic climate (7); consider a change of approaches during economic changes (7); adapt phasing and the planned program (7); speed up developmeent process during economic boom and reduce delays (7)	1	5	2	
Market (meso)	6	Increase of construction prices	Developers, contractors	Initiative, feasibility, realisation	Market specific	3,96	3,83	15,14	Good formal collaboration and contractual management (2); good economic climate (7)	1	1	-	
	7	Speculation	Developers, investors, municipality	Feasibility	Market specific	3,54	3,25	11,48	Mix of actors with different roles and strenghts (2); choose reliable partners, establish good agreements and join forces (2); avoid speculative behaviour (2); high standards and regulations in the zoning plan (3); define key-values of the area (6); maintain the area's authenticity, uniqueness and respect its heritage (6)	-	5	2	
	8	Imbalance between supply and demand	Developers, investors	Always	Market specific	3,39	3,42	11,60	Split the area in sub-areas with a spatial and chronological phasing (4), create a well-balanced mix (4)	-	2	1	
Area (micro)	9	Loss of authenticity and unique character of the area	Investors, municipality, pioneers	Feasibility, realisation, maintenance	Area specific	2,81	3,04	8,56	Be critical about each other, willing to discuss and open to suggestions (2); early involvement and guidance by municipality (2); be critical on each other, willing to discuss and open to suggestions (2) focus on a long-term goals (6); define key-values for the area (6)	-	2	2	
	10	Unbalanced mix of functions	Society, municipality, investors	Feasibility, maintenance	Area specific	2,96	3,35	9,90	Create a social business case for the whole area (2); estimate costs and values for society (3); focus on a long-term goals (6)	-	3	-	
Legal	11	Objections to building permits	Developers	Initiative, feasibility	Plot specific	3,33	3,48	11,59	Good informal communication (2); early involvement and guidance by municipality (2); be critical on each other, willing to discuss and open to suggestions (2); keep residents informed (8)	-	2	2	
	12	Objections to zoning plan changes	Municipality, developers	Initiative, feasibility	Area specific	3,45	3,71	12,80	Image of the area that people can identify with (1); good informal communication (2); early involvement and guidance by municipality (2); be critical on each other, willing to discuss and open to suggestions (2); keep residents informed (8)	-	2	3	
	13	Legal conflicts amongst parties	Everyone	Initiative, feasibility, realisation	Plot specific	3,17	3,65	11,59	Good formal collaboration and contractual management (2); create a shared vision (3)	-	2	-	
Political	14	Controversy with or within municipality	Developers, municipality	Initiative, feasibility	Area specific	3,20	3,39	10,86	Transparency of municipal plans (2); good informal collaboration and communication (2); early involvement and guidance by municipality (2)	-	2	1	
	15	Change of local political direction	Developers, municipality	Always	Area specific	3,23	3,36	10,87	Design an adaptable and flexible urban plan (3); favourable political climate (7)	1	1	-	
	16	New policies from central government	Developers, municipality	Always	Market or area specific	3,00	3,30	9,91	Design an adaptable and flexible urban plan (3); no changes in legislations and regulations that influence development negatively (8)	1	1	-	
	17	Controversy with adjacent municipality	Municipality	Initiative, realisation	Area specific	2,49	2,67	6,65	Transparency of municipal plans (2); good informal collaboration and communication (2)	-	1	1	
Organisational	18	Unsatisfying performance of collaborating partners	Everyone	Initiative, feasibility, realisation	Plot specific	3,01	3,32	10,00	Choose reliable partners and join forces (2); mix of actors with different roles and strenghts (2); establish good formal collaboration and contractual management (2)	-	3	-	
	19	Changes of personnel	Everyone	Initiative, feasibility, realisation	Area or plot specific	3,51	2,74	9,61	Choose reliable partners and join forces (2); mix of actors with different roles and strenghts (2); ambition, long-term commitment and determination (2)	-	2	1	
	20	Bankruptcy of a company	Everybody	Feasibility, realisation	Plot specific	2,39	4,10	9,81	Transparency (2); avoid speculative behaviour (2)	-	1	1	
	21	Lack of employee capacity	Municipality, developers, contractors	Feasibility, realisation, maintenance	Area or plot specific	3,29	3,30	10,87	Choose reliable partners and join forces (2), good formal collaboration and contractual management (2); speed up development processes during economic boom and reduce delays (7)	-	2	1	
	22	Internal complexity of municipality or companies	Developers, municipality	Always	Area or plot specific	3,43	3,16	10,85	Transparency of municipal plans (2); good informal communication and collaboration (2)	-	1	1	
Executional	23	Accidents during construction	Contractors, developers	Realisation	Plot specific	2,58	3,39	8,75	Internal rules, control and insurance (2); workable, coherent and clear rules (3); adaptable and flexible plans (3)	-	3	-	
Environmental	24	Ground pollution	Owner, developer	Initiative, feasibility, realisation	Plot specific	3,22	3,65	11,75	Good formal collaboration and contractual management (2); test innovative ideas (5); find shared solutions for common problems (5)	-	1	2	
	25	Noise pollution	Developer, architect	Initiative, feasibility	Plot specific	3,25	3,13	10,16	Good formal collaboration and contractual management (2); test innovative ideas (5); find shared solutions for common problems (5)	-	1	2	
	26	Air pollution	Developer, architect	Initiative, feasibility	Plot specific	2,84	3,06	8,69	Good formal collaboration and contractual management (2); test innovative ideas (5); find shared solutions for common problems (5)	-	1	2	
	27	Discovery of protected flora and fauna	Developers, contractors	Initiative, feasibility, realisation	Plot specific	3,06	3,67	11,21	Good formal collaboration and contractual management (2); test innovative ideas (5); find shared solutions for common problems (5)	-	1	2	
	28	Natural disasters	Everybody	Realisation, maintenance	Area specific	1,74	4,39	7,64	Design resilient plans (4); create a well-balanced mix of natrual and built environments (4); no negative influences of force majeure (8)	1	2	-	

Table 12 Extended risk register (own table)

Note: * to be filled in by assessor; ** relates to Table 13 Success factor register

Success factor group	Success factors	Level of SF			Directable by whom
		I	II	III	
1. Create awareness & place-making	Show consumers, investors and developers that 'something is happening' by hosting events and promoting first completed developments		X	X	Area manager, municipality, developers, pioneers
	Show municipal commitment by making investments in the area, publishing an urban vision and defining the zoning plan		X		Municipality
	Attract pioneers to the area			X	Municipality, developers
	Respect the story of the place and its immaterial heritage		X		Everybody
	Implement public facilities and public transport as soon as possible and open the area for the public		X		Municipality
	Ensure a continuity of the brand of the area			X	Everybody
	Suitable cultural background	X			—
	Establish an image of the area that people can identify with			X	
2. Good collaboration	Establish a mix of actors with different roles and strengths		X		Area manager, municipality, developers
	Create transparency of municipal plans		X		Municipality
	Early involvement and guidance by municipality		X		Municipality
	Choose reliable partners, establish good agreements and join forces		X		Everybody
	Establish good formal collaboration and contractual management		X		Everybody
	Establish good informal communication and collaboration through platforms			X	Area manager, municipality, developers
	Ambition, long-term commitment and determination from all parties			X	Everybody
	Be critical on each other, willing to discuss and open to suggestions			X	Everybody
	Create a business case for the whole area		X		Municipality, developers
	Avoid speculative behaviour			X	Developers
	Internal rules, control and insurance		X		Developers, Municipality
3. Adaptable and coherent urban plans	Create a shared vision and ambitions upfront, together with municipality and input from market parties		X		Area manager, municipality, developers, pioneers
	Define workable, coherent and clear rules in the zoning plan		X		Municipality
	Design an adaptable and flexible urban plan		X		Urban planner
	Define high standards and regulations in the zoning plan		X		Municipality
	Estimate costs and values for society		X		Area manager, municipality
4. Good urban design and the right mix of everything	Create a well-balanced mix of interacting and integrated functions, users and programs, horizontally, vertically and throughout the day		X	X	Urban planner, municipality, developers
	Create a well-balanced mix of natural and built environments		X		Urban planner, municipality, developers
	Split the area in sub-areas witch a spatial and chronological phasing		X		Area manager, municipality
	Focus on the quality of public space, activity of the plinth, the desired atmosphere, human scale and high density		X		Urban planner, developers
	Establish a good connection to the city centre		X	X	Urban planner, municipality
	Suitable demographics	X			—
	Design a resilient area		X		Urban planner, municipality
5. Software & Innovation	Create an informal platform for all actors		X		Area manager, municipality, developers
	Facilitate dialogues and connect people			X	Area manager, municipality, pioneers
	Find shared solutions for common problems			X	Everybody
	Inspire and stimulate creativity, innovative and sustainability		X	X	Area manager, municipality, pioneers, urban planner
	Test innovative ideas			X	Area manager, municipality, pioneers, urban planner
	Leave space for innovation and make it open for everybody			X	Everybody
	Always focus on people and create communities			X	Everybody
6. Use existing strengths & opportunities of the area	Define key-values of the area		X		Everybody
	Maintain the area's authenticity, uniqueness and respect its heritage		X	X	Everybody
	Leave undetermined space to be filled later		X		Municipality
	Try to maintain existing buildings		X		Municipality, developers
	Lease existing buildings temporarily at low price to generate early cash-flows and attract pioneers		X		Municipality, developers
	Focus on long-term goals		X		
7. Adapt to economic changes	Good economic climate	X			—
	Consider a change of approaches during economic changes, e.g. from integrated to organic development		X	X	Municipality, area manager
	Adapt phasing and the planned program		X		Area manager, municipality, developers
	Speed up development processes during economic boom and reduce delays			X	Everybody
	Sell building in an early stage		X		Developers
8. Framework conditions	Favourable political climate	X			—
	No changes in legislations and regulations that influence the development negatively	X			—
	No negative influences of force majeure	X			—
	Keep residents informed		X		Municipality, developers

Table 13 Success factor register (own table)

Note: this is an indicative table and relates to Table 12 Extended risk register

6.2 FRAMEWORK

The second goal of this research was to create a method to manage risks and success factors in urban area transformation processes. Due to the complexity of the process, it is crucial to actively manage risks and success factors and not leaving it to chance. For this purpose, a risk and success factor management framework was designed, which is presented in this chapter. The abbreviation 'RSFM' will be used for 'risk and success factor management'. The RSFM Framework aims to support individuals, groups or institutions that are concerned with the development of an overall area, for instance area managers, project managers of municipalities, public-private partnerships, large-scale developers and investors who are active on more than one plot in the area. This tool can be used to mitigate risks and to achieve success during the process of urban area transformation.

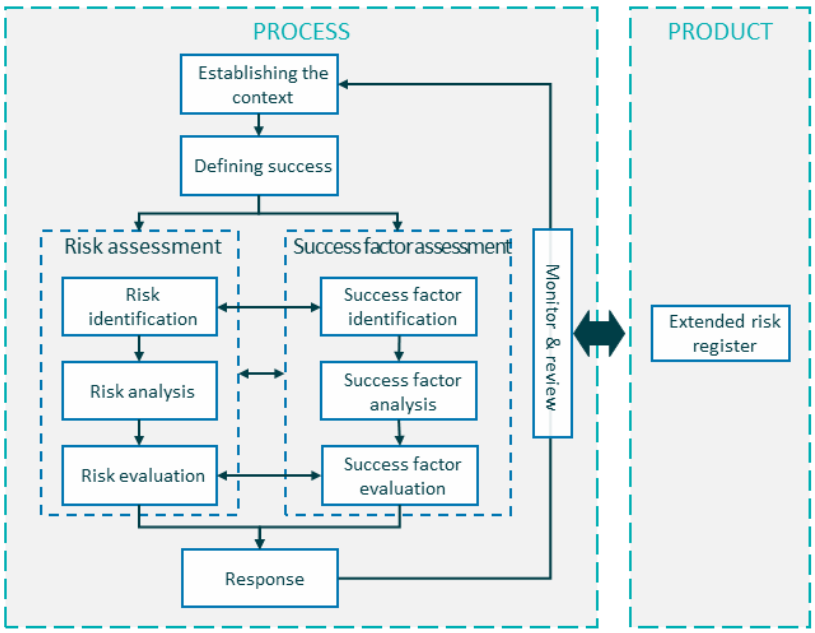


Figure 45 Concise version RSFM Framework (own ill.)

The framework is iterative, integrated and customizable. This means that the RSFM process should be performed continuously and repetitively throughout the project, it should be integrated in organisational structures and in all decision-making processes, and it should be customized to the individual and case-specific needs. The framework consists of the RSFM process and the product in form of an extended risk register. These two parts are assessed reciprocally throughout the procedure. I advise to assign an RSF manager who obtains the responsibility to coordinate and manage all tasks and processes within the framework. This can be one individual or a team of experts – depending on the scope of the project – and should possess process management, team-leading and risk management skills.

The RSFM Framework differs from the traditional risk management method by its applicability to a whole area and moreover by the inclusion of a success factor assessment.

Since traditional risk management approaches focus on risks in individual real estate developments, it was necessary to develop an extended version that focuses on areas. The essential difference between a real estate approach and an area approach is that risks can be diversified over the area. This means that an area-oriented perspective allows that some plots bear more risks and possibly generate less revenues while others are more profitable, and a balance can be achieved. The extended risk register showed that some risks are systematic risks while some are diversifiable. Therefore, this framework provides a guide on how to identify systematic and non-systematic risks and thus helps to diversify risks to the greatest extend possible.

Furthermore, this research showed that success factors play an important role in managing risks; as it was concluded from theory and proven by empirical research that success factors increase the possibility to turn risks into opportunities or to minimize their negative impact and probability. However, traditional risk management

approaches do not include these factors. Therefore, this framework links risks and success factors in such a way that they complement and reinforce each other.

The form of a framework was chosen due to its guiding and supporting nature. The form of a strategy was deliberately avoided, since this research showed that urban area transformations are too complex and dynamic to apply a fixed step-by-step plan. Therefore, I decided to design a framework that guides the process of risk and success factor management rather than dictates it and can be used for any individual case.

Framework input

The theoretical framework provided the base knowledge about how risks are managed and how success is defined in development projects, within a specific context that is determined by context variables. The empirical research tested the relationship between those concepts in practise, and particularly Hypothesis 1 proved a positive relation between risks and success factors. These lessons learned in combination with the studied theory and the created extended risk register are used for the design of the RSFM Framework.

The literature regarding risk management provided the starting point for the framework design that includes four steps (ISO, 2009; PMI, 2000): (1) establishing the context (2) risk assessment including identification, analysis and evaluation, (3) risk response and (4) risk monitoring and review.

Firstly, to account for the possibility to diversify risks, the task of risk evaluation is extended. Not only should be assessed whether a risk is manageable or not, but also whether risks are diversifiable or not. This means that it should be determined which risks are plot specific, area specific or market specific. For this purpose, theory about risk management in the field of finance and investments was consulted (Ch.3.3.4). Portfolio management is characterized by the pursuit to mitigate unsystematic risks through diversification to achieve the desired risk-return trade-off. The goal is to create an efficient portfolio which ensures the best expected return on investment at a defined level of risk. In the field of area transformations, the portfolio is the sum of all plots. An efficient portfolio can be achieved by an investor or developer by acquiring selected plots in a way that plot-specific risks are perfectly diversified. Parties that are concerned about the whole area such as the municipality obviously cannot select plots. However, it is possible to select which type of risks on which plots should be avoided or retained, based on a thorough area-oriented risk management. In this way an optimal risk-return trade-off can be created. The return in area transformations is not only financial profit but also includes social, cultural and environmental profits. Systematic risks are all risks that affect the whole real estate market, so typically economic risks, market risks, and certain national political risks. In this context, area-oriented risks are also systematic risks since they cannot be diversified within the scope on the area.

Secondly, success factors are added as an integral part of risk management; Figure 36 was designed as the preliminary framework. Since success is an ambiguous concept, the first task when dealing with success factors is to define success for the individual case (Hobma, 2011). Therefore, the step 'defining success' is included in the beginning of the framework. Consecutively, success factor assessment is combined with the risk management process and includes the tasks (1) success factor identification, (2) success factor analysis and (3) success factor evaluation.

Figure 46 presents the extended version of the newly developed framework and the following paragraphs describe each step of the newly developed framework in detail.

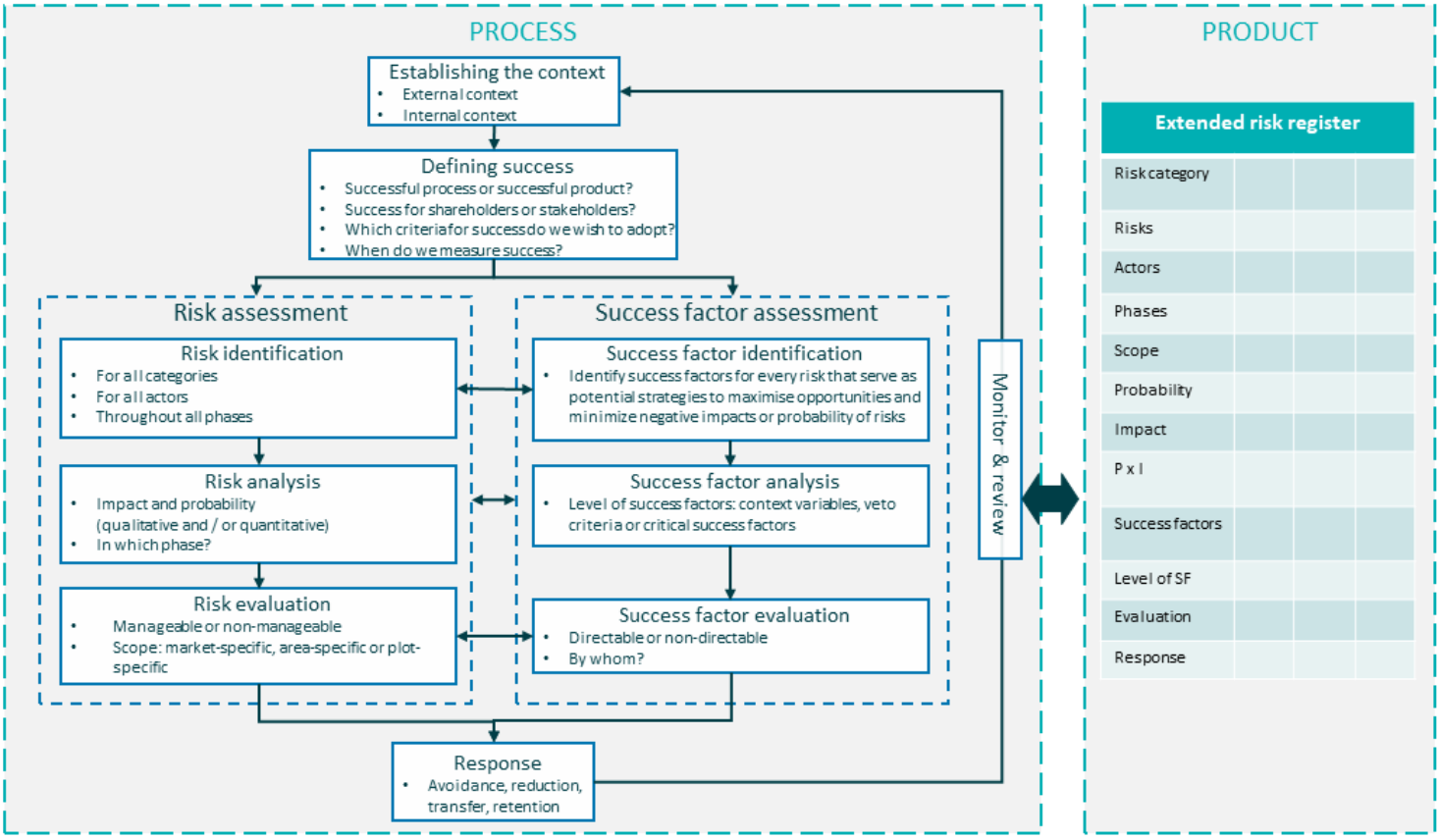
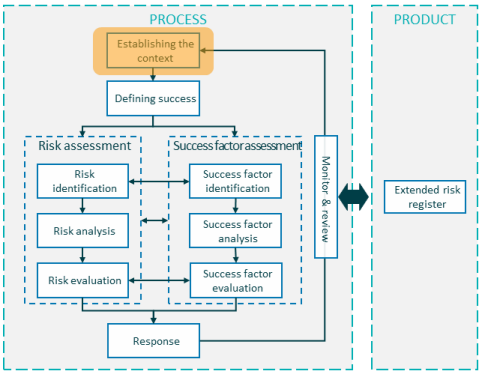


Figure 46 Extended version Process & Product RSFM Framework (own ill.)

1. Establishing the context



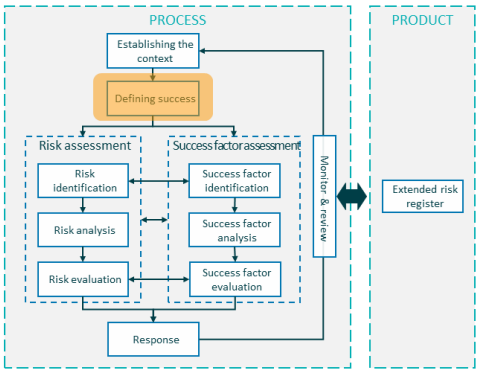
Why? In the beginning it is important to establish the context, including external and internal context. As every project is unique, risks and success factors are different in any context. In order to effectively implement a RSFM system, it is important to understand the context and organisational structures. Furthermore, the scope of risk management should be defined, as well as an agenda of risk management activities and available resources. This sets the foundation for further actions.

How? The 4Ps model can be used as a frame to establish the context. PLACE determines external context factors such as geographical location, its history, culture, society, demographics, political climate, economy, regulations & policies, and the natural and competitive environment. The PRODUCT is defined by the vision and is influenced by key drivers, barriers, trends and forecasts. Defining the scope together with a thorough analysis of the place and the product is crucial. Furthermore, stakeholders and actors are the players within the game of area transformation. Their actions are guided by their objectives, roles and resources which can be analysed by stakeholder mapping. Finally, the PROCESS is structured in phases and milestones which is significantly influenced by the development approach. The internal context within the

scope of the project organisation regards organisational aspects such as roles, policies, information systems, relations and available resources.

Who? As previously explained, it is advisable to assign an RSF Manager who is the main executive of the RSFM. They are responsible to gather all necessary information, to consult experts, to direct responsibilities and to coordinate actions.

2. Defining success



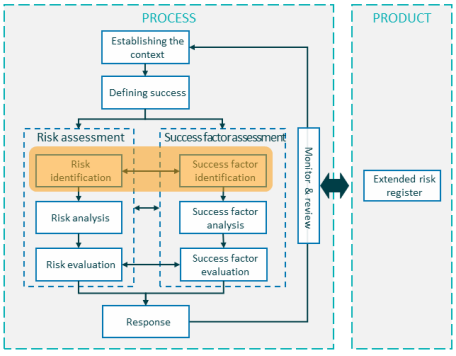
Why? It is important to come to a commonly accepted definition of success in the beginning, as success is an ambiguous concept and has a different meaning to different people at different points in time. This helps to align objectives and ensure that all efforts are directed towards the same goal. Furthermore, the definition of success should correlate with the vision of the project. In order to increase the efficiency of this task, as many actors as possible should be involved (within a feasible scope) to determine a commonly accepted definition.

How? Methods that can be applied are brainstorming sessions, workshops, interviews or questionnaires. All participants should be informed about the previously established context to ensure a common understanding. The following four questions help to define success for the specific case:

- Successful process or successful product?
- Success for shareholders or stakeholders?
- Which criteria for success do we wish to adopt?
- When do we measure success?

Who? The RSF Manager initiates activities to define success. All relevant actors should be included in this step, which are primarily project-organisation internal actors. Additionally, it is recommended to obtain insight into the success definition of external actors, in order to anticipate their objectives.

3. Risk & Success factor identification



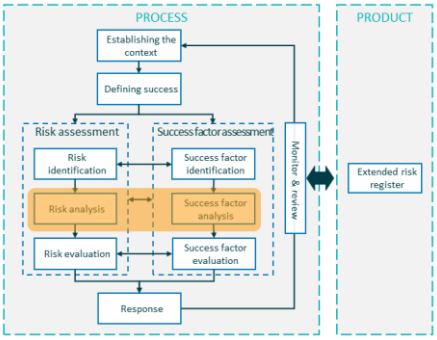
Why? The first step of the assessment is identification of risks and success factor. Due to the uncertain nature of risks and the open-ended nature of success factors, it is impossible to identify all possible factors. Nonetheless, this list should be as complete as possible. Since this step provides the basis for the following analyses, it is important to conduct the identification with great diligence.

How? Risks can be identified with traditional risk management methods for risk identification. According to the results of the questionnaire, the most commonly techniques are (in descending order): intuition and past experience, communication within the company, consulting experts, scenario analysis, brainstorming or workshops, stakeholder analysis, communication with other parties, checklists, data bases, historical data and interviews or questionnaires. It is advisable to consider different risk categories, actors and all phases in order to obtain a wholistic overview.

Factors that promote success should be identified related to each risk, as success factors are means to deal with risks. The same methods can be used as for risks to identify success factors. This is an iterative task and should be performed in a repetitive manner,

Who? This task should be performed in collaboration with different actors to stipulate as many factors as possible. Various actors and experts of different fields and with different expertise should be consulted in order to identify as many factors as possible.

4. Risk & Success factor analysis



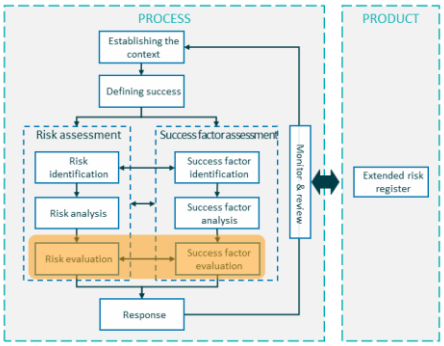
Why? After identifying all factors, the analysis helps to better understand causalities and relations of risks and success factors. The primary focus is to analyse risks regarding the probability of occurring and the potential impact they can have. Success factors can be analysed regarding the degree of directability. Furthermore, it is advisable to determine prioritisations to perform an efficient response.

How? The analysis of risks regarding probability and impact can be done in a qualitative and in a quantitative way, where methods from traditional risk management can be applied. According to the questionnaire, the most commonly used techniques are (in descending order): risk probability / impact assessment, risk categorization, sensitivity analysis, risk urgency assessment, event tree analysis, Monte Carlo Simulation. Quantitative methods should only be applied if complete data is available.

Success factors are analysed regarding their level of directability which is done by categorizing them into the different levels of success factors: context variables, veto criteria and critical success factors. This helps to better understand the relations of each factor to the decision-making environment.

Who? Experts from the field respectively to each risk should be consulted to analyse risks and success factors. The more expertise these experts have, the better and meaningful becomes the risk and success factor analysis.

5. Risk & Success factor evaluation



Why? Consecutively to the analysis, risks and success factors can be evaluated. This is the task of drawing conclusions based on the results of the previous analyses. This step determines which risks are diversifiable or not, and which success factors are directable, meaning that certain actors can actively steer on achieving them. Consecutively, it can be decided which risks are manageable for the assessing party, meaning they are capable of dealing with the risk.

How? Firstly, it must be determined for each risk whether it is market-specific, area-specific or plot-specific. In order to spread risks within the area most efficiently, all risks should be examined within the bigger picture. This can be done by drawing a map of the area and linking the risks to each plot, including all previously analysed risk characteristics. Another method to be used is a risk register, as demonstrated in ch.6.1.

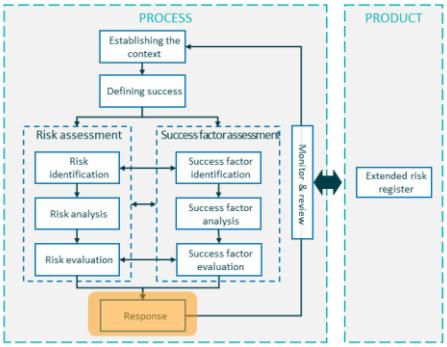
Secondly, it is evaluated in which degree each success factor is directable and furthermore by whom. The analysis of success factors already indicated the level of directability, however, it is crucial to detect the actor(s) who can best direct each success factor.

Thirdly, in the light of the previous considerations it can be determined which risks are manageable and which ones are non-manageable. This depends on the available resources (as identified in the step 'establishing the context') and on the risk appetite of the project organisation.

Who? The RSF Manager can perform this step based on the previous analyses. He or she can furthermore consult experts and should collaborate with actors within the project organisation in order to determine the risk appetite. Communication is important to reassure and to safeguard accountability of decisions made.

6. Response

Why? The last step is the response to each risk, where the results of the assessment are communicated to involved actors and actions are taken. All actions taken must be based on the previous assessments, must be aligned with the established context, must lead to the achievement of success as defined in the second step, and to minimize the probability and/or negative impact of unfortunate events.



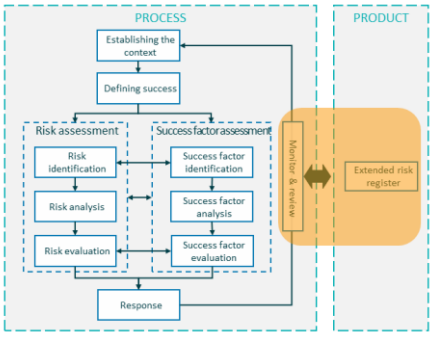
How? The possible responses are: (1) retaining those risks that are considered as manageable and where success factors are easily directable, (2) transferring those risks that are non-manageable for the project organisation but where success factors can be directed by other parties, (3) reducing those risks that are manageable and not transferable but where success factors are directable and can be used to reduce negative impact and/or probability, (4) avoiding those parts of the project or the entire project if risks are considered to severe, are non-manageable and success factors are non-directable. In the scope of an area approach it can be determined which plots should be acquired and which ones should be avoided, or whether area or market specific risks are too severe to get involved in an area development.

Furthermore, it should be ensured that success factors that are directable are achieved. Those actors that were identified to be best suited for this task should be commissioned for that.

Who? The RSF Manager communicates the results of the previous assessments. Actors that have the authority or responsibility determine which actions should be taken regarding each risk.

7. Monitor & review

Why? Monitoring and continuously reviewing all risks is crucial to anticipate risk events and to adopt the RSFM to changing circumstances and the progress of the process. The whole RSFM process should be continuously repeated throughout the project.



How? An extended risk register can be created as a useful method to maintain an overview of all risks and success factors. It includes all previously assessed aspects: Risk category, risks, actors, phases, the scope which determines the potential of diversification, probability (quantitative), impact (quantitative), probability times impact, success factors, level of success factor, evaluation, response. If preferred, a separate success factor register can be created that includes more detailed information about these factors. Furthermore, a column for criteria of success can be added if requested. This functions like a checklist to assess whether success is achieved, based on the previously established definition of success.

Who? The RSF Manager is responsible to monitor and review all risks and success factors. The risk register must be updated frequently, and any changes must be communicated within the project organisation. Furthermore, every actor is instructed to report changes regarding risks or success factors.

The RSFM Framework can be a useful tool to ensure the achievement of success and the fulfilment of objectives. The previously described steps should not be seen as separate tasks that can be checked on a list, step by step, but as an organic, iterative process. As risks can occur in any field, on any level, and are furthermore intertwined and influence each other, it is crucial to conduct RSF management as an integrated process. As many experts and actors as possible should be involved, as long as feasibility is ensured.

The structure of this framework is inspired by the International Organisation for Standardization ISO (2009). Therefore, RSFM Framework can be placed in a wider context within the structure of *principles, framework* and *process*. Principles define the rules that apply to the usage of this method and should be complied by all actors on all organisational levels that are involved in the area transformation for the process to be effective. Framework determines the organisational frame and scope. Process is the actual management process that is performed in a repetitive manner, continuously monitored and communicated. Figure 47 shows how the RSFM Framework can be placed within this frame.

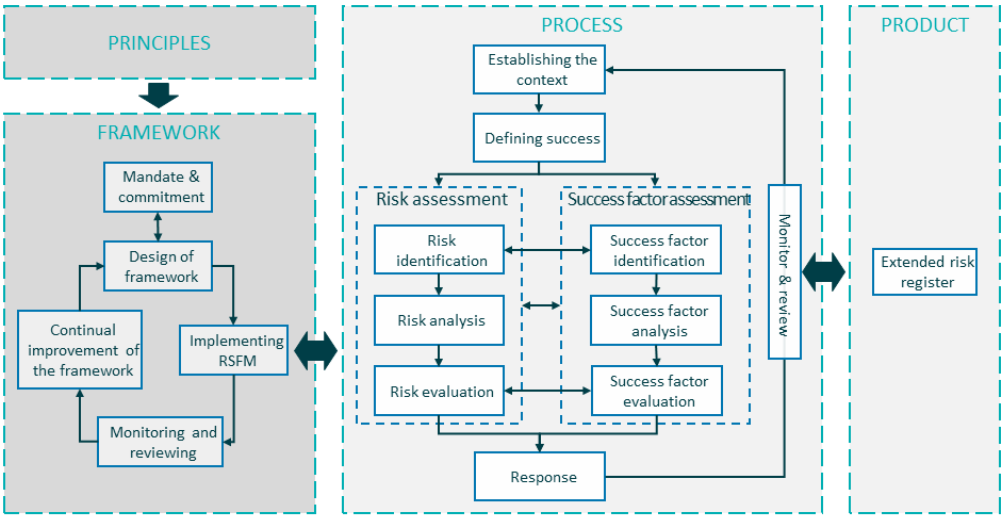


Figure 47 Relation of RSFM Framework to ISO risk management (own ill.)

6.3 LESSONS LEARNED

As a final result of this research, lessons learned throughout the process are defined. Firstly, based on the hypotheses in this research, general lessons learned are given. Hypotheses were formulated as conclusions from the theoretical framework and the qualitative data analysis. Consecutively, they were tested through the quantitative data analysis. Finally, the validated hypotheses can be used to formulate lessons learned in form of developers recommendations and policy recommendations for municipalities or other public institutions. Moreover, specific advice can be given for the development of Binckhorst based on lessons learned from Strijp-S. Finally, policy recommendations are given for the land use plan with extended reach which is used in Binckhorst as a pilot, due to its great attention and importance.

Developers recommendations:

5. When operating in an area with highly fragmented ownership, be aware of an increased risk of speculations, opportunists and free-riders. These factors can give a wrong image about the actual value of properties and about the market. Avoid speculative behaviour as it increases the risk of obtaining an unfeasible business case. During economic recessions speculations can cause that revenues do not cover expenses and in the worst case can lead to bankruptcy.

6. Prefer to operate in situations with a limited number of actors to make the process less complex. However, to make the process less risky, a limited number of actors is not feasible, but the right mix of different types of actors is decisive. Thus, aim for a balanced mix within the project, incorporate parties with different perspectives and use each other's strengths and expertise within the area. Think for instance of housing associations, pioneers, both small and big developers and investors, etc.

7. Establish informal collaboration and communication amongst actors to make the process less risky. Networks and platforms can be means to assemble various parties and to organise frequent meetings or events where developments, plans and problems can be discussed. This can help to share ideas, find common solutions to problems and to establish transparency and trust. Informal collaboration proved to be more effective to reduce risks than formal collaboration.

Policy recommendation:

8. When initiating an area transformation, carefully consider which approach should be chosen. The organisational structure and the type of development approach depends strongly on the current economy. Organic approaches and private sector-led developments are better suite during economic recession due to the greater diversification of certain risks. Particularly financial risks are diversified more efficiently in this approach and especially for large-scaled areas with highly fragmented ownerships. In contrast, integrated development approaches and private-public partnerships enable to share financial risks and to reduce organisational complexity due to limited ownership.
   These are recommendations and no guarantee for success. The best approach in which an area is developed depends on the area's history, the location, the desired outcome, the economy, and is always case-specific.

Advice for Binckhorst

Based on the cross-case analysis, lessons learned from Strijp-S can be defined and detailed advice is given about which success factors can be used and how, to cope with the main challenges and risks in the Binckhorst re-development. Since Strijp-S is considered a successful project and is in a later stage of the process than Binckhorst, it can be useful to take it as a good example, learn from its success factors but also from its weaknesses. The similarities and differences of both cases are explored, lessons learned from Strijp-S are defined and then tested for their applicability for Binckhorst.

1. Create awareness & place-making

Similarities: For Binckhorst and Strijp-S, increasing awareness of 'something is happening' in the area and place-making are considered as highly important. The reason is two-fold: to attract users and visitors to the area, but also to attract investors and developers to enter the development. In both cases a brand was developed, in Strijp-S by Park Strijp Beheer, and in Binckhorst by I'M BINCK. Events and festivals are hosted to attract people to the area.

Differences: Strijp-S was known as the 'forbidden city' because the area was fenced and closed for the public during a long period. On the one hand, attracting people was a challenge because they had to start from zero. On the other hand, the area was well-known by the public due to the high identification with the former user Philips. Binckhorst has always been occupied and used by the public.

Lessons learned from Strijp-S: (1) Showing commitment from the municipality in an early stage was important to increase security and certainty for developers and investors. This is done through the establishment of a PPP, by investing in public transport and urban space, and through the design of a master plan as the urban vision. (2) Furthermore, pioneers were attracted through the temporal renting of

cheap and flexible existing buildings. (3) Finally, the continuity of the brand Strijp-S is ensured through various subcompanies of Park Strijp Beheer, such as an energy provider, that will continue to exist after the termination of the PPP. These measures proved to be successful, as Strijp-S currently hosts 530 enterprises, 500 residents and 1.3 million visitors each year (Strijp-S, n.d.).

Applicability to Binckhorst: (1) Although a PPP for the whole area is not possible, the municipality could show commitment by implementing public transport as soon as possible. Currently, there are only a few busses running through the area, and a tram line is planned, however the date of implementation is unknown. The pilot zoning plan determines a vision for the area, although a stronger municipal direction in the beginning would have been favoured by private parties. (2) Some existing buildings are temporarily used, for instance the Secrit building, but the temporarily renting of vacant buildings could be promoted more proactively by the municipality or by building owners to attract pioneers. (3) I'M BINCK is an initiative of entrepreneurs and it is unknown for how long they will be operating. They already established a well-grounded brand, for instance through the I'M BINCK festival or its own beer brand. Considering the differences in history of both areas, Binckhorst can draw lessons learned from Strijp-S regarding a successful place-making, attracting and retaining people.

2. Good collaboration

Similarities: Both cases are characterized by a mix of actors with different roles that collaborate on formal and informal levels, in order to join forces, share risks and capital, to discuss developments and to find common solutions to problems. The type of informal collaboration is similar: Board of inspiration vs. I'M BINCK and Stadsmakers.

Differences: Of course, the form of formal collaboration differs from an integrated to an organic approach: PPP vs. collaboration amongst market parties. Naturally, the involvement of the municipality differs in those cases, although they were both involved in an early stage and initiated the development.

Lessons learned from Strijp-S: (1) For the development of Strijp-S, the partners were purposively selected by Park Strijp Beheer. This enabled a precise selection to create a well-balanced mix of actors. (2) Ambition, commitment and determination from all parties is guaranteed through the careful selection and easy to monitor due to the limited number of actors. The board of inspiration provides a platform for discussions and to be critical on each other's plans. (3) Through the PPP, the municipality provides guidance and plans are transparent for market players. (4) Due to the integrated approach, it is possible to financially work on the big picture with a long-term horizon and make a business case for the whole area, meaning that some plots generate less and some more revenues and risks can be diversified.

Applicability to Binckhorst: (1) Binckhorst is open for everybody to join the development and the mix of parties cannot be directed. Nonetheless, use can be made of the strengths of all different actors, and this great variety should be turned into an opportunity. The network of informal collaboration can be a tool for that. Furthermore, due to the high number of involved actors, it is recommendable for market parties to join forces by entering collaborations and become a stronger voice. (2) Due to the high number of actors this lesson is less applicable, and actors can hardly be monitored. I'M BINCK already provides a platform for discussions. (3) Particularly since the municipality has a facilitating role, it is important to establish transparent municipal plans and to provide clarity about procedures. Especially the pilot environmental plan has been lacking clarity. It is advisable to revise this plan and clearly define procedures before it is implemented in other cases. (4) This lesson is less applicable. However, it is advisable for the municipality and for larger private parties, to obtain several plots in the area and thus diversify risks.

3. Adaptable and coherent urban plans

Similarities: In both cases a common vision was created in form of an urban plan, with a focus on adaptability and flexibility.

Differences: (1) For Binckhorst, flexibility is achieved through the environmental plan that allows an area-focus rather than plot-focus. In the Binckhorst it has been stated that input from market parties was not sufficiently obtained and included in the vision. Furthermore, the environmental plan lacks coherence and rules are unclear. For Strijp-S flexibility is possible through frequent meetings of the main actors and constant collaboration with the urban planner, which allow easy adaption. (2) Furthermore, the division in sub-areas allows more flexibility. (3) However, flexibility must be dealt with caution as it can also become a risk of creating monofunctionality. Too

much freedom can jeopardize the aim of mixed-use as actors strive for HBU which could mean the same function for every plot.

Lessons learned from Strijp-S: (1) Frequent meetings and collaboration between the main actors and the urban planners allows the incorporation of opinions of all parties, and facilitate a high degree of flexibility, adaptability and coherence of the master plan. The zoning plan is developed in accordance with the master plan thanks to the close involvement of the municipality. The plan has been proven to be adaptable after the economic crisis. (2) Adaptability in Strijp-S was further achieved through the division in sub-areas. Each sub-area is owned by one party. The gradual phasing, not only physically but also in duration proved to be successful and allowed a flexible zoning. Particularly, during the economic crisis, this flexibility was key to success and the best suitable sub-area could be developed first. This was possible through the good, comprehensive cooperation between the municipality and market parties (West 8, 2013). (3) Informal collaboration, a long-term interest of developers and specific rules, e.g. a fixed percentage of social housing prevented monofunctionality.

Applicability to Binckhorst: (1) It would have been advisable in the beginning to organise an intense workshop and several meetings to obtain the opinions from market parties. Although this phase has already passed, this might be applicable in cases of unforeseen events or an economic recession which require a change of plans. It is also advisable to offer more consultation with the municipality and perhaps public presentations about the environmental plan, how rules can be applied and how procedures work. Moreover, it would be advisable to obtain feedback from market parties regarding the pilot zoning plan. (2) In this organic approach it is not possible to determine phasing in time or space, since every developer can decide phasing on its own plot. Although the situations are quite different, lessons learned at Strijp-S should still be considered. Perhaps, the municipality could steer on more gradual phasing by dividing the area in sub-areas and develop public space and infrastructure according to it. This makes it likely that developers adopt to this phasing, as they benefit from public development. Furthermore, the municipality could focus and concentrate their efforts on one part at a time. (3) To prevent monofunctionality while maintaining flexibility, informal collaboration to discuss plans, a long-term interest of developers and investors and rules like a fixed percentage of social housing should be guiding principles.

4. Good urban design and the right mix of everything

Similarities: In both cases the vision is to create a mix of functions, users and programs, horizontally, vertically and throughout the day. Furthermore, in both urban plans, the area is split in sub-areas, although in different ways.

Differences: (1) Thanks to the integrated approach, it is easier to ensure and integration and interaction of functions in Strijp-S, in a way that they mutually support each other. (2) Furthermore, since Strijp-S is located in walking distance to the city centre, it is easier to establish a good connection to the centre.

Lessons learned from Strijp-S: (1) Since only a few actors own large pieces of the area, it is possible for them to focus on interaction and integration of functions and on a high urban quality. Furthermore, the urban planner acts as a supervisor and must approve all plans from private parties. This ensures good urban design. (2) A strong focus is put on creating an active and lively plinth and public spaces at all times of the day. This is achieved by programming the functions on the ground floor, such as horeca functions and small shops, by focusing on pedestrian use and human scale, and by hosting events. (3) A good connection to the city centre is established through the early implementation of public transport, in form of a bus line. Furthermore, the construction of slow traffic lanes, pedestrian roads and smart parking solutions, helped to reduce traffic and focus on pedestrian and bike use.

Applicability to Binckhorst: (1) Due to the fragmented ownership it is hardly possible for individual owners to achieve an integration and interaction of functions to reach a perfect mix. However, it is advisable to introduce a supervisor who focuses on the big picture and on good urban design. This should be an external consultant, hired by the municipality who is an expert in urban design. He or she should be in close and frequent contact with developers. (2) All lessons learned from Strijp-S can be taken into account. (3) Since Binckhorst is located in biking distance to the city centre, it is advisable to focus on a good accessibility by bike, e.g. by offering enough parking spaces and appropriate bike lanes. Due to the industrial and office history of the area, Binckhorst has mainly focused on accessibility by cars, trucks and ships. A shift towards a focus on pedestrian use could contribute to more lively public spaces. Additionally, public transport should be expanded, and smart parking solutions could be implemented to reduce traffic.

5. Software & Innovation

Similarities: The facilitation of dialogues between actors through informal platforms is a way to connect people and to find shared solutions for common problems. This is achieved in both cases.
It can be a vehicle to inspire and stimulate creativity, innovation and sustainable solutions.
Differences: The difference is that in Strijp-S all main actors are involved in the board of inspiration. In Binckhorst it is optional to participate in I'M BINCK or de Stadsmakers, and due to the high number of actors it is difficult to incorporate everybody. To additionally steer on innovation, Park Strijp Beheer established several companies that focus on local, innovative solutions in the area.
Lessons learned from Strijp-S: Thus far, the focus on innovation and on the 'software', so on people and creating communities, has proven to be successful. Innovation is steered on through the plus packages, for instance iCity that develops smart infrastructure. The lighting system which runs through a fiber optic network won the Auroralia Award in 2014, a global prize for sustainable light projects (VolkerWessels, 2014). Furthermore, the transformation won the Golden Phoenix (Gulden Fenix), which assessed durability, sublimation, sustainability, economy, innovation and social value (West 8, 2013).
Applicability to Binckhorst: Establishing independent, local companies that focus on innovative solutions could be an idea to cope with common problems, such as waste management, energy production and circular economy. I'M BINCK already steers on innovations for those issues and shows solutions. It is advisable for every party to participate in common solution finding.

6. Use existing strengths & opportunities of the area

Similarities: In both developments a focus was put on the existing strengths of the area. Some existing buildings are kept and used for temporary, flexible use, mainly for creative functions. I'M BINK defined key-values for the area
Differences: For Binckhorst, the Monuments Inventory Project (*Monumenten Inventarisatie Project*) awards special quality to a few, special elements in the area, including the Binckhorst Castle (Gemeente Den Haag, 2012). Except from the Binckhorst Castle, all buildings were constructed after 1900 and the majority after 1945. The construction of Strijp-S started in 1916 and nine monuments were refurbished and maintained.
Lessons learned from Strijp-S: The economic crisis caused a change of thinking and led to the decision not to demolish buildings hastily. This and the temporary leasing of existing buildings at low price was one of the main success factors at Strijp-S. It generated early cash-flows and attracted pioneers. By maintaining monuments and attracting pioneers, a unique character was created and the heritage of the place was kept and respected.
Applicability to Binckhorst: As stated in the *Omgevingsplan* one ambition is: "Guaranteeing the quality, identity and recognisability of the living environment by protecting cultural-historical values and, if possible, promoting redirection". There are 5 national monuments, 3 municipal monuments, one municipal protected cityscape, and 17 defined special buildings. This measure ensures the maintenance of the area's heritage. It is furthermore advisable to develop ideas how remarkable or monumental buildings can be re-used, as done by I'M BINCK. It is not enough to only impose the preservation of buildings, but also solutions should be offered. Additionally, as already stated in the first success category, it is advisable to facilitate temporary leasing of existing, vacant space more extensively. Moreover, seemingly disadvantages should be turned into an opportunity. For instance, regarding the existing heavy industrial functions, temporary and experimental housing could be a solution to realise residential functions next to those still operating functions.

7. Adapt to economic changes

Similarities: Both developments were initiated before the economic crisis and experienced its tremendous impacts which forced a change of plans.
Differences: In the Binckhorst development the approach changed from a more integrated to an organic approach (Interviewee 5, 2019a). In Strijp-S the phasing changed and the master plan became more organic likewise.
Lessons learned from Strijp-S: In both cases an organic approach was better suited during economic recession. Strijp-S showed that it is possible to continue the development during an economic downturn, when focusing on social housing and housing for rent.

Applicability to Binckhorst: In case of the next economic recession, it is advisable to focus on rental, middle- and low-segment housing and postpone high-segment apartments and housing for sale. Furthermore, it is important to speed up during booming economy and to reduce any sources of delays.

8. Framework conditions

Similarities: In both cases, great attention is placed on setting the right conditions, particularly regarding the public perception of the development. The hosting of festivals, events, informational meetings and the inclusion of the public helped to keep residents informed and to achieve general acceptance.
Differences: Both cases used very similar approaches in this regard. In Strijp-S the identification with the area by society and also the city has always been high, therefore the political and social conditions have been favourable from the beginning on.
Lessons learned from Strijp-S: The framework conditions in Strijp-S are historically dependent.
Applicability to Binckhorst: Therefore, no lessons can be learned for Binckhorst in this regard.

Concludingly, several lessons learned from Strijp-S are applicable to Binckhorst about how to achieve success factors in practise. All lessons learned that are applicable to Binckhorst are summarized in the following table. Some success factors are not particularly mentioned in this list, which means that either no advice can be given or that the success factor is already fulfilled. Additionally, it can be said that all success factors that were collected in the success factor register are generally valid and should be achieved for the Binckhorst development.

It is important to point out that all advice given does not guarantee success, as the lessons learned are based on another case with a different context. Nonetheless, it provides guidance and draws attention to certain important aspects and can steer on innovative ideas that help to achieve a successful outcome.

Table 14 Advice for Binckhorst based on lessons learned from Strijp-S (own table)

Success category	Potential strategy and means	Directable by whom
1. Create awareness & place-making	Show commitment by implementing public transport as soon as possible	Municipality
	Provide strong and clear municipal direction	Municipality
	Temporarily rent out vacant buildings, for a low rent and flexible contract. Promote this more proactively	Owners of vacant buildings, municipality
2. Good collaboration	Make use of the strengths of all different actors, facilitated through the network platform I'M BINCK and de Stadsmakers	Developers, I'M BINCK, de Stadsmakers
	Join forces by entering collaborations with other companies to become a stronger voice	Developers
	Establish transparent municipal plans and provide clarity about procedures	Municipality
	If possible, obtain several plots in the area to diversify risks and create a financial business case for an area, rather than just for a plot	Developers, municipality
3. Adaptable and coherent urban plans	In case of a necessary change of plans, organise an intense workshop and several meetings to obtain the opinions from market parties.	Municipality, perhaps facilitated by I'M BINCK
	Offer more consultation and perhaps organise public presentations about the environmental plan, how rules can be applied and how procedures work. Obtain feedback from market parties about the pilot zoning plan.	Municipality
	Consider steering on gradual phasing in time and space by dividing the area in sub-areas and develop public space and infrastructure according to it.	Municipality
	Achieve a balance between flexibility and guidance through informal collaboration, a long-term interest of developers and investors and rules like a fixed percentage of social housing	Developers, investors, municipality
4. Good urban design and the right mix of everything	Introduce a supervisor who focuses on the big picture and on good urban design. He or she should be an external consultant, experienced in urban design, and have close and frequent contact with developers.	Municipality
	Create an active and lively plinth and public spaces that are accessible and used at all times of the day. Program the functions on the ground floor, like horeca functions and small shops, focus on pedestrian use and human scale, and host events.	Municipality, urban planner, developers
	Focus on accessibility by bike and walkability. E.g. offer parking spaces, safe and interesting slow traffic routes. The location along the water could be used.	Municipality, urban planner
	Expand public transport as soon as possible. Introduce sufficient parking spaces for private transport and consider smart parking solutions to reduce traffic.	Municipality, urban planner

5. Software & Innovation	Participate in finding common solutions to issues like waste management, energy production and circular economy. Establishing an independent, local company could facilitate innovative solutions	Developers, municipality, I'M BINCK
6. Use existing strengths & opportunities of the area	Develop innovative ideas how monumental or remarkable buildings can be preserved and re-used.	I'M BINCK, developers, municipality
	Temporarily rent out vacant buildings, for a low rent and flexible contract. Promote this more proactively	Owners of vacant buildings, municipality
	Turn disadvantages in opportunities. Explore experimental or temporary housing next to the still operating industrial and harbour functions, to increase liveliness of the area throughout the day.	Developers
7. Adapt to economic changes	Speed up development as long as economy is booming. Reduce sources of delays and provide sufficient means and labour.	Developers, municipality
	In case of the next economic recession, focus on rental, middle- and low-segment housing	Developers

Policy advice regarding the land use plan with extended reach

Since the environmental plan (*Omgevingsplan*) is used as a pilot zoning plan for the Binckhorst development, special attention is drawn to it. Therefore, this paragraph explores the central aspects regarding the environmental plan that were discovered during this research. This can be used by municipalities and policy-makers as feedback to further develop and improve this method for the Binckhorst or for other areas where it might be implemented in the future.

1. More clarity and coherence
   As this land use plan is a pilot, most municipalities do not know how to define its rules and procedures. It is crucial that the municipality clearly defines all aspects, rules and procedures *before* the implementation of the plan. Making changes of the plan throughout the process causes uncertainty, delays and becomes a risk for developers. All documents should be easily understandable, readable and precise. Special attention must be payed to internal coherence of all rules. Obtaining feedback and learning from cases where this system has already been used is advisable, both from public and private sides.

2. More direction upfront
   As this zoning plan is a pilot, none of the involved actors were familiar with its rules and procedures. For future projects, it is advisable for municipalities to give a clear introduction to this system *in the beginning* of the development. Furthermore, direction and consultations upfront are advisable. Public presentations, open consultations, meetings and a clear handbook could be means to clarify how procedures work and which rules apply. This helps to reduce uncertainty for developers.

3. How to deal with developments that started before the implementation
   (Re-)developments happen in existing urban structures which are mostly developed organically and occupied at the starting point. This means, it must be determined how to deal with developments that started before the implementation of the environmental plan. In the Binckhorst area, the development of some plots already started before the official implementation of the plan and developers faced uncertainty about which rules applied to them. This issue must be considered and clearly defined upfront.

6.4 SUMMARY

This chapter presented all final outcomes of this research, based on the theoretical framework and empirical research. The first result is an extended risk register in addition with a success factor register as a comprehensive overview of all risks and success factors that can influence urban area transformations. These include all analysed aspects (Table 12 and Table 13). This helps to raise awareness about risks and success factors that can influence a development significantly, and how they relate to each other. Furthermore, this outcome can be used as a checklist by actors to conduct risk and success factor management which helps to cope with risks and to achieve success.

The second result is the newly developed Risk and Success Factor Framework. This framework is iterative, integrated and customizable and can be applied by individuals, groups and institutions for managing risks and success factors in projects within the context of urban area transformation. The structure of the traditional risk management approach was used as a base for the framework. However, it differs from the traditional risk management firstly by the focus on a whole area which allows diversification of risks through a number plots, and secondly, by the inclusion of success factor assessment in a way that success factors and risks mutually support each other. Particularly for large-scale, complex projects it is advisable to use a system that is especially designed for those challenges. Due to the interconnection of risks and success factors it is important to include them both in risk management. This helps to achieve mutual support of both factors and to make the whole more than the sum of individual parts. The newly developed framework serves for this purpose and helps to achieve a successful process and product.

Finally, advice given for urban area transformations. Based on the lessons learned in this research, general advice was provided in form of developers recommendations and policy recommendation. Moreover, specific advice was given for the development of Binckhorst which was based on the lessons learned from the transformation of Strijp-S. Within each success factor group, the lessons learned from Strijp-S and the applicability to Binckhorst was discussed, based on the similarities and differences between those cases. Table 14 summarised the advice given to Binckhorst for the municipality, developers, urban planners, investors, I'M BINCK and de Stadsmakers. Moreover, policy advice was given regarding the pilot land use plan with extended reach. As this is a pilot in the Netherlands, it is useful to learn from experiences.

Conclusion

7 CONCLUSION

The last chapter provides the conclusion of this report. A discussion elaborates on the results within a wider social context. Moreover, the process and the products of this research are tested regarding general validity and trustworthiness. Recommendations for further research & practice can provide inspirations for future research. Finally, a reflection on the process of this master thesis concludes the report.

7.1 CONCLUSION & DISCUSSION

The problem of obsolete, monofunctional office areas in the Netherlands that cause a direct and indirect reduction of value, and negative effects for the city, residents and society, requires a structural solution. Transforming these urban areas into mixed-use areas eliminates the root of the problem and creates more liveable, integrated and future-proof areas. However, these are highly complex and dynamic processes that are influenced by various factors (Ch.3.1). The theoretical framework revealed that any project is first of all case-specific and thus depends on context variables which are the place itself, the product it should become, the persons that are involved and the process (Ch.3.2). On top of that, risks and success factors can have an enormous influence and determine over success or failure (Ch.3.3, Ch.3.4). A qualitative research strategy was used to answer the main research question: Which risks and success factors influence the process of urban area transformations from monofunctional to mixed-use areas and how can they be managed? Two case studies were used to identify and analyse risks and success factors: Binckhorst in Den Haag and Strijp-S in Eindhoven. Data obtained through expert interviews was analysed by a cross-case comparison and by a questionnaire, as a method to quantify risks and to test generated hypotheses.

Thus, the first part of the research question can be answered: An extended risk register in combination with a success factor register was created that presents all risks and success factors that can influence the process of urban area transformations from monofunctional to mixed-use areas. This demonstrates the close relation between those factors and how success factors can be applied as strategies to reduce risks. These registers can be used as checklists by developers, municipalities or other actors who operate in area transformations, and increases awareness. Furthermore, the analysis showed:

- The biggest potential impact has the risk ‘natural disasters’
- The highest probability has the risk ‘increase of construction prices’
- The overall biggest risk (calculated as probability times impact) is the ‘increase of construction prices’

- The higher the potential impact of a risk is, the more likely it depends on success factors that *cannot* be directed by individual actors.
- The less a risk can be diversified within the area, the more likely it depends on success factors that *cannot* be directed by individual actors.

Under consideration of the extended risk register and the lessons learned, a framework was designed, to answer the second part of the main research question: Risks and success factors in the process of area transformations can be managed with the use of the newly developed Risk and Success Factor Management Framework. This framework differs from traditional risk management by facilitating the diversification of risks through focusing on a whole area rather than on an individual plot. Thus, the categorization of risks into plot-specific, area-specific and market-specific was incorporated. Furthermore, success factor assessment was included as an integral part to improve the efficiency of reducing negative impacts and probability of risks and of increasing the achievement of opportunities. In the beginning of the process, the task ‘defining success’ for the specific case was introduced. This is followed by the identification of success factors in relation to risks, and the analysis and evaluation of directability. The Risk and Success Factor Management Framework can be used by any actor who is concerned about the development of the whole area, or several plots within the area, to better manage risks and to achieve success factors.

Finally, based on generated and tested hypotheses, lessons learned were defined and advice was given. This should be seen as a guideline to give direction, increase awareness about important aspects and to define

priorities. The developers recommendations and policy recommendations can help future area transformation projects to achieve the desired outcomes and a successful process. Moreover, specific advice was given for the development of Binckhorst which is currently being executed, based on lessons learned from Strijp-S. Nonetheless, these advices are no guarantee for success.

Based on these outcomes it can be concluded that the increase of knowledge gained through this research and the developed tools reduce uncertainty in the process. Therefore, this research helps to achieve successful urban area transformations that create liveable, future-proof mixed-use cities.

Discussion

This discussion places the analysed aspects and results of this research in a wider social context.

Research showed that offices located in monofunctional urban areas are less attractive and have a higher risk of becoming vacant and obsolete. In case of external shocks such as decreasing demand, all buildings are affected equally, and the value of a whole area decreases. Just like a beetle can destroy a whole monoculture plantation at once, there is no buffer or possibility for quick adaption. In contrast, the great variety of functions in mixed-use areas can better absorb and counterbalance shocks. Even though the HBU might dictate one type of function for every plot, this can only be true for a short-term perspective. On the long-term the value of every individual property will be higher in mixed-use areas, particularly since market demand demonstrates the explicit preference for these areas. However, there are certain factors that still encourage monofunctionality.

Public developing has been focussing too much on producing one function, due to the increased competition between municipalities. This prevails since the beginning of the century when the central government started to focus on decentralization. This included governmental cutbacks on investments for spatial planning and its withdrawal from urban, retail and housing policy. Municipalities started to rely on income from real estate developments via land companies which led to negative policy competition and fragmented decision-making by individual municipalities. This dynamic and lack of coordination has caused an over-supply of business sites and retail, with increasing vacancy as a result. These suboptimal solutions resulted in a zero-sum game — financed with public funds.

Moreover, the falling vacancy numbers and the rising take-ups in recent years encouraged over-optimism to build even more offices. To name an example, the Office Plan 2019-2026 of Amsterdam aims to construct 500,000 square meters of offices in the next four years (Cobouw, 2019). Although, currently Amsterdam has a healthy vacancy rate of 6,5% (Cushman & Wakefield, 2018a), at the time of delivering the new office space the economy may be in recession — fueling the next vacancy problem. Trends show that overall demand for office space will continue to decrease in the future, due to demographic reasons, a reducing number of work force, and new ways of working. The idea that the market will absorb all the vacant real estate with the recovery of the economy is incorrect. The longer the vacancy of a building persists, the lower the chance for occupation while risks accumulate.

Thus, the problem of office vacancy is still far from being solved and the market will always fluctuate around the perfect balance which can never be achieved for good. These risks of municipal competitions and over-optimism are manageable on a large scale but not directable by an individual actor, which shows that more regulations and communication are needed. These issues require quick, large-scale solutions and area transformations must be redefined. Doing nothing is no longer an option.

Organic developments are becoming more and more popular in Dutch building practice, as these approaches are more successful in uncertain and changing circumstances. Organic structures are more loosely connected and thus can absorb shocks such as economic recessions better — like an elastic spider web. Integrated development organisations are often too stiff and less responsive to changes. If one part within a tightly coupled systems is hit by external shocks, the whole structure collapses. My research showed that especially economy has tremendous impact on area developments and can change the whole approach and institutional structures. Not only Binckhorst and Strijp-S, but also other cases experienced a shift from integrated to organic development approaches after the crisis, such as Havenkwartier in Deventer or Ebbingekwartier in Groningen (Buitelaar et al., 2014). Nonetheless, neither is complete freedom and flexibility for private sector-led developments an optimal solution, as the risk of speculations and achieving segregation instead of mixed-use is much higher. Like everything in life, the right balance makes the difference. But how can that be achieved?

Institutional settings must facilitate for more organic approaches and the municipalities must define their new guiding and facilitating role. My experiences showed that in practise a change of mindset is happening. Project developers and municipalities focus more and more on long-term goals and on collaboration. We are currently in a transitional phase in the process of institutionalising new approaches of urban developments. However, this is a slow and difficult process due to path-dependency and remaining pre-crisis power structures. Such a shift requires many pilot projects to experiment with new approaches. The Omgevingsplan as used in Binckhorst is a good start but still needs improvements, as this research showed. Future projects should learn from experiences made (see feedback given p.115) and municipalities should learn from each other. Decentralization has gone too far, and we must look for a new balance with stronger cooperation between municipalities in which the partial interests of municipalities are not the deciding factor, but where the public interest is central. We have to fully exploit the agglomeration power and the urban network that the Netherlands is known for to find solutions at a higher scale level. More knowledge about possible solutions and awareness is needed, and risk management on a larger scale becomes increasingly important. Every little contribution to that matter, including this research, is a step in the right direction.

7.2 RECOMMENDATION

As this research was bound by time and means, certain aspects could not be explored completely. These recommendations can serve as a foundation or inspiration for other researchers. The following paragraphs provide recommendations for further research and for practice.

Recommendation for further research:

- Further cases should be studied to identify more risks and success factors and to extend the overview of possible factors. This can increase the validity of the obtained results. Cases that have different characteristics should be chosen to cover different situations. Furthermore, these cases should be in different stages of the process. Since both Binckhorst and Strijp-S are not completed yet, results are partly based on expectations. Thus, a post hoc analysis of cases regarding risks would enrich the results gained. It is recommendable to use similar methods to identify and analyse risks since these have been proven to be appropriate for that purpose.

- Furthermore, it would be interesting to analyse the same cases, Binckhorst and Strijp-S, in 5-, 10- or 20-years' time. It could be assessed whether anticipated risks actually occurred, which degree of impact they had in reality, and which factors were most effective to promote success and who could direct them. It is also recommended to analyse whether these projects were a success and in relation to which definition of success.

Recommendations for practice:

- The developed RSFM Framework is based on theoretical framework and empirical research, however, due to the limitation of this research it was not yet tested in practice. It is recommended to apply the framework in a real-life case to identify and improved weaknesses based on the lessons learned from such an experiment.

- Furthermore, the focus of this research was placed on the risk and success factor management tasks of establishing the context, identifying and analysing risks and success factors. These steps provide the foundation for RSFM. However, the decisive steps are the actual actions taken to cope with the results from this assessment. Therefore, it is recommended to explore the later steps in more detail, namely response and monitoring. This should be done based on practical experience to analyse the effects of actions taken.

7.3 REFLECTION

This paragraph provides a reflection of the process and products of this research. First, the position within the chosen graduation laboratory is elaborated on, followed by a reflection on the research methods and results, and concludingly a personal reflection is provided.

Position within graduation laboratory & scientific relevance

The graduation laboratory Adaptive Re-use offers a wide variety of research topics related to adapting the built environment to suit new conditions. Office vacancy poses a challenge that requires the upgrading of a huge number of affected buildings. Most research by former students focused on the causes and effects of office vacancy and adaption on a building level (Borst, 2017; Damwijk, 2015). In the past years, more studies were conducted about the transformation from monofunctional towards mixed-use. The location characteristics were analysed that increase the risk of structural office vacancy (Van Wingerden, 2013), and different tools were developed, for instance to support the initiation process (Van Velzen, 2013) or to determine strategic activities (Huijsmans, 2018).

However, no research has been done on risks and success factors in the process of area transformation. My research fills that scientific gap and contributes to the problem how areas can be reused and updated in a socially, environmentally and economically sustainable way. With the focus on managerial dimensions of construction processes, by exploring the management of risks, my topic fits in the master track MBE and in the master programme MSc Architecture, Urbanism and Building Sciences.

Research design and methods

The chosen qualitative approach proved to be the right choice due to the complexity of the topic. Since every case is unique and risk and success factors are case-specific, it was logical to select two case studies and to conduct interviews with experts to identify risks and success factors.

Internal validity or credibility determines the consistency of the research. One way to increase credibility was the use of the Delphi method with two rounds that allowed the application of respondent validation (Bryman, 2016). This means that findings obtained from the first round were submitted back to the experts to receive confirmations through the second round. This ensured that the studied issues were understood correctly. Furthermore, an interview guide was prepared which increased consistency of interviews held. However, it was not possible to achieve equal circumstances, as due to time limitations of interviewees some interviews were shorter and not all questions could be asked. This factor reduced internal validity. Finally, the use of different types of data collection methods (case-study documents, expert interviews, questionnaires) established triangulation, which is a recognized method to establish internal validity, generalizability of the results and to reduce intrinsic bias.

The options for the second Delphi round were to use a questionnaire with a broad audience or a focus group session in form of a simulation game. By choosing the questionnaire, I combined qualitative methods (case-studies and interviews) with quantitative methods (questionnaire) to first zoom in and gain an in-depth understanding of the topic, and then to zoom out and broaden the perspective. Discussions in larger groups have the risk that some respondents take the lead while others remain quiet. Furthermore, people tend to agree with a general opinion in social interactions. In contrast, a questionnaire allowed the necessary anonymity to obtain honest opinions. This proved to add rich data, improved validity, and prevented generalization of the results. Nonetheless, an expert panel with a focus group could have been a valuable method in addition to the questionnaire to stimulate interesting discussions for deeper insights. This was not feasible due to time restrictions of this thesis.

Research results

The external validity or transferability determines "the degree to which a study can be generalized across social settings" (Bryman, 2016). The transferability of qualitative research results is naturally limited as every project is unique.

The extended risk register and the success factor register are based on two case studies and are therefore primarily transferable to cases that have similar characteristics to Binckhorst or Strijp-S. Furthermore, both cases are not completed yet which means that some factors are only *expected* but not proven to have an impact. However, external validity was increased by employing a large sample by means of a questionnaire with responses

of 9 + 67 experts. Moreover, 'thick description' was produced which provides a profound database to judge about the transferability of each individual risk and success factor to other situations. In this regard, the obtained overview serves as a valuable starting point for any case that, however, needs to be adapted accordingly. The general validity could have been improved by conducting more interviews and case studies with different characteristics, to cover a broader spectrum of situations.

The RSFM Framework has a high degree of transferability, as it was designed to be adaptable and applicable to any case, since it serves as a guide not as a fixed step-by-step strategy. However, the framework has not been tested in practise. Nonetheless, this new insight improves traditional risk management and helps to design effective strategies to cope with risks and to achieve success. Although it was designed for urban area transformations, the framework can be used for other situations due to its adaptability such as urban and rural (re-)developments, green-field developments or other large-scale developments that are characterized by high complexity. For small-scale development projects a traditional risk management approach can be sufficient.

The general validity of developers and policy recommendations are high, since they were validated by both qualitative and quantitative methods. The specific advice for Binckhorst has a limited external validity as this was solely based on Strijp-S. Thus, these advices must be taken with caution.

Despite those limitations, the results increased knowledge about area transformations which helps to reduce uncertainty. Particularly the analysis of risks and success factors helps to better understand their interconnection, which has not yet been analysed in previous research. Since this knowledge can make a crucial difference for the success of a project, this thesis adds to existing knowledge.

Ethical issues

A moral problem was encountered when discussing about risks and issues with different actors during interviews. Since naturally actors have different perspectives, sometimes they blamed others for certain problems or asked me about information from other people. I had to be sensitive to respect the value of privacy and to maintain confidentiality of statements made. On the one side, my active and professional responsibility obliged me not to pass on confidential information to other people, considering the likely consequences of creating discord amongst parties. This is in line with the ethics of deontology that would determine this action wrong as it does not agree with moral rules. On the other side, passing on information about problems could help to solve them, by communicating those different opinions and creating mutual understanding. According to the doctrine of consequentialism, the end result would justify the means and could lead to the greater happiness. In the light of these considerations I decided to adhere to the norms and not to discuss confidential information. Instead, I offered all interview partners to send them the end results of my research which can provide them with new insight from different parties. Particularly the advice given for actors working in the Binckhorst development can be valuable information. In this way confidentiality is maintained since interviewees are kept anonymous, but it still helps to solve issues and to reduce risks in practise due to an increase of knowledge.

Personal reflection

During this research I realised that the issue of structural vacancy and the process of area transformation is much more complex than I expected. Although this research answered the defined questions, yet much more questions arose. I hope to get the opportunity in my future career to dive deeper in the topic of risk management since this is such a complex yet crucial aspect of any project. Above content related aspects, I acquired valuable personal skills. I trained myself to work most efficiently with limited means and a given timeframe, and to be the manager of my own work. I learned that it is crucial to build up a network of experts, mentors and colleagues who can provide you with the right information and personal support if needed. Furthermore, through the contacts with experts during this research I got interesting insight about potential future positions for myself.

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9 APPENDICES

Appendix I: Terminology

Appendix II: Semi-structured interview guide

Appendix III: Risk register Binckhorst

Appendix IV: Success factors Binckhorst

Appendix V: Risk register Strijp-S

Appendix VI: Success factors Strijp-S

Appendix VII: Risk register Binckhorst and Strijp-S

Appendix VIII: Success factors Binckhorst and Strijp-S

Appendix IX: Questionnaire

Appendix X: Questionnaire Results

APPENDIX I: TERMINOLOGY

Actors are individuals, groups or institutions who act on the project and represent a role within the project. All actors are stakeholders but not vice versa.

Highest and best use (HBU) strives for maximum productivity of an entity. It requires to identify those functions for an entity, such as land or building, that could have the highest value of its usage (Munizzo & Musial, 2010).

Integrated development approaches are comprehensive, large-scale developments that combine different land uses and operates with integrated financial and organisational systems, where public authorities adapt an active land policy.

Obsolescence is defined as a reduction of the original value of a property during its life cycle, which can be caused by different types of obsolescence.

Organic development approaches are individual, small scale developments that are executed in a gradual and mixed manner, where public authorities take on a facilitating and risk-averse role, while market parties and end-users obtain a leading role.

Value of a building is determined by the return on investment that comes from its users willingness to pay which derives from the property´s fitness of use for the specific user (Douglas, 2006).

Monofunctional office areas primarily host one function. They are characterized by their focus on car accessibility and are considered non-future-proof due to their low degree of adaptability to changing circumstances.

Mixed-use areas are defined as a combination of min. three interacting and integrated functions that mutually support each other. A mix must occur on different layers, horizontally and vertically within a building or block, horizontally within the area and throughout different points in time. A coherent plan should be implemented that focuses on pedestrian use and optimization of space usage. The coexistence of a diversity of actors and built & natural landscapes should be established.

Risk is defined as a situation that can cause a threat or opportunity in consequence of uncertainty.

Stakeholders are individuals, groups or institutions with an interest in the project (Boddy & Paton, 2004) or "those actors which will incur – or perceive they will incur – a direct benefit or loss as a result of the project" (Winch, 2010).

Structural vacancy is defined as vacancy of the same square metres of office space or at least 50% vacancy of a building over a period of three years or longer, with no perspective on future tenancy (Remøy, 2010)

Success is an ambiguous concept and is differently defined for different actors. There is not one explanation for this concept, see chapter X.

Uncertainty is defined as the lack of information or knowledge without awareness of it.

Urban area development (UAD) is a deliberate development of an urban area with a long-term perspective to strategically improve the economic, physical, social or environmental conditions. It is often driven by social urgency and/or potential and can be initiated and steered on by public or private parties.

Urban area transformation is the re-development of existing urban built environments and falls under the umbrella term 'urban area developments'.

APPENDIX II: SEMI-STRUCTURED INTERVIEW GUIDE

Date: ……
Location: ……
Name: ……
Company: ……
Can you briefly describe your current position?

Actors

1. What is your role in this area development?
2. Are there agreements between the involved actors in order to develop the area as a whole?

Phases & Milestones

3. In which phases is the process of the area development divided?
   In which phase is the process now? When is it expected to be completed?
4. Which are the main milestones and key-decision moments of the process?

Risks

5. Is risk management conducted for this project?
   If yes,
   a. Who is mainly responsible for it and how is risk managed?
   If no,
   b. Do you have another approach on how to deal with risks?
6. Are there shared risk management approaches for the area or is it only done individually?
7. What are the main risks in the overall area development?

➔ *Show interviewee a list with typical risk categories to stimulate further responses*

8. Which risk can have the biggest impact?
   Which one has the highest probability of occurring?
   Which one is the most unpredictable?
9. Which unexpected events happened that had a positive impact and created opportunities?
10. Is speculative behaviour in the area development a risk? What about Free riders?
11. Does the number of involved actors in the area influence the level of risk? And if so, in what way?
12. Do you think it is less risky to develop an area in a PPP?

Success Factors

13. What are the key factors that make the outcome of the area development successful?
14. Who can steer on those factors to achieve success?
15. In what way is the mix of functions in the area important to make it successful?

Are there any relevant aspects that are noteworthy in relation to this topic?
Do you have any recommendations for interesting parties that I could speak on this subject?

End of the interview

Thank you very much for your time!

APPENDIX III: RISK REGISTER BINCKHORST

Risk category	Risk	Actor	Phase	Impact	Potential strategy
Planning	Incoherence and changes of original plans by municipality	Developers	Initiative, planning, execution	Uncertainty of plans, extra effort and means needed to make changes.	Early dialogue with municipality, more direction and counselling, transparency, create informal platform to discuss changes amongst actors
	Wrong estimation of future demand	Developers, investors, users	Completion	revenues don´t cover costs, monofunctional area, price increase, vacancy	Create mix of functions; consider changing plans especially after certain external events
	Existing hazardous functions	Developers, municipality, users	Planning, completion	Noise and air pollution must be anticipated in design	Municipality can negotiate relocation
Financial	Revenues don´t cover expenses	Developers, contractors, especially speculative actors	Initiative, planning, execution	Loss of invested capital	Sell building in an early stage; chose location strategically; don't buy but lease the land; no speculations
	Not enough demand after completion	Developers, investors	Completion	Lack of income, loss of investment	
	Unbalanced mix of functions	Society, users, municipality, investors	Completion	Not enough jobs cause unemployment, not enough housing causes high prices	Create a social business case for the whole area, estimate costs and values for society on long-term
Economic (macro)	Economic recession or crisis	Everybody	Always	Can slow down or stop development, decrease revenues	Speed up development during economic boom
Market (meso)	Construction price increase	Developers, contractors	Always	Medium, can be positive or negative	Thorough calculations of costs and delivery times
	Speculation	Everybody	Always	Commercialization, rising house prices, loss of authenticity, bankruptcy	High standards and regulations set by zoning plan (e.g. social housing)
Area (micro)	Bankruptcy	Everybody	Always	Can slow down or stop development, delays, outstanding liabilities	Fragmented ownership reduces overall impact
	Loss of authenticity and unique character	Investors, municipality, users	Completion	Commercialization, rising house prices, loss of current functions and users	Collaboratively define key-values of the area
	Restrictions for existing companies due to new developments	Existing non-footloose companies	Always	Impact on production processes, costs or reduced profit, forced relocation	
Legal	Objections from residents to building permits	Developers	Planning, execution	Delays of permit procedures, costs of lawsuits	Establish good communication with residents and keep them informed
	Objections from existing companies to building permits	Developers	Planning, execution	Delays of permit procedures, costs of lawsuits	Establish good communication and find shared solutions
	Objections to zoning plan changes	Municipality, developers	Planning	Delay of implementation zoning plan, costs of lawsuits	Establish good communication with residents and keep them informed
Political	Controversy with or within municipality	Developers, municipality	Initiative, planning, execution	Uncertainty about rules, processes and zoning plan	Create continuity and transparency, early communication with municipality
	Change of political direction and municipal plans	Developers, municipality	Planning, execution; during electoral cycles	Higher standards or changes of planning, additional costs	
	Controversy with adjacent municipalities	Municipality	Initiative, planning	Conflicts, delays	
	New policies from central government (eg energy standards)	Developers, municipality	Planning, execution	Higher standards, cost increase; unknown impacts	
Organisational	Lack of employee capacity	Municipality, developers, contractors	Initiative, planning, execution	Slow speed of process, delays, high construction prices	
	Selection of unsuitable partners	Everyone	Always	Clash of opinions, extra costs and delays when searching for new partner	Carefully select partners, create mix of different parties, good contractual management
	Changes of personnel	Everyone	Always; during electoral cycles	Loss of knowledge or new visions/opinions	
	Internal complexity of municipality	Developers, municipality	Initiative, planning, execution	Slow speed of procedures, uncertainty and no coherent opinion, neglection of market opinions	
	Bankruptcy	Everybody	Always	Can slow down or stop development, delays, outstanding liabilities	Fragmented ownership reduces overall impact
	Image damage	Municipality	Always	Problems and conflicts during the process can harm the image of municipality	Keep society informed

Executional	Accidents or unexpected events	Contractors, developers	Planning, execution	Can have a big impact on time, costs, safety and quality.	
Environmental	Hazardous functions	Developers	Initiative, planning, execution	Cause noise and air pollution, conflicts with residential functions	
	Ground pollution	Owner, developer	Planning, execution; depends on location	Delays and extra costs	Thorough upfront investigations
	Noise pollution (railway, factories)	Developer, architect	Planning; depends on location	Extra effort and means needed	
	Air pollution	Developer, architect	Planning; depends on location	Extra effort and means needed	
	Discovery of protected flora and fauna	Developers, contractors	execution	Delays	
	Infrastructure and traffic	Developers, municipality	Planning, completion	Cause traffic problems, conflicts with neighbours	Collaborate and design well-functioning infrastructure and parking plans

APPENDIX IV: SUCCESS FACTORS BINCKHORST

1. Create awareness and place-making

- Show consumers, investors and developers that 'something is happening' by hosting events and promoting first completed developments
- Show municipal commitment by making investments in public spaces, public transport and infrastructure, publishing an urban vision and defining the zoning plan
- Attract pioneers to the area, like creative communities, start-ups, restaurants, etc.
- Suitable cultural background

2. Speed of development processes

- Good economic climate
- Speed up processes like building permissions
- Reduce delays

3. Good collaboration

- Establish a mix of actors with different roles and strengths
- Create transparency of municipal plans
- Choose reliable partners, establish good agreements and join forces
- Establish good formal and informal communication and collaboration
- Ambition, commitment and determination from all parties
- Be critical, willing to discuss and open to suggestions

4. Favourable conditions

- Favourable political climate
- No changes in legislations and regulations that influence the development negatively
- No force majeure

5. Coherent urban plan and vision

- Create a shared vision upfront
- Define workable and clear rules in the zoning plan
- Design an adaptable and flexible urban plan

6. Good urban program and the right mix

- Create a well-balanced mix of interacting and integrated functions
- Find a solution to conflicting functions
- Implement public facilities and public transport as soon as possible
- Establish a good connection to the city centre

7. Informal platform and consciousness of the area

- Facilitate dialogues and connect people
- Find shared solutions for common problems
- Inspire and stimulate creativity, innovative and sustainability

8. Use existing strengths of the area

- Define key-values to use opportunities of the area
- Maintain the area's authenticity, uniqueness and respect its heritage
- Leave undetermined space to be filled later

APPENDIX V: RISK REGISTER STRIJP-S

Risk category	Risk	Actor	Phase	Impact	Potential strategy
Planning	Changes of original plans	Municipality, developers, urban planners	Planning, execution; After certain external events (e.g. crisis)	Extra effort and means needed to make changes.	Design and keep urban plan flexible and adaptable; create informal platform to discuss changes amongst actors
	Wrong estimation of future demand, based on current demand (e.g. parking or too much buildings of one type)	Developers, investors, users	Completion, especially when economy is good	Revenues don´t cover costs, monofunctional area, price increase, vacancy	Design flexible urban plan with a wide mix of functions; consider changing plans especially after certain external events
	Too much supply within a short time period	Developers, investors	Completion	Vacancy, lack of income	Spatial phasing and completion of zones at different times over a longer period
Financial	Revenues don´t cover expenses	Developers, contractors	Initiative, planning, execution, less now	Loss of invested capital	
		Housing corporations	completion	Less impact	Flexibility to wait with selling houses
Economic (macro)	Economic recession or crisis	Everybody	Always	Can slow down or stop development, decrease revenues	Turn it into an opportunity, adapt urban plan and phasing according to current demands
Market (meso)	Construction price increase	Developers, contractors	Always	Medium, can be positive or negative	
	Speculation	Everybody	Always	Commercialization, rising house prices, loss of authenticity, bankruptcy, manageable	Involve housing corporations, social housing rules, limited number of owners
Area (micro)	Bankruptcy	Everybody	Always	Can slow down or stop development, delays, outstanding liabilities	
	Unpredictability of pioneer users, (creative, startups, students, high-tech - high flexibility and discontinuity)	Developers, investors	Completion	high rate of tenant changeover, no steady income	
	Loss of authenticity and unique character	Investors, municipality, users	Completion	Commercialization, rising house prices; manageable	Be critical about each other's plans, communication, long-term plans
Legal	Legal conflicts amongst parties	Everybody	Always; but not much here (all noses are in the same direction)	the more parties, the higher the risk gets	good contract management, common vision
	Objections from interested parties to changes in zoning plan or building permits	Developers, municipality	Planning, building permission	Delay and costs of lawsuits	Establish an image of the area that people can identify with (Philips)
Political	Controversy with or within municipality	Municipality, developers	Initiative, planning, execution; but low here, high interest from municipality	Uncertainty about urban plans	Create continuity and work together with municipality
	New policies from central government (eg housing act)	Developers, municipality, housing associations	Planning, execution	Higher standards, cost increase; unknown impacts	
Organisational	Clash of opinions (e.g. on urban plan)	Everyone	Planning	Medium, the more parties involved the higher	Turn into opportunity and use strength of every party
	Selection of unsuitable partners	Everybody	Always	Different visions/opinions, too pricy, extra costs and delays when searching for new partner	Carefully select partners, create mix of different parties
	Changes of personnel	Everyone	Always; during electoral cycles	Loss of knowledge or new visions/opinions	
	Bankruptcy	Everybody	Always	Can slow down or stop development, delays, outstanding liabilities	Transparency, not too complicated company structures
Executional	Management of prices set	Contractors, developers	Execution	Positive or negative	Internal control, insurance, calculations
	Accidents or unexpected events	Contractors	Execution	Can have a big impact on time, costs, safety and quality. Can lead to introduction of new regulations	Internal rules, control and insurance
Environmental	Ground pollution	Owner, (Developer, municipality)	Planning, execution; depending on location	Delays and extra costs	Contracts with former owner to clean soil; testing innovative ideas, e.g. establishing new company
	Noise pollution (railway)	Developer, architect	Planning; depending on location	Extra effort and means needed	
	Air pollution	Developer, architect	Planning; depending on location	Extra effort and means needed	

	Flooding	Developer, urban planners, municipality, users	Completion	Big, sealed surfaces, danger of heavy rain	Anticipate every possible event and adopt plans accordingly

APPENDIX VI: SUCCESS FACTORS STRIJP-S

1. Right project team

- Establish a good mix and the right number of actors with different roles and strengths
- Involvement of the municipality through PPP
- Be critical on each other
- Establish a good collaboration and close partnership with partners
- Financially work on the big picture with a long-term horizon and make a business case over the whole area (some plots generate less and some more revenues)

2. Mix of everything

- Create a wide mix of functions, facilities, users and programs
- Establish a mix of different owners
- Split the area in sub-areas
- Suitable demographics

3. Flexible master plan

- Design a master plan that is adaptable to changes
- Consider a change of approaches, e.g. from supply-oriented to organic development
- Create a clear vision and ambition from the municipality

4. Maintain existing buildings

- Maintain the area's heritage
- Lease existing buildings temporarily at low price to generate early cash-flows and attract pioneers

5. Branding and place-making

- Respect the story of the place and its immaterial heritage
- Attract people, employees, visitors and creative communities
- Host various events
- Open the area for the public (tear down the fences) and introduce public transport
- Ensure a continuity of the project organisation and brand of the area

6. Software & innovation

- Manage the program (e.g. brainport development, innovations)
- Always focus on people and create communities
- Find creative and shared solutions to problems (e.g. new parking solutions)
- Facilitate opportunities, leave space for innovation and make it open for everybody

7. Good urban design

- Create an active plinth 24/7
- Focus on the quality of public space (sun, shadow, wind, size, etc.)
- Focus on industrial and urban atmosphere, human scale and high density
- Make the area an alternative to the existing city centre

APPENDIX VII: RISK REGISTER BINCKHORST & STRIJP-S

Risk category	Risk	Actor	Phase	Impact	Scope	Potential strategy
Planning	Wrong estimation of future demand	Developers, investors, users	Completion	Revenues don´t cover costs, monofunctional area, price increase, vacancy	Area specific	Flexible urban plan with a wide mix of functions; considering changing plans especially after certain external events
	Incoherence and changes of plans by municipality	Developers, urban planners	Initiative, planning, execution; After certain external events	Uncertainty, extra effort, time and means needed to make changes	Area specific	Early transparent dialogues and counselling with municipality; adaptable urban plan; informal platform amongst actors to discuss changes
	Incompatibility of existing and future functions	Developers, municipality, users, existing non-footloose companies	Planning, execution, completion	Restrictions for existing and new companies and users, conflicts of interests	Area specific	Negotiations to find common solutions, e.g. relocation or change of planned functions
Financial	Revenues don´t cover expenses	Developers, contractors, investors	Initiative, planning, execution	Loss of invested capital	Plot specific	Sell building in an early stage; chose location strategically; don't buy but lease the land; avoid speculations
Economic (macro)	Economic recession	Everybody	Always	Can slow down or stop development, decrease revenues	Market specific	Turn it into an opportunity; adaption of urban plan and phasing according to current demands; speed up development during economic boom
Market (meso)	Increase of construction prices	Developers, contractors	Always	Reduced return on investment	Market specific	Thorough calculations of costs and delivery times
	Speculation	Developers, investors, municipality, users	Always	Rising prices in a certain real estate market, commercialization, loss of authenticity, bankruptcy	Market specific	High standards and regulations set by zoning plan, min. percentage of social housing; Involvement of housing corporations; limited number of actors
	Imbalance between supply and demand	Developers, investors, users	Completion	Rising prices in a certain real estate market, reduced return on investment, vacancy	Market specific	Spatial phasing and completion of zones at different times over a longer period
Area (micro)	Loss of authenticity and unique character of the area	Investors, municipality, users, pioneers	Completion	Commercialization, rising house prices, loss of current functions and users	Area specific	Be critical about each other's plans; communication; long-term plans; collaboratively define key-values for the area; avoid speculation
	Unbalanced mix of functions	Society, users, municipality, investors	Completion	Unemployment, high prices, lack of liveliness in the area	Area specific	Create a social business case for the whole area, estimate costs and values for society on long-term
Legal	Objections to building permits	Developers	Planning, execution	Delays of permit procedures, costs of lawsuits	Plot specific	Good communication with residents and companies, keep them informed; be open to critique
	Objections to zoning plan changes	Municipality, developers	Planning	Delay of implementing zoning plan, costs of lawsuits	Area specific	Good communication with residents and companies, keep them informed; establish an image of the area that people can identify with; be open to criticism
	Legal conflicts amongst parties	Everyone	Always	Delays and costs of lawsuits	Plot specific	Good contract management; common vision
Political	Controversy with or within municipality	Developers, municipality	Initiative, planning, execution	Uncertainty about rules, processes and zoning plan	Area specific	Create continuity and transparency; collaborate and communicate with municipality in early stage
	Change of local political direction	Developers, municipality	Planning, execution; during electoral cycles	Changes of urban vision, higher standards, additional costs and means to implement changes	Area specific	
	New policies from central government	Developers, municipality	Planning, execution	Higher standards, cost increase; unknown impacts	Market or area specific	
	Controversy with adjacent municipality	Municipality	Initiative, planning	Conflicts, delays	Area specific	
Organisational	Unsatisfying performance of collaborating partners	Everyone	Always	Unsatisfying quality, extra costs and delays, clash of opinions, image and reputation damage	Plot specific	Carefully select partners; create mix of different parties; good contractual management; good communication
	Changes of personnel	Everyone	Always; during electoral cycles	Loss of knowledge, new visions and opinions	Area or plot specific	
	Bankruptcy of a company	Everybody	Always	Can slow down or stop development, delays, outstanding liabilities	Plot specific	Fragmented ownership reduces overall impact; transparency; avoidance of complicated company structures
	Lack of employee capacity	Municipality, developers, contractors	Initiative, planning, execution	Slow speed of procedures, delays, higher prices for services	Area or plot specific	

	Internal complexity of municipality or companies	Developers, municipality	Initiative, planning, execution	Slow speed of procedures, uncertainty and lack of coherent opinion	Area or plot specific	
Executional	Accidents during construction	Contractors, developers	Planning, execution	Can have a big impact on time, costs, safety and quality. Can lead to introduction of new regulations	Plot specific	Internal rules, control and insurance
Environmental	Ground pollution	Owner, developer	Planning, execution; depending on location	Delays and extra costs	Plot specific	Thorough upfront investigations; contracts with former owner to clean soil; testing innovative ideas
	Noise pollution	Developer, architect	Planning; depending on location	Extra effort and means needed	Plot specific	
	Air pollution	Developer, architect	Planning; depending on location	Extra effort and means needed	Plot specific	
	Discovery of protected flora and fauna	Developers, contractors	Execution	Delays and extra costs	Plot specific	
	Natural disasters	Everybody	Always	Delays during construction, physical damage, costs, security threat	Area specific	Anticipate every possible event and design resilient plans

APPENDIX VIII: SUCCESS FACTORS BINCKHORST & STRIJP-S

	Levels of success factors		
	I	II	III
1. Create awareness & place-making			
• Show consumers, investors and developers that 'something is happening' by hosting events and promoting first completed developments		X	X
• Show municipal commitment by making investments in the area, publishing an urban vision and defining the zoning plan		X	
• Attract pioneers to the area			X
• Respect the story of the place and its immaterial heritage		X	
• Implement public facilities and public transport as soon as possible and open the area for the public		X	
• Ensure a continuity of the brand of the area			X
• Suitable cultural background	X		
2. Good collaboration			
• Establish a mix of actors with different roles and strengths		X	
• Create transparency of municipal plans		X	
• Early involvement and guidance by municipality		X	
• Choose reliable partners, establish good agreements and join forces		X	
• Establish good formal and informal communication and collaboration			X
• Ambition, long-term commitment and determination from all parties			X
• Be critical on each other, willing to discuss and open to suggestions			X
• Financially work on the big picture with a long-term horizon and make a business case for the whole area (some plots generate less and some more revenues)		X	
3. Adaptable and coherent urban plans			
• Create a shared vision and ambitions upfront, together with municipality and input from market parties		X	
• Define workable, coherent and clear rules in the zoning plan		X	
• Design an adaptable and flexible urban plan		X	
4. Good urban design and the right mix of everything			
• Create a well-balanced mix of interacting and integrated functions, users and programs, horizontally, vertically and throughout the day		X	X

• Split the area in sub-areas		X	
• Focus on the quality of public space, activity of the plinth, the desired atmosphere, human scale and high density		X	
• Establish a good connection to the city centre		X	X
• Suitable demographics	X		
5. Software & Innovation			
• Create an informal platform for all actors		X	
• Facilitate dialogues and connect people			X
• Find shared solutions for common problems			X
• Inspire and stimulate creativity, innovative and sustainability		X	X
• leave space for innovation and make it open for everybody			X
• Always focus on people and create communities			X
6. Use existing strengths & opportunities of the area			
• Define key-values of the area		X	
• Maintain the area's authenticity, uniqueness and respect its heritage		X	X
• Leave undetermined space to be filled later		X	
• Try to maintain existing buildings		X	
• Lease existing buildings temporarily at low price to generate early cash-flows and attract pioneers		X	
7. Economic climate			
• Good economic climate	X		
• Consider a change of approaches during economic changes, e.g. from integrated to organic development		X	X
• Adapt phasing and the planned program		X	
• Speed up development processes during economic boom and reduce delays			X
8. Favourable conditions			
• Favourable political climate	X		
• No changes in legislations and regulations that influence the development negatively	X		
• No negative influences of force majeure	X		

APPENDIX IX: QUESTIONNAIRE

Dear Sir or Madam,

The topic of my Master Thesis is the re-development of obsolete urban areas like office districts towards lively, future-proof mixed-use areas for living, working and leisure. The focus is on risks and success factors of the development process. This survey is based on previously conducted interviews with experts working on the transformation of Binckhorst, Den Haag and Strijp S, Eindhoven.

I am interested in your personal experience and opinion. The goal is to identify the most crucial risks and to develop a framework that can help actors achieving a successful project. The survey consists of four parts and will take around 10 minutes to be filled in. Your personal information will be treated strictly confidential and anonymous.

Thanks for your participation!

Kind regards,

Sophia Geiger
TU Delft, Phone number: …, Email: …

Part 1: Personal background

1. Your name, job position (optional): _____

2. Which category do you belong to?

◯ Municipality or other public institution ◯ Housing cooperation ◯ Developer ◯ Investor
◯ Contractor ◯ Urban planner or architect ◯ Researcher or consultant ◯ Other

3. For how many years have you been working in the field of real estate and/or area development?

◯ < 5 years ◯ 5 – 10 years ◯ > 10 years

4. Is your personal expertise more related to individual real estate or to overall areas? Real estate development (1-5) area development

	1	2	3	4	5	
Real estate development	◯	◯	◯	◯	◯	area development

Part 2: Risk management

Risk management is a method to manage risks in a project. It helps to minimize and control the probability or impact of unfortunate events and to maximize opportunities. Risk management can consist of several steps:

- *establishing and analysing the general context of the project*
- *identifying possible risks*
- *analysing, evaluating and prioritizing all identified risks regarding their impact and probability*
- *responding to risks, making strategies or taking actions to minimize or control risks*
- *reviewing risks to monitor all risks throughout the process*

Some parties have formal systems for that, while others manage risks more intuitively. Please tell me about your experience.

1. Which parts of risk management do you usually conduct?

☐ 1. Establishing the context
☐ 2. Risk identification
☐ 3. Risk analysis
☐ 4. Risk response

- ☐ 5. Risk review
- ☐ None of the above mentioned

2. Which methods do you use to identify risks?

- ☐ Intuition and past experience
- ☐ Brainstorming or workshops
- ☐ Communication within the company
- ☐ Communication with other parties
- ☐ Scenario analysis
- ☐ Checklists
- ☐ Consulting experts
- ☐ Data bases, historical data
- ☐ Stakeholder analysis
- ☐ Interviews or questionnaires
- ☐ Other: _____

3. Which methods do you use to analyse risks?

- ☐ Risk probability and impact assessment
- ☐ Risk categorization
- ☐ Risk urgency assessment
- ☐ Monte Carlo Simulation
- ☐ Sensitivity analysis
- ☐ Event tree analysis
- ☐ None of the above mentioned
- ☐ Other: _____

4. Risk management is …

	Strongly disagree	disagree	undecided	agree	Strongly agree
Useful in complex projects	◯	◯	◯	◯	◯
Necessary in complex projects	◯	◯	◯	◯	◯
Too time consuming	◯	◯	◯	◯	◯
Too complicated	◯	◯	◯	◯	◯

Part 3: Risk analysis

In the following part, please evaluate all risks that can occur in an urban area development. Firstly, indicate the probability of each risk to occur during the project. Secondly, state what impact each risk can have if it occurs, e.g. on time, money or quality.
** Finally, estimate in which phase of the process each risk is most likely to occur. The phases are:*

- *Initiative - first ideas, plans and negotiations to develop an area*
- *Feasibility - defining the project, making designs, calculations and preparations*
- *Realisation - constructing the buildings etc.*
- *Maintenance - everything after completion*

Planning risks

1. What is the probability for each risk to occur?

	Almost never	unlikely	possible	likely	Almost certain
Wrong estimation of future demand	◯	◯	◯	◯	◯
Incoherence and changes of plans by municipality	◯	◯	◯	◯	◯
Incompatibility of existing and future functions	◯	◯	◯	◯	◯

2. What is the possible impact of each risk?

	Very low	low	moderate	high	Very high
Wrong estimation of future demand	◯	◯	◯	◯	◯
Incoherence and changes of plans by municipality	◯	◯	◯	◯	◯

Incompatibility of existing and future functions	◯	◯	◯	◯	◯

3. In which phase(s) can each risk occur? *

	Initiative	Feasibility	Realisation	Maintenance	Don't know
Wrong estimation of future demand	☐	☐	☐	☐	☐
Incoherence and changes of plans by municipality	☐	☐	☐	☐	☐
Incompatibility of existing and future functions	☐	☐	☐	☐	☐

*Note: * these questions were only asked to group 1*

Financial, economic & market risks

1. What is the probability for each risk to occur?

	Almost never	unlikely	possible	likely	Almost certain
Revenues don´t cover expenses	◯	◯	◯	◯	◯
Economic recession	◯	◯	◯	◯	◯
Increase of construction prices	◯	◯	◯	◯	◯
Speculation in the market	◯	◯	◯	◯	◯
Imbalance between supply and demand	◯	◯	◯	◯	◯

2. What is the possible impact of each risk?

	Very low	low	moderate	high	Very high
Revenues don´t cover expenses	◯	◯	◯	◯	◯
Economic recession	◯	◯	◯	◯	◯
Increase of construction prices	◯	◯	◯	◯	◯
Speculation in the market	◯	◯	◯	◯	◯
Imbalance between supply and demand	◯	◯	◯	◯	◯

3. In which phase(s) can each risk occur? *

	Initiative	Feasibility	Realisation	Maintenance	Don't know
Revenues don´t cover expenses	☐	☐	☐	☐	☐
Economic recession	☐	☐	☐	☐	☐
Increase of construction prices	☐	☐	☐	☐	☐
Speculation in the market	☐	☐	☐	☐	☐
Imbalance between supply and demand	☐	☐	☐	☐	☐

*Note: * these questions were only asked to group 1*

Area risks

1. What is the probability for each risk to occur?

	Almost never	unlikely	possible	likely	Almost certain
Loss of authenticity and unique character	◯	◯	◯	◯	◯
Unbalanced mix of functions	◯	◯	◯	◯	◯

2. What is the possible impact of each risk?

	Very low	low	moderate	high	Very high
Loss of authenticity and unique character	◯	◯	◯	◯	◯
Unbalanced mix of functions	◯	◯	◯	◯	◯

3. In which phase(s) can each risk occur? *

	Initiative	Feasibility	Realisation	Maintenance	Don't know

Loss of authenticity and unique character	☐	☐	☐	☐	☐
Unbalanced mix of functions	☐	☐	☐	☐	☐

*Note: * these questions were only asked to group 1*

Legal & political risks

1. What is the probability for each risk to occur?

	Almost never	unlikely	possible	likely	Almost certain
Objections to building permits	◯	◯	◯	◯	◯
Objections to zoning plan changes	◯	◯	◯	◯	◯
Legal conflicts amongst parties	◯	◯	◯	◯	◯
Controversy with or within municipality	◯	◯	◯	◯	◯
Change of local political direction	◯	◯	◯	◯	◯
New policies from central government	◯	◯	◯	◯	◯
Controversy with adjacent municipality	◯	◯	◯	◯	◯

2. What is the possible impact of each risk?

	Very low	low	moderate	high	Very high
Objections to building permits	◯	◯	◯	◯	◯
Objections to zoning plan changes	◯	◯	◯	◯	◯
Legal conflicts amongst parties	◯	◯	◯	◯	◯
Controversy with or within municipality	◯	◯	◯	◯	◯
Change of local political direction	◯	◯	◯	◯	◯
New policies from central government	◯	◯	◯	◯	◯
Controversy with adjacent municipality	◯	◯	◯	◯	◯

3. In which phase(s) can each risk occur? *

	Initiative	Feasibility	Realisation	Maintenance	Don't know
Objections to building permits	☐	☐	☐	☐	☐
Objections to zoning plan changes	☐	☐	☐	☐	☐
Legal conflicts amongst parties	☐	☐	☐	☐	☐
Controversy with or within municipality	☐	☐	☐	☐	☐
Change of local political direction	☐	☐	☐	☐	☐
New policies from central government	☐	☐	☐	☐	☐
Controversy with adjacent municipality	☐	☐	☐	☐	☐

*Note: * these questions were only asked to group 1*

Organisational risks

1. What is the probability for each risk to occur?

	Almost never	unlikely	possible	likely	Almost certain
Unsatisfying performance of partners	◯	◯	◯	◯	◯
Changes of personnel	◯	◯	◯	◯	◯
Bankruptcy of a company	◯	◯	◯	◯	◯
Lack of employee capacity	◯	◯	◯	◯	◯
Internal complexity of municipality or companies	◯	◯	◯	◯	◯

2. What is the possible impact of each risk?

	Very low	low	moderate	high	Very high
Unsatisfying performance of partners	◯	◯	◯	◯	◯
Changes of personnel	◯	◯	◯	◯	◯
Bankruptcy of a company	◯	◯	◯	◯	◯
Lack of employee capacity	◯	◯	◯	◯	◯

Internal complexity of municipality or companies	◯	◯	◯	◯	◯

3. In which phase(s) can each risk occur? *

	Initiative	Feasibility	Realisation	Maintenance	Don't know
Unsatisfying performance of partners	☐	☐	☐	☐	☐
Changes of personnel	☐	☐	☐	☐	☐
Bankruptcy of a company	☐	☐	☐	☐	☐
Lack of employee capacity	☐	☐	☐	☐	☐
Internal complexity of municipality or companies	☐	☐	☐	☐	☐

*Note: * these questions were only asked to group 1*

Executional & environmental risks

1. What is the probability for each risk to occur?

	Almost never	unlikely	possible	likely	Almost certain
Accidents during construction	◯	◯	◯	◯	◯
Ground pollution	◯	◯	◯	◯	◯
Noise pollution	◯	◯	◯	◯	◯
Air pollution	◯	◯	◯	◯	◯
Discovery of protected flora & fauna	◯	◯	◯	◯	◯
Natural disasters	◯	◯	◯	◯	◯

2. What is the possible impact of each risk?

	Very low	low	moderate	high	Very high
Accidents during construction	◯	◯	◯	◯	◯
Ground pollution	◯	◯	◯	◯	◯
Noise pollution	◯	◯	◯	◯	◯
Air pollution	◯	◯	◯	◯	◯
Discovery of protected flora & fauna	◯	◯	◯	◯	◯
Natural disasters	◯	◯	◯	◯	◯

3. In which phase(s) can each risk occur? *

	Initiative	Feasibility	Realisation	Maintenance	Don't know
Accidents during construction	☐	☐	☐	☐	☐
Ground pollution	☐	☐	☐	☐	☐
Noise pollution	☐	☐	☐	☐	☐
Air pollution	☐	☐	☐	☐	☐
Discovery of protected flora & fauna	☐	☐	☐	☐	☐
Natural disasters	☐	☐	☐	☐	☐

*Note: * these questions were only asked to group 1*

Part 4: Risks and success factors

Please read the following statements and indicated to what extend you agree or disagree. Note: Success factors are for instance, good collaboration & communication, adaptability and transparency of plans, place-making, good urban design, etc.

1.	Strongly disagree	disagree	undecided	agree	Strongly agree
Risks can also have a positive impact and become an opportunity	◯	◯	◯	◯	◯

Depending on how well risks are managed, this can determine the success or failure of the project	◯	◯	◯	◯	◯
Success factors can help to minimize the impact or probability of risks	◯	◯	◯	◯	◯

2.	Strongly disagree	disagree	undecided	agree	Strongly agree
A limited number of actors makes the process less complex	◯	◯	◯	◯	◯
A limited number of actors makes the process less risky	◯	◯	◯	◯	◯
A mix of different types of actors makes the process less risky	◯	◯	◯	◯	◯
Informal collaboration via networks makes the process less risky	◯	◯	◯	◯	◯
Formal collaboration (e.g. joint venture) makes the process less risky	◯	◯	◯	◯	◯

3.	Strongly disagree	disagree	undecided	agree	Strongly agree
The economy can influence which organisational structure, e.g. PPP or private sector-led, is best suitable for an area development	◯	◯	◯	◯	◯
The economy can influence which approach, e.g. integrated or organic, is best suitable for an area development	◯	◯	◯	◯	◯

End of the questionnaire

This is the end of the questionnaire.

Thank you very much for your valuable time and for supporting my research!

In the following weeks, the results of this survey will be analysed and used to design a framework. It can be used by public and private parties for designing successful strategies to reduce risks and achieve success factors in area developments. Additionally, an overview will be provide of all crucial risks and success factors. If you wish to receive the end-results of this research, feel free to tick the box below.

You can fill in the field below if you have general comments to the topic or to this survey.

Kind regards,

Sophia Geiger

Do you want to receive the end-results of this research?
Email: _____

APPENDIX X: QUESTIONNAIRE RESULTS

Part 1: Personal background

1. Your name, job position (optional)
2. Which category do you belong to?

	Group 1	Group 2
Municipality or other public institution	2	6
Housing cooperation	1	5
Developer	5	24
Investor	0	3
Contractor	1	1
Urban planner or architect	0	6
Researcher or consultant	0	18
other	0	4

3. For how many years have you been working in the field of real estate and/or area development?

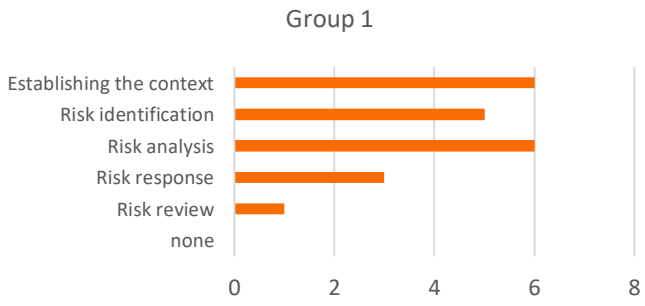
	Group 1		Group 2	
< 5 years	2	22%	27	40%
5 - 10 years	0	0%	24	36%
> 10 years	7	78%	16	24%

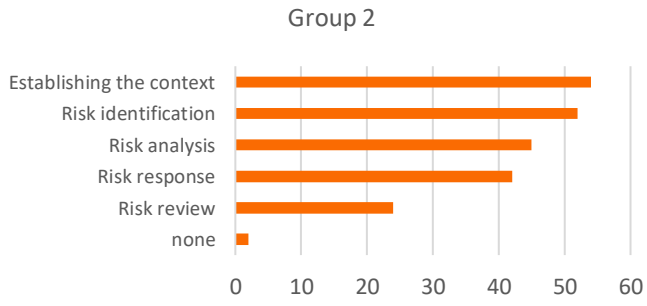
4. Is your personal expertise more related to individual real estate or to overall areas? Real estate development (1-5) area development

	Group 1		Group 2	
RE development only	0	0%	4	6%
	2	22%	21	31%
	3	33%	25	37%
	0	0%	11	16%
Area development only	4	44%	6	9%

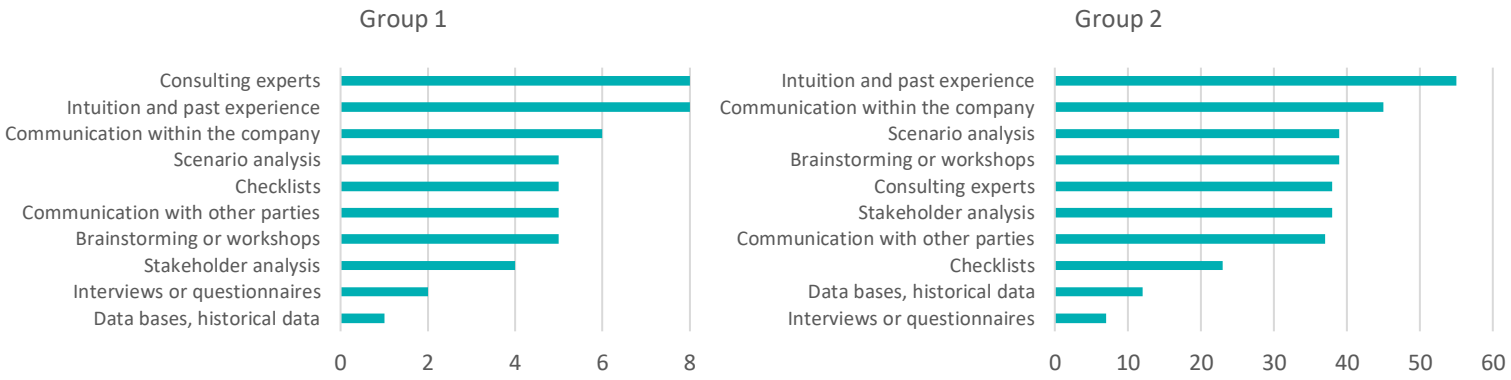
Part 2: Risk management

1. Which parts of risk management do you usually conduct?

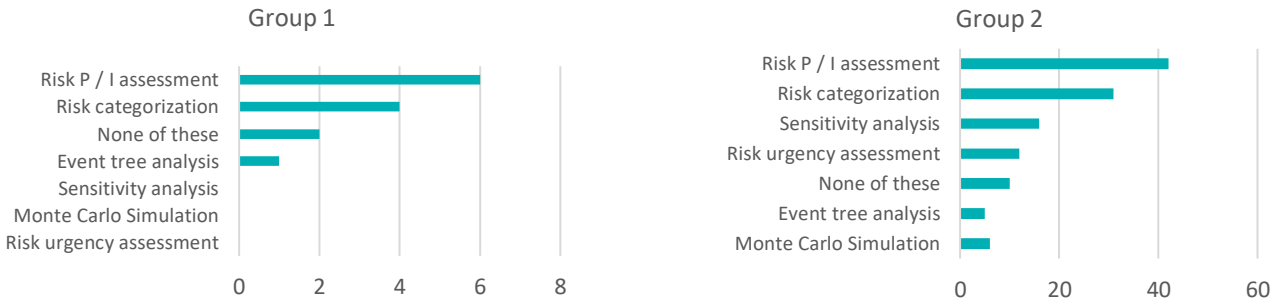




2. Which methods do you use to identify risks?



3. Which methods do you use to analyse risks?



4. Risk management is …

Group 1	useful in complex projects		necessary in complex projects		too time consuming		too complicated	
strongly disagree	0	0%	0	0%	0	0%	1	11%
disagree	0	0%	0	0%	6	67%	6	67%
undecided	0	0%	0	0%	2	22%	1	11%
agree	7	78%	6	67%	1	11%	1	11%
strongly agree	2	22%	3	33%	0	0%	0	0%

Group 2	useful in complex projects		necessary in complex projects		too time consuming		too complicated	
strongly disagree	1	1%	1	1%	8	12%	14	21%
disagree	1	1%	1	1%	40	60%	32	48%
undecided	1	1%	3	4%	10	15%	13	19%
agree	34	51%	27	40%	9	13%	8	12%
strongly agree	30	45%	35	52%	0	0%	0	0%

Part 3: Risk analysis

Planning risks

	Group 1		
Probability	**risk 1**	**risk 2**	**risk 3**
1	0	0	0
2	1	0	2
3	7	3	4
4	0	3	3
5	1	3	0
Average	3,11	4,00	3,11
Impact	**risk 1**	**risk 2**	**risk 3**
1	0	0	0
2	0	0	1
3	3	3	3
4	4	5	4
5	2	1	1
Average	3,89	3,78	3,56

	Group 2		
Probability	**risk 1**	**risk 2**	**risk 3**
1	1	1	1
2	5	5	10
3	30	21	39
4	25	31	16
5	6	9	1
Average	3,45	3,63	3,09
Impact	**risk 1**	**risk 2**	**risk 3**
1	0	0	1
2	5	2	5
3	14	18	30
4	37	30	22
5	11	17	9
Average	3,81	3,93	3,49

Phase	risk 1		risk 2		risk 3	
Initiative	4	44%	8	89%	3	33%
Feasibility	7	78%	8	89%	4	44%
Realisation	2	22%	2	22%	4	44%
Maintenance	5	56%	2	22%	4	44%
don´t know	0	0%	0	0%	0	0%

Financial, economic & market risks

	Group 1				
Probability	**risk 4**	**risk 5**	**risk 6**	**risk 7**	**risk 8**
1	0	0	0	0	0
2	3	2	0	1	1
3	4	5	4	4	5
4	2	1	4	2	3
5	0	1	1	2	0
Average	2,89	3,11	3,67	3,56	3,22
Impact	**risk 4**	**risk 5**	**risk 6**	**risk 7**	**risk 8**
1	0	0	0	0	0
2	0	1	0	3	0
3	5	1	2	0	3
4	3	2	7	5	5
5	1	5	0	1	1
Average	3,56	4,22	3,78	3,44	3,78

	Group 2				
Probability	**risk 4**	**risk 5**	**risk 6**	**risk 7**	**risk 8**
1	0	5	0	0	1
2	18	7	0	4	5
3	34	41	18	30	28
4	14	11	30	28	31
5	1	3	19	5	2
Average	2,97	3,00	4,01	3,51	3,42
Impact	**risk 4**	**risk 5**	**risk 6**	**risk 7**	**risk 8**
1	0	0	0	0	0
2	3	1	2	10	9
3	12	8	17	33	25
4	31	23	39	24	31
5	21	35	9	0	2
Average	4,04	4,37	3,82	3,21	3,39

Phase	**risk 4**		**risk 5**		**risk 6**		**risk 7**		**risk 8**	
Initiative	3	33%	6	67%	4	44%	3	33%	5	56%
Feasibility	3	33%	8	89%	6	67%	8	89%	5	56%
Realisation	4	44%	7	78%	7	78%	4	44%	5	56%
Maintenance	4	44%	5	56%	0	0%	4	44%	6	67%
don´t know	0	0%	0	0%	0	0%	0	0%	0	0%

Area risks

	Group 1	
Probability	**risk 9**	**risk 10**
1	1	0
2	3	4
3	5	4
4	0	1
5	0	0
Average	2,44	2,67
Impact	**risk 9**	**risk 10**
1	1	1
2	3	2
3	2	1
4	3	5
5	0	0
Average	2,78	3,11

	Group 2	
Probability	**risk 9**	**risk 10**
1	2	1
2	20	17
3	33	35
4	11	13
5	1	1
Average	2,84	2,94
Impact	**risk 9**	**risk 10**
1	3	1
2	16	9
3	29	30
4	14	22
5	5	5
Average	3,03	3,31

Phase	**risk 9**		**risk 10**	
Initiative	4	44%	3	33%
Feasibility	6	67%	4	44%
Realisation	5	56%	3	33%
Maintenance	4	44%	4	44%
don´t know	0	0%	0	0%

Legal & political risks

	Group 1						
Probability	**risk 11**	**risk 12**	**risk 13**	**risk 14**	**risk 15**	**risk 16**	**risk 17**
1	1	1	0	0	1	0	1
2	1	1	2	2	0	1	1
3	4	2	5	3	3	4	6
4	2	4	2	2	4	2	1
5	1	1	0	2	1	2	0
Average	3,11	3,33	3,00	3,44	3,44	3,56	2,78
Impact	**risk 11**	**risk 12**	**risk 13**	**risk 14**	**risk 15**	**risk 16**	**risk 17**
1	0	0	0	0	0	0	1
2	1	1	0	0	2	3	1
3	4	3	4	6	2	4	6
4	2	3	4	2	4	1	1
5	2	2	1	1	1	1	0
Average	3,56	3,67	3,67	3,44	3,44	3,00	2,78

	Group 2						
Probability	**risk 11**	**risk 12**	**risk 13**	**risk 14**	**risk 15**	**risk 16**	**risk 17**
1	1	0	0	0	0	2	10
2	6	4	9	12	9	18	21
3	33	29	41	32	37	34	31
4	22	29	15	20	17	11	5
5	5	5	2	3	4	2	0
Average	3,36	3,52	3,15	3,21	3,24	2,90	2,46
Impact	**risk 11**	**risk 12**	**risk 13**	**risk 14**	**risk 15**	**risk 16**	**risk 17**
1	1	0	0	0	0	3	8
2	11	5	4	6	11	9	17
3	17	19	26	31	26	26	32
4	29	30	27	28	25	22	10
5	9	13	10	2	5	7	0
Average	3,51	3,76	3,64	3,39	3,36	3,31	2,66

Phase	**risk 11**		**risk 12**		**risk 13**		**risk 14**		**risk 15**		**risk 16**		**risk 17**	
Initiative	4	44%	6	67%	4	44%	8	89%	8	100%	8	89%	7	78%
Feasibility	6	67%	6	67%	7	78%	8	89%	7	78%	9	100%	8	10%
Realisation	3	33%	2	22%	6	67%	1	11%	5	56%	3	100%	4	44%
Maintenance	0	0%	1	11%	3	33%	2	22%	4	44%	4	44%	3	33%
don´t know	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%

Organisational risks

	Group 1				
Probability	**risk 18**	**risk 19**	**risk 20**	**risk 21**	**risk 22**
1	0	0	0	0	0
2	0	0	4	0	1
3	8	3	5	6	4
4	1	3	0	2	3
5	0	3	0	1	1
Average	3,11	4,00	2,56	3,44	3,44
Impact	**risk 18**	**risk 19**	**risk 20**	**risk 21**	**risk 22**
1	0	1	2	0	0
2	1	3	0	2	1
3	3	3	0	3	4
4	5	2	2	3	3
5	0	0	5	1	1
Average	3,44	2,67	3,89	3,33	3,44

	Group 2				
Probability	**risk 18**	**risk 19**	**risk 20**	**risk 21**	**risk 22**
1	1	1	6	2	0
2	12	6	32	8	9
3	41	25	28	31	27
4	12	32	1	22	26
5	1	3	0	4	5
Average	3,00	3,45	2,36	3,27	3,40
Impact	**risk 18**	**risk 19**	**risk 20**	**risk 21**	**risk 22**
1	0	5	0	0	0
2	7	27	5	11	17
3	37	21	7	27	31
4	20	14	29	27	15
5	3	0	26	2	4
Average	3,28	2,66	4,13	3,30	3,09

Phase	**risk 18**		**risk 19**		**risk 20**		**risk 21**		**risk 22**	
Initiative	4	44%	7	78%	3	33%	3	33%	9	100%
Feasibility	8	89%	9	100%	4	44%	5	56%	8	89%
Realisation	8	89%	6	67%	9	100%	8	89%	6	67%
Maintenance	4	44%	3	33%	4	44%	5	56%	5	56%
don´t know	0	0%	0	0%	0	0%	0	0%	0	0%

Executional & environmental risks

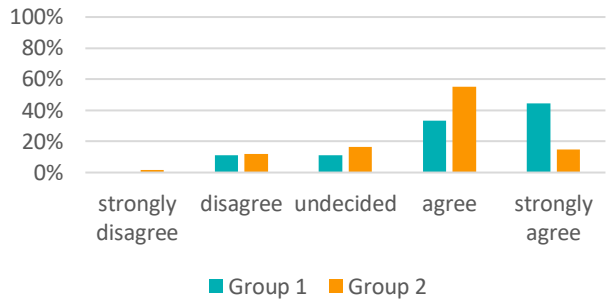
	Group 1					
Probability	**risk 23**	**risk 24**	**risk 25**	**risk 26**	**risk 27**	**risk 28**
1	1	0	0	0	0	3
2	1	0	0	1	2	5
3	5	4	3	4	4	1
4	2	3	5	3	2	0
5	0	2	1	1	1	0
Average	2,89	3,78	3,78	3,44	3,22	1,78
Impact	**risk 23**	**risk 24**	**risk 25**	**risk 26**	**risk 27**	**risk 28**
1	0	0	0	1	0	1
2	2	2	1	0	2	0
3	3	1	6	4	2	0
4	4	4	2	4	4	4
5	0	2	0	0	1	4
Average	3,22	3,67	3,11	3,22	3,44	4,11

	Group 2					
Probability	**risk 23**	**risk 24**	**risk 25**	**risk 26**	**risk 27**	**risk 28**
1	9	1	0	4	1	29
2	18	9	9	18	11	27
3	37	39	38	38	41	11
4	2	16	20	7	14	0
5	1	2	0	0	0	0
Average	2,52	3,13	3,16	2,72	3,01	1,73
Impact	**risk 23**	**risk 24**	**risk 25**	**risk 26**	**risk 27**	**risk 28**
1	0	0	1	2	1	1
2	11	8	14	14	7	3
3	23	14	31	33	16	4
4	26	34	17	16	29	18
5	7	11	4	2	14	41
Average	3,43	3,72	3,13	3,03	3,72	4,42

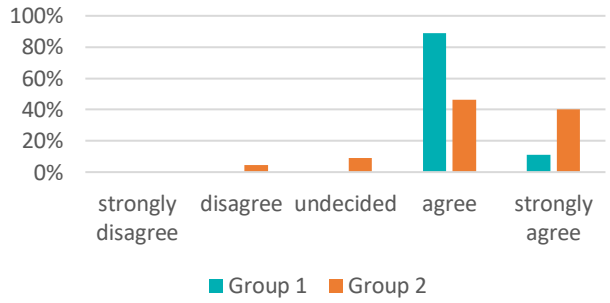
Phase	risk 23		risk 24		risk 25		risk 26		risk 27		risk 28	
Initiative	0	0%	5	56%	7	78%	7	78%	5	56%	3	0%
Feasibility	0	0%	5	56%	8	89%	8	89%	5	100%	3	33%
Realisation	9	100%	7	78%	3	33%	3	33%	6	67%	7	78%
Maintenance	2	22%	2	22%	2	22%	2	22%	2	22%	7	78%
don´t know	0	0%	0	0%	0	0%	0	0%	0	0%	1	11%

Part 4: Risks and success factors

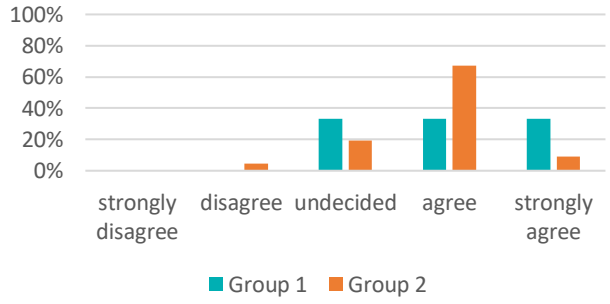
1. Risks can also have a positive impact and become an opportunity.



2. Depending on how well risks are managed, this can determine the success or failure of the project.



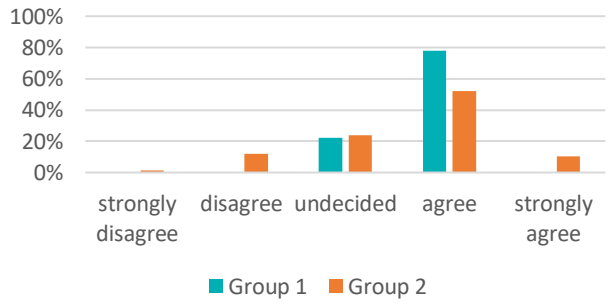
3. Success factors can help to minimize the impact or probability of risks.



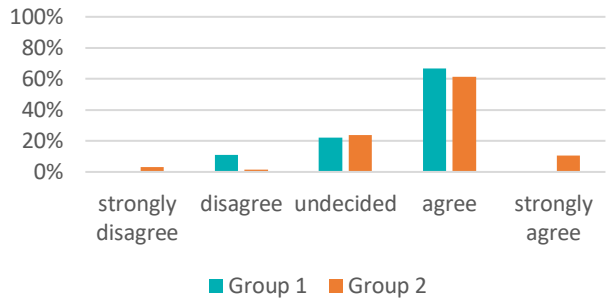
Group 1	A limited number of actors makes the process less complex		A limited number of actors makes the process less risky		A mix of different types of actors makes the process less risky		Informal collaboration via networks makes the process less risky.		Formal collaboration (e.g. joint venture) makes the process less risky.	
strongly disagree	1	11%	1	11%	2	22%	0	0%	0	0%
disagree	1	11%	1	11%	4	44%	2	22%	4	44%
undecided	1	11%	3	33%	0	0%	2	22%	3	33%
agree	6	67%	4	44%	3	33%	4	44%	2	22%
strongly agree	0	0%	0	0%	0	0%	1	11%	0	0%

Group 2	A limited number of actors makes the process less complex		A limited number of actors makes the process less risky		A mix of different types of actors makes the process less risky		Informal collaboration via networks makes the process less risky.		Formal collaboration (e.g. joint venture) makes the process less risky.	
strongly disagree	2	3%	4	6%	1	1%	4	6%	4	6%
disagree	6	9%	26	39%	19	28%	11	16%	11	16%
undecided	4	6%	14	21%	19	28%	18	27%	22	33%
agree	45	67%	19	28%	25	37%	28	42%	27	40%
strongly agree	10	15%	4	6%	3	4%	6	9%	3	4%

4. The economy can influence which organisational structure, e.g. PPP or private sector-led, is best suitable for an area development.



5. The economy can influence which approach, e.g. integrated or organic, is best suitable for an area development.



- End of the questionnaire -