

# Green Building Certificates.

*A study about the interests and impact regarding BREEAM-NL In Use certifications  
for asset managers, investors and tenants of office buildings*

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Management in the Built Environment  
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# Foreword

*This thesis marks the final step in the graduation trajectory of the MSc Management in the Built Environment. It also marks the end of my student period at the Delft University of Technology. This period offered me a wide range of development opportunities including three years of the BSc Architecture, one year as a member of the University Student Council and two semesters with internships at the Consulate General of The Netherlands and Deloitte Real Estate Consulting.*

In this foreword I will explain the motivation behind the research subject and my vision. Lastly, I would like to thank the persons that supported me during the trajectory and contributed to this research.

## **Motivation**

In the fall semester of 2015 I spent six months in Vancouver for an internship at the Consulate General of the Kingdom of The Netherlands. As Research Officer Sustainable Building I was responsible for exploring business opportunities for Dutch companies in the built environment of West-Canada. I was astonished by the large-scale application of green building certificates such as LEED and also WELL. The City of Vancouver even made it a mandatory requirement for building permits. I started to question myself: why are these green building certificates so well integrated in the built environment of West-Canada? And what are the opportunities of green building certificates in the Dutch built environment? From the moment I arrived back in the Netherlands I was convinced and decided to further investigate the world of green building certificates.

## **Vision**

The European Union is working towards climate neutral built environment in 2050. To realize this ambition, The Netherlands must decrease its emissions by 80-95%. This is a huge challenge for professionals in the built environment. Vancouver already set an example by using green building certificates as a means for accelerating their transition towards a green city. My vision is that a similar development could be realized in The Netherlands.

However, it must be admitted that the real estate sector can be very conventional and is not always flexible in implementing innovative solutions. Therefore, it is important that innovations receive a wide support amongst professionals and academics. This thesis provides insight in the interests of stakeholders related to office buildings certified with BREEAM-NL In Use. The findings could help the Dutch Green Building Council with further development of BREEAM, improve communication between stakeholders of certified projects and inspire interested professionals in using green building certificates to increase the sustainability performance of their projects.

## **Many thanks to:**

- Dr. Hilde Remøy and Drs. Philip Koppels for assistance during my graduation trajectory.
- Interviewees of Deloitte, Union Investment GmbH, Savills, PwC, CBRE, bpfBOUW, Bouwinvest, De Volksbank, JLL and Dutch Green Building Council.

I hope that this thesis will provide you with new insights in the world of green building certificates,

*Vincent Steenkamp*

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# 1. Research Summary

The research summary is the first chapter of this thesis and describes the essential common thread through the research process. The summary is structured by chapter, starting with the introduction chapter.

## 1.1 Introduction

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The built environment is one of the largest contributors to global warming. 32% of all primary energy is consumed by buildings, causing 19% of energy related GHG-emissions worldwide (IPCC, 2014). The Climate Agreement of Paris, directives of the European Union and organisations such as Urgenda stimulate and require the Dutch government to take action and reduce the environmental impact of the built environment.

The energy transition, stricter regulations set by the government and increasing transparency in a relatively intransparent built environment are trends that stimulate market parties to take action. The effects are visible in the market for commercial real estate wherein green building certificates are increasingly applied to measure and acknowledge sustainability of assets.

### Research problem

Over the past years, multiple green building certificates were designed for different applications. Initially, green building certificates were only available for new construction. The introduction of green building certificates for existing buildings that are in use could have consequences for previous research. The possibility enables non-certified buildings to become certified green buildings. Research papers that studied the benefits of certified green buildings do not clearly distinguish this difference in certificates. Having the consequence that these benefits may not apply for existing buildings with in use certificates. Currently, research on this topic lacks insight in the impact of green building certificates for existing buildings that are in use. Furthermore, there is no insight in the formation of the certification process, involvement of stakeholders and their interests.

### Research question

The aim of this research is to provide insight in the interests and impact regarding green building certificates for stakeholders of existing office buildings that are in use. This is done through a case study analysis of office buildings certified with BREEAM-NL In Use. The research question is formulated as follows:

*How do green building certificates affect the building and organisation of investors, asset managers and tenants of in use office buildings?*

### Research objectives

The research problem, aim of research and research question are translated into three research objectives. The research objectives are:

- Analysis of the interests of stakeholders regarding green building certificates
- Providing insight in the certification process of BREEAM-NL In Use and determine the involvement of each stakeholder
- Determine the applicability of the interests and impact regarding BREEAM-NL In Use certifications for asset managers, investors and tenants



## 1.2 Theoretical Framework

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Green building certificates are designed to assess and acknowledge buildings that meet sustainability requirements (WorldGBC, 2016). From 2004, academic research on this topic gained more awareness resulting in an increasing number of publications each year.

### **Certified Green Buildings versus Non-certified Buildings**

Comparative research about certified green buildings and non-certified buildings is an important branch within academic research on the topic of green building certificates. Findings of these research papers are presented as benefits of certified green buildings compared to non-certified buildings. In the literature review, several benefits of certified green buildings were found and are related to:

- Asset value and rent price (Fuerst & McAllister, 2011a; Devine & Kok, 2015)
- Occupancy rate, tenant satisfaction and retention (Devine & Kok, 2015)
- CSR, SRI, GRESB (Eichholtz, Kok & Yonder, 2013; Eichholtz, Kok & Quigley, 2016) and reputational benefits (Van der Voordt & Koppels, 2013)
- OPEX (Devine & Kok, 2015) and CAPEX (Fuerst & McAllister, 2011a)
- Decreased risks (Fuerst & McAllister, 2011a)

### **New Construction versus In Use**

Green building certificates are not only used for newly constructed buildings, it is also possible to certify buildings that are already in use. In contrast with newly constructed buildings, an existing building is not designed in line with the principles of BREEAM. The performance is merely measured against the criteria of BREEAM-NL In Use. If an existing building performs well enough, a certificate can be obtained without physical adjustments. Next to a current state of the building there is also a current context of stakeholders. This context consists of agreements between stakeholders. For example, 5 to 10 year tenancy contracts between a tenant and owner.

The ability to obtain a certificate for an existing building that is already in use enables a non-certified building to become a certified green building. This can be realized without improving the sustainability performance of a building and without changing the agreements between stakeholders. However, this does not necessarily mean that the benefits of certified green buildings will apply. This research gap could have implications for some of the findings of previous research.

### **Conceptual Model**

This research has a focus on three types of stakeholders: investors, asset managers and tenants. These stakeholders were chosen because of their interests towards BREEAM-NL In Use certificates which is demonstrated by their large share in certified office buildings. The context of stakeholders, their actions and level of interest towards green building certificates are illustrated in figure 1.2.1. The conceptual model is explained as follows. The investor invests indirectly in real estate by buying shares of real estate funds. The asset managers offer real estate funds, using portfolios wherein multiple assets are combined. The tenants demand office space to operate their businesses.

### **Theoretical Framework**

The theoretical framework combines the findings of the literature review with the stakeholders in the conceptual model. The benefits related to certified green buildings are translated into potential interests for asset managers, investors and tenants. The theoretical framework consists of a list of interests, definitions of these interests and applicability per stakeholder. This is presented in table 1.2.2.

## Conceptual model

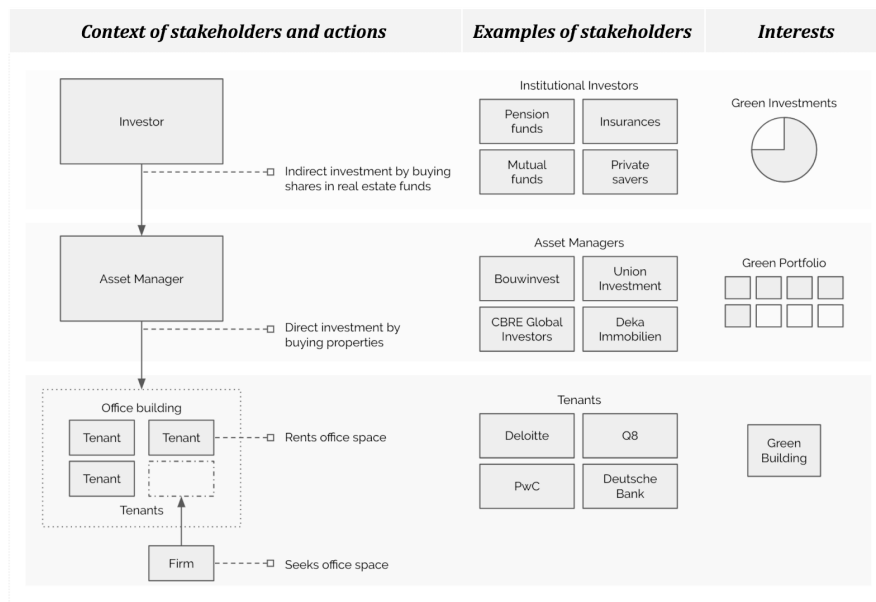


Figure 1.2.1: Conceptual model: Context of stakeholders, actions and level of interest (own illustration)

## Definition of interests and applicability per stakeholder

Interest	Definition		App.
Achieving sustainability ambitions or CSR (Eichholtz, Kok & Quigley, 2016)	Sustainability ambitions are part of an organization's Corporate Social Responsibility strategy. An organization's performance data is reported and targets are described in annual reports that can be found on their website.	I	✓
		A	✓
		T	✓
Decreased risks (Fuerst & McAllister, 2011a)	Real estate is exposed to certain risks, such as regulatory risks, vacancy risks and market related risks. Risk premia and risk profiles are tools used to indicate risks. A building that is exposed to less risks is often called 'future proof'.	I	✓
		A	✓
		T	✓
SRI (Eichholtz, Kok & Yonder, 2015)	Social Responsible Investments are used amongst investors and asset managers. SRI principles and Environmental, Social and Governance criteria are integrated in investment strategies to stimulate financial and social return.	I	✓
		A	✓
		T	X
GRESB rating	The Global Real Estate Sustainability Benchmark (GRESB) is a rating tool that measures the sustainability performance of funds using ESG data. Green building certificates are part of the assessment.	I	✓
		A	✓
		T	X
Reputational benefits (Van der Voordt & Koppels, 2013)	Sustainable real estate can be used to communicate a firm's CSR strategy. Environmental responsibility can enhance a firm's image resulting in reputational benefits and competitive advantage.	I	✓
		A	✓
		T	✓
Increased asset value (Fuerst & McAllister, 2011a; Wiley, Benefield & Johnsen, 2010)	Several research papers found an asset value premium for certified green buildings. This could be the result of other possible effects such as increased rent rates, lower operating expenditures, increased occupancy rates, reputational benefits and lower risk profiles.	I	✓
		A	✓
		T	X
Lower CAPEX (Fuerst & McAllister, 2011a)	Capital Expenditures (CAPEX) are costs or rather investments for the acquisition of a building or for extending a building's life. Increased occupation, tenant retention and lower operating expenditures of certified green buildings are drivers for lower capital expenditures.	I	✓
		A	✓
		T	X
Increased rental income (Devine & Kok, 2015; Fuerst & McAllister, 2011a)	Certified buildings have higher rental incomes compared to non-certified buildings (Devine & Kok, 2015; Eichholtz, Kok & Quigley, 2015). The rental premium results from a higher market demand, higher tenant retention and less vacancy.	I	✓
		A	✓
		T	X
Reduced OPEX (Devine & Kok, 2015)	Operating Expenditures (OPEX) are the day-to-day costs for operation, management and maintenance of a commercial building. Generally, certified green buildings have lower operating expenditures compared to non-certified buildings, because of less consumption and maintenance costs.	I	✓
		A	✓
		T	✓
Increased occupancy rate (Devine & Kok, 2015)	Certified green buildings have higher occupancy rates compared to non-certified buildings. This is driven by competitive advantage, better tenant satisfaction and retention.	I	✓
		A	✓
		T	✓
Insight in sustainable performance	A green building certificates provides a detailed insight in the sustainability performance of a building. This insight could be used to improve the building, analyze portfolios and can be communicated to third parties.	I	✓
		A	✓
		T	✓

Table 1.2.2: Theoretical Framework: Definition of interests and applicability per stakeholder (own illustration)

## 1.3 Empirical Research

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The applicability of the theoretical framework is studied through empirical research. A multiple case study research is designed and performed to gather empirical evidence from office buildings, certification processes and stakeholders.

### Research Method

The method that was used for this case study research was based on Yin (2014) and is described in the book *Case Study Research: Design and Methods*. The method is structured in three phases. The first phase entailed a selection of cases and design of the data collection protocol. The BREEAM-NL project database was analyzed and three case study projects were selected that fulfilled the selection criteria. A data collection protocol was designed to organise and structure the project analysis and guide the interviews. This format consists of three parts: project analysis, reconstruction certification process and evaluation of interests and impact. In the second phase, case studies were conducted. Each case study project was analysed and twelve interviews were held with stakeholders. The results were documented in three case study reports. In the third phase, the three case study reports were compared in a cross case analysis. The findings were discussed with an expert panel.

### Case Studies

The case studies that were selected are multi-tenant office buildings in The Netherlands certified with BREEAM NL In-Use. The context of stakeholders corresponds with the conceptual model and includes an asset manager, investor and tenants. The three selected case study projects are:

- The Haagsche Zwaan, a multi-tenant office building located in the business district of The Hague. Interviews were held with asset manager Union Investment GmbH, tenant Deloitte and property manager Savills.
- WTC The Hague, a multi-tenant office building located in the business district of The Hague. Interviews were held with investor bpfBOUW, asset manager Bouwinvest, tenant PwC and property manager CBRE.
- Hojel City Center, a multi-tenant office building located in the city centre of Utrecht. Interviews were held with tenant De Volksbank and property manager JLL.

Figure 1.3.1 shows each case study project with building, certification and stakeholder information.

### Findings

The findings of the case study research are structured following the research objectives:

- Project analysis: multi-tenant office buildings managed by asset managers are mainly assessed for 'Asset' and 'Management'. The 'Use' assessment is avoided because of a lacking support of tenants and an intensive documentation phase in certification process.
- Certification process: asset managers initiate the certification process, which is executed by a BREEAM Expert and property manager. Tenants are not involved, unless they take their own initiative. Investors are never involved, it does not fall within their governance.
- Stakeholder interests and impact: these findings are formulated per interest in figure 1.3.3.

Figure 1.3.2 shows the case study findings for the certification process.

## Case study selection - Project information



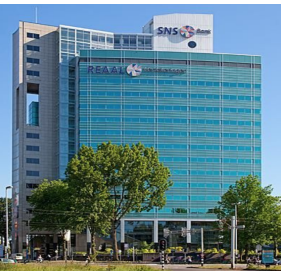
	<i>Haagsche Zwaan</i>	<i>WTC The Hague</i>	<i>Hojel City Center</i>
<b>Building information</b>			
<i>Location</i>	The Hague	The Hague	Utrecht
<i>GFA</i>	17.817 sqm	72.805 sqm	40.022 sqm
<i>Building function</i>	Office	Office	Office
<i>Tenancy</i>	Multi-tenant	Multi-tenant	Multi-tenant
<i>Opening</i>	2010	2005	1994
<b>Certificate information</b>			
<i>Date of certification</i>	August 25th, 2015	December 16th, 2016	June 3rd, 2015
<i>Expiry date</i>	August 25th, 2018	December 16th, 2019	June 3rd, 2018
<i>Score</i>	***	****	***
<i>-Asset</i>	56.34 %	70.04 %	51.90 %
<i>-Management</i>	29.55 %	73.71 %	58.36 %
<i>-Use</i>	-	-	45.47 %
<b>Stakeholder information</b>			
<i>Investor</i>	confidential	bpfBOUW	confidential
<i>Asset Manager</i>	Union Investment GmbH	Bouwinvest	CBRE Global Investors
<i>Tenant</i>	Deloitte	PwC	de Volksbank
<i>Property Manager</i>	Savills	CBRE	JLL

Table 1.3.1: Case study selection - Project information (own illustration)

## Case study findings - Certification processes

	<i>Haagsche Zwaan</i>	<i>WTC The Hague</i>	<i>Hojel City Center</i>
<b>Stakeholder involvement</b>			
<i>Investor</i>	X	X	X
<i>Asset Manager</i>	✓	✓	✓
<i>Tenant</i>	X	X	✓
<i>Property Manager</i>	✓	✓	✓
<i>BREEAM Expert</i>	✓	X	✓
<i>BREEAM Assessor</i>	✓	✓	✓
<b>Allocation of actions</b>			
<i>1. Initiative</i>	Asset Manager	Asset Manager	Tenant
<i>2. Quickscan</i>	BREEAM Expert	Property Manager	BREEAM Expert
<i>-scope</i>	Building level	Building & portfolio level	Building level
<i>3. Design plan of approach</i>	BREEAM Expert	Property Manager	BREEAM Expert
<i>4. Decision to execute plan</i>	Already done in step 1	Asset Manager	Tenant + Asset manager
<i>5. Execution of plan</i>	Property Manager	Property Manager	Tenant + BREEAM Expert
<i>6. Collection of documents</i>	Property Manager	Property Manager	Tenant + Property manager
<i>7. Filing on DGBC portal</i>	Property Manager	Property Manager	BREEAM Expert
<i>8. Assessment</i>	BREEAM Assessor	BREEAM Assessor	BREEAM Assessor
<i>-client</i>	Asset Manager	Asset Manager	Asset Manager

Table 1.3.2: Case study findings - Certification process (own illustration)

## Case study findings - Interests and applicability per stakeholder

Interests	App.	Findings
Achieving sustainability ambitions or CSR (Eichholtz, Kok & Quigley, 2016)	I ✓ A ✓ T ✓	<b>Asset managers, tenants and investors can use BREEAM as a tool to set and achieve sustainability targets</b> <ul style="list-style-type: none"> <li>▪Asset managers use BREEAM as a common (international) sustainability definition between stakeholders and as a tool to measure and improve asset sustainability. For which specific certification and performance targets can be set.</li> <li>▪Tenants can use BREEAM as tool to measure, set requirements and targets for their offices.</li> </ul>
Decreased risks (Fuerst & McAllister, 2011a)	I - A ✓ T X	<b>Asset managers can use BREEAM as a tool to indicate risks</b> <ul style="list-style-type: none"> <li>▪Asset managers can use BREEAM as standard for future proof assets indicated with a low risk profile (low regulatory and environmental risks).</li> <li>▪Tenants do not have major risks related to tenancy and do not use BREEAM to indicate decreased risks.</li> </ul>
SRI (Eichholtz, Kok & Yonder, 2015)	I ✓ A ✓ T -	<b>Asset managers and investors can use BREEAM as a tool to indicate and stimulate Social Responsible Investments</b> <ul style="list-style-type: none"> <li>▪Asset managers integrated certificates as part of sustainability analysis of their real estate funds.</li> <li>▪Investors integrate ESG-criteria in the service level agreement with the asset manager. Certificates can be included as a criteria.</li> </ul>
GRESB rating	I - A ✓ T -	<b>Asset managers that use GRESB can receive points for BREEAM certified assets</b> <ul style="list-style-type: none"> <li>▪Asset managers use GRESB to determine and enhance sustainability on fund level, certificates are part of this rating. GRESB ratings are used to communicate sustainability of funds towards investors.</li> </ul>
Reputational benefits (Van der Voordt & Koppels, 2013)	I ✓ A ✓ T ✓	<b>Asset managers, investors and tenants can use BREEAM to communicate sustainability as a brand value</b> <ul style="list-style-type: none"> <li>▪Asset managers could use sustainability as a competitive advantage. BREEAM could be used to communicate sustainability on building level but depends per fund or asset manager.</li> <li>▪Tenants communicate sustainability as a brand value, the role of BREEAM depends per organisation.</li> </ul>
Increased asset value (Fuerst & McAllister, 2011a; Wiley, Benefield & Johnsen, 2010)	I - A ✓ T -	<b>Asset managers could possibly benefit from certification because of an increased asset value</b> <ul style="list-style-type: none"> <li>▪Asset managers use certificates to improve their assets. An increased asset value could be the result of higher marketing value, less consumption and better tenant satisfaction. but this is hard to quantify and depends on many factors.</li> </ul>
Lower CAPEX (Fuerst & McAllister, 2011a)	I - A X T -	<b>Asset manager do not use certificates to reduce CAPEX</b> <ul style="list-style-type: none"> <li>▪Asset managers do not pay taxes and do not receive subsidies for sustainability measures.</li> </ul>
Increased rental income (Devine & Kok, 2015; Fuerst & McAllister, 2011a)	I - A X T -	<b>Asset managers do not increase the rent price after certification</b> <ul style="list-style-type: none"> <li>▪Tenants do not experience an increased rent price after certification. Asset managers could benefit from energy efficient measures that lower service costs and increase net rental income.</li> </ul>
Reduced OPEX (Devine & Kok, 2015)	I - A X T X	<b>Asset managers and tenants do not experience lower OPEX after certification</b> <ul style="list-style-type: none"> <li>▪Energy and water consumption does not decrease without measures or upgrades.</li> </ul>
Increased occupancy rate (Devine & Kok, 2015)	I - A X T -	<b>Asset managers could possibly benefit from certification because of an increased occupancy rate</b> <ul style="list-style-type: none"> <li>▪Asset managers are not able to determine an increased occupancy rate because of certification. This depends on too many other factors.</li> </ul>
Insight in sustainability performance	I ✓ A ✓ T ✓	<b>Asset managers, investors and tenants use BREEAM as a tool to provide insight and improve sustainability performance</b> <ul style="list-style-type: none"> <li>▪It is not used for insight in consumption and related emissions.</li> </ul>

Table 1.3.3: Case study findings - Interests and applicability per stakeholder (own illustration)

## 1.4 Conclusion, Discussion & Recommendations

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Based on the results of the empirical research conclusions are drawn for each research objective. These conclusions combined answer the main research question. The research design, interpretation of results and limitations are evaluated in the discussion. Finally, recommendations for further research and for professionals are given.

### **Conclusion**

The main question of this research was to understand how green building certificates affect the building and organisation of asset managers, investors and tenants of in use office buildings. This research provided insight in the certification processes, stakeholder interests and impact of green building certificates for in use office buildings.

The analysis of certification processes revealed that asset managers initiated the building certification, unless the initiative was taken by the tenant. When the initiative was taken by the asset manager, the tenants were not involved and the 'Use' assessment was not performed. Involvement of tenants is an intensive process and the rating of the 'Use' assessment is determined by the least performing tenant. The feasibility of the 'Use' assessment therefore decreases with the number of tenants that participate.

The analysis of the stakeholder interests and impact studied the applicability of the benefits of certified green buildings for in use office buildings. It was confirmed that green building certificates contribute to the asset value, decreased risks and insight in sustainability performance of in use office buildings. And for stakeholders it contributes to their CSR, SRI, GRESB and reputation. It was not confirmed that green building certificates contribute to the rent price, occupancy rate, OPEX and CAPEX.

The stakeholder that benefits most of green building certificates is the asset manager. Tenants benefit less from certification of an existing office building. The research concludes with a reference to the 'Vicious Circle of Blame'. Based on this research a similar illustration is designed to explain why existing office buildings are being certified without sustainable measures and why the 'Use' assessment is not performed.

### **Discussion**

The research design is evaluated as an effective approach for conducting this type of research. However, regarding the generalization of the research findings it is important to note the negative aspect of case study research. In comparison with quantitative research, findings of this qualitative research cannot be easily generalized. The findings of this research are therefore, initially, only applicable for the cases that were studied.

An expert panel was organised to discuss the research findings and discuss the applicability of the findings for other multi-tenant office buildings certified with BREEAM-NL In Use.

### **Recommendations**

The findings of this research can be important for policy makers, users, researchers and developers of green building certificates. The first recommendation for further research is confirming the findings of this research for a larger target group by performing a questionnaire using the client database of DGBC. The findings could also be studied for other green building certificates. Additional research on recertification is needed to study the increase in sustainability performance over time. Other recommendations are elaborated for the DGBC, Dutch government and academics.

## 2. Introduction

The Introduction chapter describes the research subject and research design of this graduation thesis. The first paragraph introduces the term green building certificates and explains its origin. The second paragraph describes the context wherein the energy transition is stimulating measures on a global and national scale. The third paragraph defines the trends in the built environment that stimulate the use of green building certificates. The research problem, question, objectives and relevance are presented in the fourth paragraph. In the fifth paragraph, the research design and structure of this thesis are described. The chapter ends with a list of terms and definitions.

### 2.1 Green Building Certificates

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The increasing demand for environmentally friendly products and services is a trend that is followed by an emergence of verification systems. Certificates and labels are designed to acknowledge an environmentally friendly status. These verification systems are developed by accredited organisations that perform independent procedures to acknowledge this status (RVA, 2018).

Verification of an environmentally friendly status of products and services gives a consumer trust. A certificate or label is a written assurance showing that, according to independent experts, specific requirements are met (ISO, 2017). A broad spectrum of certificates and labels is developed for environmentally friendly products and services across all sectors. FSC-certified hardwood prevents deforestation, EKO-certified biological vegetables are grown without artificial pesticides and Fairtrade-certified coffee guarantees fair prices for farmers.

Green building certificates are designed to assess and acknowledge buildings that meet sustainability requirements (WorldGBC, 2016). BREEAM-NL is an example of a green building certificate for buildings in The Netherlands. BREEAM-NL is managed by the Dutch Green Building Council (DGBC). DGBC is an independent non-profit organisation committed to lead the transition towards a sustainable built environment (DGBC, 2018).

This research is about in use office buildings certified with BREEAM-NL In Use. The interests and impact regarding this green building certificate are studied for investors, owners and tenants.

### Rating tool for the built environment

The concept of green building certificates originated in the United Kingdom in the 1990's. In 1990, the Building Research Establishment (BRE) introduced the Building Research Establishment Environmental Assessment Method (BREEAM).

Originally, the assessment method was designed to assess, rate and certify the sustainability of office buildings (BREEAM, 2017). Within a few years this was expanded with rating schemes for other building types. The aim was to make owners, designers and occupiers aware of the benefits of a sustainable building. In general, the benefits included a reduction of a building's negative impact on the environment and a positive recognition of a sustainable building.

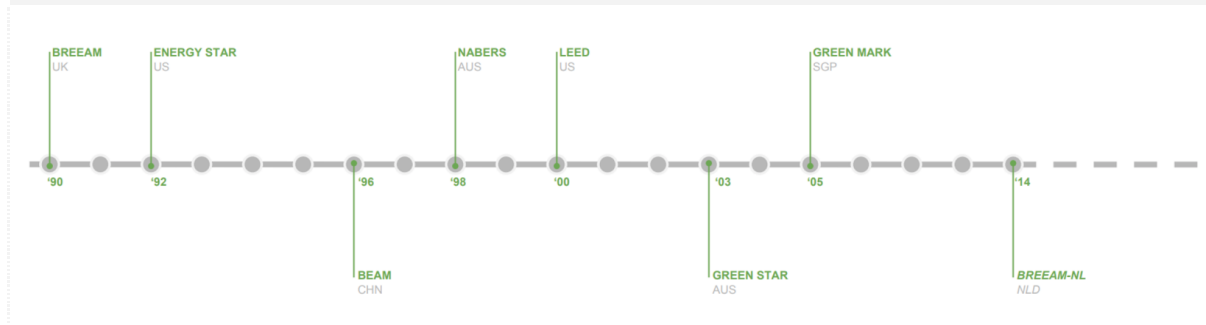
Over the past decades the attention for BREEAM grew extensively. This was accompanied by the development of other green building certificates (Figure 2.1.1). After its origin in the United Kingdom, BREEAM is nowadays used in more than 70 countries around the world. The total number of registered projects around the world is over two million (BREEAM, 2017). Several countries developed a customized country specific schedule operated by national green building councils, this was done in The Netherlands, Spain and Germany. In the Netherlands, nearly 5% of the office stock is certified with BREEAM-NL.

In 2000, the United States Green Building Council (USGBC) introduced Leadership in Energy and Environmental Design (LEED). Similar to BREEAM it was developed as a set of sustainability rating systems. The aim was to help designers and owners with the environmental responsible and resource efficient construction and operation of green buildings (USGBC, 2017).

In 2003, the Green Building Council of Australia launched Green Star. It was designed as Australia's leading rating tool for the built environment. Nearly 30% of all office space in Australia is certified with Green Star (GBCA, 2017). Other examples of sustainable ratings are Energy Star (United States), BEAM (China), NABERS (Australia) and Green Mark (Singapore).

## ***Emergence of green building certificates***

### ***Timeline with year and country of origin***



*Figure 2.1.1: Year and country of origin of eight major green building certificates (own illustration)*

## 2.2 Energy Transition

Globally, internationally and nationally governments and organisations are collaborating to reduce emissions. Ambitious targets are set to enforce the energy transition.

### **Globally**

Global warming is one of the world biggest challenges humanity is facing this century. Increasing GHG-emissions cause a rise in the average global temperature creating major consequence of climate change, rising sea levels and extinction of species (IPCC, 2014).

In December 2015, the Climate Agreement of Paris was signed by 195 countries with the goal to limit the rise of the average global temperature to well below 2°C (United Nations, 2015). The agreement requires countries to achieve mitigation targets through nationally determined contributions (NDCs). In line with the Climate Agreement of Paris, the European Union set the goal for a climate neutral society in 2050. Therefore, it must reduce its emissions by 80-95% against levels of 1990.

The largest reductions of emissions are expected in sectors for power generation, transport and the built environment. Therefore, fossil fuels must be replaced with renewable energy and energy must be used more efficiently.

Each country is responsible for the development and execution of a Climate Action Plan to achieve their targets for 2030. An enormous challenge that requires immediate action. Although, two years after the Paris Agreement there is yet no sign of action. Figure 2.2.1 presents current, pledged and required global emission projections.



## Current, pledged and required global emission projections

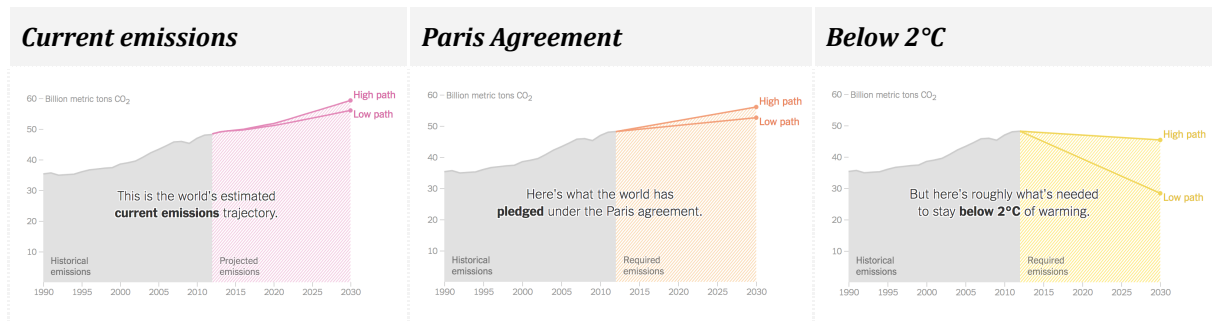


Figure 2.2.1: Current, pledged and required global emission projections based on NY Times (2017) (own illustration)

### The Netherlands

As a member of the European Union, the Netherlands is also expected to achieve the targets. In 2017, The Netherlands is on its way to achieve a reduction in GHG-emissions of 20% by 2020. This is not enough for achieving its target.

In 2015, the Dutch government was taken to court by Urgenda. Urgenda is a Dutch organisation that wants to accelerate the energy transition. It was determined in court that The Netherlands will not achieve its target for 2020. With the result that the court of The Hague required the Dutch government to implement policies for a reduction of 25% (Urgenda, 2015).

The consequence of not achieving the targets for 2020 will result in even bigger challenges for other future targets. If the reduction of emissions develops at the same rate as it does for 2020, targets for 40% emission reductions in 2030 and 80-95% in 2050 will also not be achieved.

The Netherlands must accelerate its emission reductions three times faster in order to achieve the targets for 2050 (figure 2.2.2). In 2016, McKinsey published the report 'Accelerating the energy transition: costly or opportunity'. According to McKinsey (2016), an accelerated energy transition will help achieving the targets and will also have a positive impact on the Dutch economy. It is expected that the largest impact can be realized in the sectors for power generation, transport and the built environment.

## Current and required emission reduction for The Netherlands

Measured from 1990 and projected towards 2050

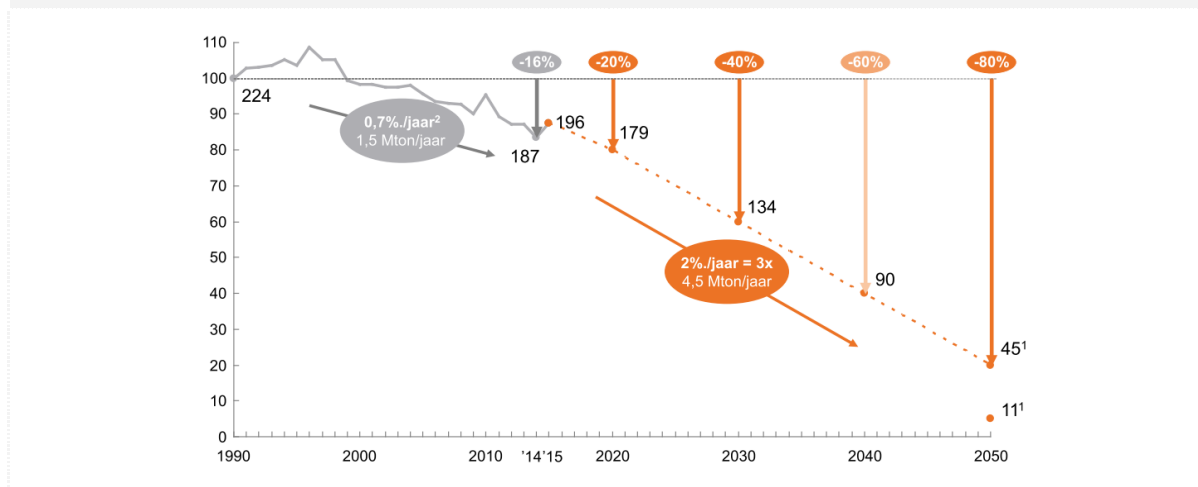


Figure 2.2.2: Current and required emission reduction for The Netherlands (McKinsey, 2016)

### 2.3 Energy Transition in the Built Environment

The built environment is one of the largest contributors to global warming. 32% of all primary energy is consumed by buildings, causing 19% of energy related GHG-emissions worldwide (IPCC, 2014). This could double or even triple towards 2050 if trends in population growth, increasing levels of wealth and migration to cities continue (McKinsey, 2016). Reducing the environmental impact of the built environment has a high priority.

#### Trends

The Climate Agreement of Paris, directives of the European Union and organisations similar to Urgenda stimulate and require the Dutch government to take action. This is visible through stricter regulations regarding the environmental impact of the building stock. This trend and other trends stimulate the use of green building certificates directly and indirectly.

#### *Stricter regulations set by the government*

In The Netherlands, regulations that stimulate the energy efficiency of the built environment are not a novelty. It already has a history of more than four decades.

The Dutch government introduced its first subsidy for energy efficient measures in 1974 (VROM, 2002). A few years later, a national program was launched to improve the energy efficiency of 200.000 residences per year. In 1995, the Energy Performance Coefficient (EPC) for buildings was brought into practice as a result of a collaboration between the government and market parties. The EPC is integrated in the Building Code and sets energy performance norms per building function against the average performance in 1990 (RVO, 2017; Van Straalen, De Winter, Coppens, & Vermande, 2007). In 2000, energy labels were introduced by the government as a more simplified performance measurement. From 2009, this became restricted and all building owners in The Netherlands were required to label the energy performance of their buildings.

If The Netherlands wants to become climate neutral by 2050, the government must set even more ambitious targets, introduce even stricter regulations and use more innovative instruments.

Contemporary policies aim their goals for 2020, 2030 and 2050 and combine national policies as well as European policies. In 2010, the European Court and European Parliament agreed on a directive that requires all new residential buildings in Europe to be built nearly zero energy from 2020 (European Parliament, 2010). From 2023, all office buildings will be required to have a minimum of energy label C (RVO, 2017). A measure that affects 52% of all office buildings in The Netherlands that currently perform lower than energy label C (EIB, 2016).

#### *Large banks increasingly require sustainability*

Large banks in The Netherlands are reserving capital for more sustainable commercial real estate (FD, 2017). ABN Amro, ING and Rabobank reserved more than one billion euros for their real estate clients to finance sustainable measures.

With these actions, large banks are responding the 2023 regulations of the government. Real estate represents an enormous amount of capital of banks because of related mortgages and finances. A bank's capital in real estate can represent more than half of a bank's balance sheet. Real estate financed by ING equals a capital of 14 billion euros and about one third are office buildings. Currently, 30% of their office buildings have an energy label C or higher. Office buildings financed by ABN Amro are for 80% higher than energy label C. For Rabobank this is 50%.

Sustainable real estate becomes more valuable for banks and their clients. Green buildings have a lower risk profile, high occupancy rates and value retention. Therefore, they receive interest reductions and higher financing capital for investments in sustainable measures and certification.

From 2018, ING demands a sustainability plan from real estate clients as a minimum requirement for refinancing. ABN Amro requires a sustainability paragraph in their real estate valuations. This includes assessments of the real estate life cycle, sustainability of building construction, tax and legal aspects. The real estate life cycle consists of, for instance, GHG-emissions and energy consumption calculations. The sustainability of building construction consists of, for instance, construction materials and building design. Tax and legal aspects are related to incentives and compliance with future regulations. The real estate appraiser determines whether the aspects contribute positively or negatively to the building value. One of the largest real estate appraisers in The Netherlands is Cushman & Wakefield. In 2017, 70 employees were educated as a BREEAM-NL Expert as part of their pilot for sustainable real estate valuations (Vastgoedmarkt, 2017).

#### *Transparency*

The Information Age is characterized by a movement towards organizational transparency. Over the past decades several new abbreviations were introduced related to increasing transparency in businesses, including the built environment.

Corporate Social Responsibility (CSR) is term for an organization's responsibility that goes further than economical benefits of their operations. Organizations increasingly integrate CSR and sustainability in their annual reports and policies. An important part of this is the documentation of an organization's environmental and societal impact. The Global Report Initiative (GRI) provides a sustainability reporting standard and is used by more than 600 organizations worldwide.

Social Responsible Investments (SRI) is a term for investing in assets, stocks or funds while avoiding investments with a negative societal or environmental impact. SRI is often used in combination with Environmental, Social and Governance (ESG). ESG is term that describes set of standards or criteria used by an organization to screen investments.

In 2009, Global Real Estate Sustainability Benchmark (GRESB) was introduced for investors in the built environment. GRESB is a rating tool that measures the sustainability performance of funds using ESG data. In 2017, 850 asset managers and funds participated in the Real Estate

Assessment representing 3 trillion euros worth of assets. The GRESB benchmark is used by 70 major institutional investors.

#### *More attention for green building certificates*

Although green building certificates are a voluntary rating tool for the built environment, local planning authorities can use it as a tool to go further than the national building code.

Local planning authorities can use green building certificates as a means to stimulate the development of sustainable buildings. An example is given by the city of Vancouver in British Columbia, Canada. The city of Vancouver aims to become the greenest city in the world by 2020. One of their strategies is related to the built environment, wherein it strives for building construction and renovation that go further than required by the national building code. To realize this, the city of Vancouver integrated LEED Gold certifications as a requirement for building permits (City of Vancouver, 2012).

Another example is the Amsterdam Zuidas, a prominent business district in the Netherlands. BREEAM Excellent was set as a minimum requirement for new developments in order to stimulate the development of sustainable buildings (Gemeente Amsterdam, 2016). This agreement was a collaboration between the municipality of Amsterdam and the Green Business Club Zuidas. The Zuidas is now one of the most sustainable office locations in the Netherlands and has the ambition to become the most sustainable office location of Europe by 2020. The headquarters of ABN-Amro received the BREEAM-In Use Award and the headquarters of Deloitte received an award for the highest BREEAM score.

## 2.4 Relevance of Research

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The energy transition, stricter regulations set by the government and increasing transparency in a relatively intransparent built environment are trends that stimulate market parties to take action. The effects are visible in the market for commercial real estate wherein green building certificates are increasingly applied to measure and acknowledge sustainability of assets.

### **Research problem**

The benefits related to certified green buildings is an interesting topic for academics. Several research papers were published with studies that compare certified green buildings with non-certified buildings. Findings include benefits related to the asset value (Fuerst & McAllister, 2011a; Miller, Spivey & Florance, 2008), rent price (Fuerst & McAllister, 2011a; Devine & Kok 2015) and occupancy (Devine & Kok, 2015) of certified green buildings.

Over the past years, multiple green building certificates were designed for different applications. Initially, green building certificates were available for new construction. New assessments were developed for different building types and also for existing buildings that are in use.

The introduction of green building certificates for existing buildings that are in use could have consequences for findings in previous research papers. This possibility enables non-certified buildings to become certified green buildings. The research papers that studied the benefits of certified green buildings do not clearly distinguish this difference in certificates. Having the consequence that these benefits may not apply for the existing buildings with in use certificates.

The current body of literature on this research topic lacks insight in the impact of green building certificates for existing buildings that are in use. Furthermore, there is no insight in the certification process, involvement of stakeholders and their interests.

## Research question

The aim of this research is to provide insight in the interests and impact regarding green building certificates for stakeholders of existing office buildings that are in use. This is done through an analysis of certified office buildings, the related certification processes and interests of different stakeholders. The research question is formulated as follows:

*How do green building certificates affect the building and organisation of investors, asset managers and tenants of in use office buildings?*

### *Demarcation*

There are several demarcations within this research for the green building certificate, type of office building and stakeholders.

The green building certificate that will be studied is BREEAM-NL In Use. BREEAM is managed by the Dutch Green Building Council and is the most commonly issued green building certificate in The Netherlands.

Green building certificates are more preferred in tenant markets than owner occupier markets (Qui, Su & Wang, 2016). Therefore, this research focuses on multi tenant office buildings.

The scope of this research includes asset managers, investors and tenants of office buildings. In the Netherlands, large asset managers are prominent users of BREEAM-NL certificates. These asset managers invest capital of institutional investors in multi-tenant office buildings located in business districts of the largest Dutch cities. Tenants of these buildings are a combination of corporate anchor tenants and small businesses.

## Research objectives

The research problem, aim of research and research question are translated into three research objectives. The research objectives are:

- Analysis of the interests of stakeholders regarding green building certificates
- Providing insight in the certification process of BREEAM-NL In Use and determine the involvement of each stakeholder
- Determine the applicability of the interests and impact regarding BREEAM-NL In Use certifications for asset managers, investors and tenants

## Academic relevance

The academic relevance of this research is two-sided. Firstly, it studies a research gap that is characterized by a lack of insight in the impact and interests of stakeholders regarding green building certificates for existing buildings that are in use. Secondly, the findings of this research are aimed to contribute to the current body of literature on the topic of green building certificates.

The first research papers on the topic of green building certificates were published around the millenium. From 2004, academic research on this topic gained more awareness resulting in an increasing number of publications. Until today, most research on green building certificates finds its origin in the United States. Although the popularity of BREEAM, Europe is outperformed for research on this topic by North America and Asia. It must be noted that, in case of The Netherlands, BREEAM-NL was launched in 2010 therefore is a relatively new topic for the academic field,

Nevertheless, important research papers that study the benefits of certified green buildings are published by authors from the United Kingdom and The Netherlands. This research builds further on research by Eichholtz et al. (2015) on the ecological responsiveness of corporate real estate, research on drivers for obtaining green building certificates (Qiu et al., 2016; Darko et al., 2017; Devine & Kok, 2015), price effects (Fuerst & McAllister, 2011a; Fuerst & McAllister, 2011b) and reputational benefits (Van der Voordt & Koppels, 2013).

### *Contribution of research*

The findings of this research are aimed to deliver two contributions. An academical contribution and a contribution for further development of green building certificates.

Firstly, as stated above, this research aims to extend the current body of literature on the topic of green building certificates. The focus on green building certificates for existing buildings, certification process and stakeholders is distinctive from previous research.

Secondly, this research aims to improve the application of green building certificates in the built environment. This research provides insight in interests of stakeholders, their involvement during the certification process and the impact of green building certificates on existing buildings. The research findings could help enhancing further development of the certification process. Increasing the sustainable impact of green building certificates contributes to the acceleration of the energy transition in the built environment.

Findings of this research are relevant for developers and managers of green building certificates, policy makers, asset managers, real estate investors and tenants.

## 2.5 Research Design

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The research design describes the structure of this thesis. The subtitle of this thesis already revealed the research approach, which is formulated as follows:

### *A study about the interests and impact regarding BREEAM-NL In Use certifications for asset managers, investors and tenants of office buildings*

The research approach consists of the design of a theoretical framework and an empirical research.

The second chapter describes the design of a theoretical framework. Literature on the topic of green building certificates is explored and reviewed. The benefits of certified green buildings are listed and discussed. A conceptual model is designed to describe the context of the stakeholders. The literature review and conceptual model are combined into the design of the theoretical framework. The theoretical framework describes which benefits of green building certificates are applicable as interests for each type of stakeholder.

The third chapter describes the empirical research. The conceptual model and theoretical framework are tested in practice. Therefore, a case study research method is developed. Three certified office buildings in The Netherlands are analyzed as case study projects. The Haagsche Zwaan, WTC The Hague and Hojel City Center in Utrecht. In each case study interviews are held with the three main stakeholders and with the property manager. The results of each case study are documented in case study reports.

The fourth chapter describes the conclusion, discussion and recommendations. The conclusion describes how each research objective was carried out and the answers that were found in this research. The results are combined to answer the main research question. The discussion evaluates the validity of the research design. It is discussed how the results should be interpreted and limitations are explained. Recommendations are formulated for academics and professionals.

## 2.6 List of Terms and Definitions

This thesis contains many terms used by different branches within the real estate sector. Some of these terms may be new or may be differently understood by the reader. A list of most important terms and their definitions is given as a convenient means to avoid misunderstandings and improve readability. The list is presented in figure 2.6.1.

### ***List of terms and definitions***

<b><i>Term</i></b>	<b><i>Definition</i></b>
<i>Green building</i>	'Healthy facilities designed and built in a resource efficient manner using ecologically based systems.' (Kibert, 2018). The term 'green' is used to indicate buildings that meet the requirements of green building certificates.
<i>Green building certificate</i>	Green building certificates assess and verify the status of a green building. The assessment system consists of a set of criteria to measure the sustainability performance. The certification system is the verification of a performance rating by a third party that issues the certificate (Cole & Valdebenito, 2013).
<i>BREEAM-NL In Use</i>	Building Research Establishment Environmental Assessment Method (BREEAM) is an assessment method designed to assess, rate and certify the sustainability of buildings (BREEAM, 2017). BREEAM-NL is a country specific system for The Netherlands adopted by DGBC. BREEAM-NL In Use is a specific scheme for existing buildings that are in use.
<i>DGBC</i>	The Dutch Green Building Council (DGBC) is an independent non-profit organisation committed to lead the transition towards a sustainable built environment (DGBC, 2018). DGBC is responsible for the management of BREEAM-NL.
<i>Asset Manager</i>	Asset managers are real estate investment managers that offer real estate investment funds for private and institutional investors. Real estate investment funds enable investors to indirectly invest in real estate. Instead of direct ownership of real estate assets, an investor buys shares of real estate portfolios. Thereby, allowing a third party that is specialized in asset management of real estate, to manage the investments.
<i>Investor</i>	Investors can be private or institutional investors. Institutional investors are pension funds, insurances companies or real estate funds. These investors indirectly invest in real estate through real estate investment funds offered by asset managers.
<i>Tenant</i>	Tenants rent office space in a building provided by the asset manager. The agreement between the tenant and asset manager is defined in the tenancy agreement. Often, asset managers outsource the tenancy management to a property manager.
<i>Property Manager</i>	A property manager provides operational services regarding real estate management. An asset manager has the possibility to outsource operational activities related to their assets to property managers. These can be commercial, technical and administrative activities. Contact with tenants and tenancy agreements fall within the commercial services. Green building certifications fall within technical services.

**Table 2.6.1: List of terms and definitions (own illustration)**

# 3. Theoretical Framework

The chapter Theoretical Framework describes the process from literature review to the design of the theoretical framework. The literature review further explains the term green building certificates and gives an overview of the research field. Findings from previous research are analysed and benefits of green building certificates regarding office buildings are listed. The findings from previous research indicate an inconsistency with developments in practice. This is explained with the conceptual model. The research gap is a starting point for this graduation thesis. The benefits of green building certificates as found in the literature review are combined with the conceptual model. This results in the design of a theoretical framework that is presented at the end of this chapter.

## 3.1 Literature Review

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The literature review is aimed to explore previous research and identify benefits of green building certificates for office buildings. The review starts with a study of the term green building certificates. In order to better understand the term, first the term green building is described. The definition of green building certificates for this research is then determined. The research field of green building certificates is explored and mapped. The publications related to this topic are analysed and structured. This is the starting point for reviewing the leading research on the benefits of green building certificates.

### Green buildings

The definition of green buildings is important to understand the term green building certificates. In literature, as well as in practice, various definitions are used for the concept of green buildings. Although the definitions may vary, often references are made towards acknowledgement of green buildings via green building certificates.

#### *In practice*

The term green buildings is globally known. However, characteristics of green buildings can differ per region because of unique environmental conditions that require a different performance. A description is given from an international perspective, the World Green Building Council, and the national perspective, the Dutch government.

The World Green Building Council (WorldGBC) represents a global network of 70 Green Building Councils. The WorldGBC defines green buildings as buildings that are designed, constructed and operated in a way to reduce or eliminate the negative environmental impact (WorldGBC, 2016). Features of green buildings are: energy and water efficiency, renewable energy, reduction of waste and pollution, sustainable materials and adaptive. Around the world green buildings have different characteristics because of distinctive environmental, cultural and climate conditions. These characteristics are presented in table 3.1.1.

Green Building Councils that are member of the WorldGBC manage and develop green building certificates. These are used to assess and recognize green buildings if green requirements are met.



## ***Green building characteristics - WorldGBC***

<b><i>Characteristic</i></b>	<b><i>Description</i></b>
<i>Energy</i>	<ul style="list-style-type: none"> <li>• Energy use is minimised in all stages of the building cycle</li> <li>• Building users are learned how to be efficient</li> <li>• Integration of low-carbon technologies and renewable energy systems</li> </ul>
<i>Water</i>	<ul style="list-style-type: none"> <li>• Water management minimizes water use and increases waste water efficiency</li> <li>• Water infrastructure is designed to preserve and drain storm water</li> </ul>
<i>Waste</i>	<ul style="list-style-type: none"> <li>• Waste is minimized by engaging building users to use durable materials</li> <li>• Waste is collected separately and materials are recycled</li> <li>• Buildings are designed for demolition and material recovery</li> </ul>
<i>Health and Wellbeing</i>	<ul style="list-style-type: none"> <li>• Health and wellbeing of building users is promoted through comfortable design</li> <li>• Good indoor air quality, non-toxic emissions, natural light and acoustics</li> </ul>
<i>Environment</i>	<ul style="list-style-type: none"> <li>• The environmental impact of buildings is minimized through preservation of nature and enhancing ecology</li> </ul>
<i>Resilient</i>	<ul style="list-style-type: none"> <li>• Adaptive design of buildings ensures resilience towards climate change and extreme events</li> <li>• Adaptivity and flexibility anticipate buildings for changes in use over time and prevent a building to become obsolete</li> </ul>
<i>Community</i>	<ul style="list-style-type: none"> <li>• Connecting people and enhancing communities stimulate positive social and economic effects</li> </ul>

*Table 3.1.1: Green building characteristics based on WorldGBC (2016) (own illustration)*

The Dutch government describes green buildings as being more environmentally friendly than conventional buildings. Green buildings are energy efficient, use less resources and are more healthy for building users. The green building characteristics as described by the Dutch government are presented in table 3.1.2.

The Dutch government uses the terms 'green building' and 'sustainable building' as interchangeable terms. A building receives the predicate 'green building' or 'sustainable building' if it satisfies the prerequisites of methods that are acknowledged by the RVO (National Entrepreneurship Administration). These are Greencalc, GPR building and BREEAM-NL (Rijksoverheid, 2017). The acknowledgement allows real estate funds to use the term 'green building'.

## ***Green building characteristics - Dutch government***

<b><i>Characteristic</i></b>	<b><i>Description</i></b>
<i>Sustainable materials</i>	<ul style="list-style-type: none"><li>• Sustainable materials consider the environment and health of building users</li></ul>
<i>Indoor environment</i>	<ul style="list-style-type: none"><li>• A healthy indoor environment using good ventilation</li></ul>
<i>Water</i>	<ul style="list-style-type: none"><li>• Water is used responsibly</li></ul>
<i>Resources</i>	<ul style="list-style-type: none"><li>• Prevention of depletion of building materials</li></ul>
<i>Environment</i>	<ul style="list-style-type: none"><li>• The environmental impact of buildings is minimized through preservation of nature and enhancing ecology</li></ul>
<i>Demolition</i>	<ul style="list-style-type: none"><li>• Sustainable demolition and reuse of building materials</li></ul>
<i>Community</i>	<ul style="list-style-type: none"><li>• Design of good living environments at building and urban level</li></ul>

*Table 3.1.2: Green building characteristics based on the Dutch government (2016) (own illustration)*

Both WorldGBC and the Dutch Government define and describe characteristics of green buildings but refer to secondary systems that acknowledge the status of green buildings. This is further explained in the part 'Green building certificates'.

### *In literature*

Where in practice a green building is described through characteristics, in literature it is often tried to describe the term with an all-embracing definition. However, there is still no single definition.

In their search for a definition of green buildings, Robichaud and Anantatmula (2010) compared various definitions of multiple sources including the US government, USGBC, design books and market reports. Based on this Robichaud and Anantatmula (2010) defined green buildings as a building that: (1) minimizes impact on the environment, (2) enhances health and wellbeing of occupants, (3) generates returns for its developers and community and (4) applies these approaches throughout the building life cycle.

One of their sources was the book 'Sustainable Construction: Green Building Design and Delivery' written by Charles Kibert (2018). Charles Kibert is a professor building construction at the University of Florida and is actively involved in the USGBC and BRI. In his book he gives an introduction to green building design. Kibert (2018) defines green buildings as 'healthy facilities designed and built in a resource efficient manner using ecologically based systems.' Moreover, he mentioned also that the term 'green' is used to indicate buildings that meet the requirements of green building certificates.

## **Green building certificates**

Green building certificates assess and verify the status of a green building. The first green building certificates originated almost three decades ago. Over time various systems were developed across the world and more stringent assessment criteria improved to overall sustainability performance of buildings.

In the beginning of the 1990s there was a growing worldwide awareness for environmental issues which stimulated the deployment of environmental assessment techniques (Kajikawa, Inoue & Goh, 2011). The goal for sustainable buildings in the construction sector increased social interest for certification methods within the built environment (Ding, 2008).

Today, green building certificates are used to assess the sustainability performance of building characteristics. The goal is to raise environmental standards for building owners, constructors and designers by setting targets measuring with a set of criteria.

Within green building certificates there is an important distinction between two systems: the assessment system and certification system (Cole & Valdebenito, 2013). The assessment system consists of a set of criteria to measure the sustainability performance. The certification system is the verification of a performance rating by a third party that issues the certificate.

#### *Green building certificates around the world*

Multiple green building certificates are used all over the world. In some countries there are even multiple domestic green building certificates. A distinction can be made between a 'national' and 'country' system (Cole & Valdebenito, 2013). A country system finds its origin and is developed in that country. A national system is adopted by the national Green Building Council and is prescribed by the government or even implemented in the national building code.

An example is given of the most popular green building certificates in four countries around the world. Starting with The Netherlands, where the Dutch Green Building Council introduced its own adapted version of BREEAM. LEED is designed by the United States Green Building Council and is also used by the Canadian Green Building Council and other countries all over the world. Green Mark is introduced by the Green Building Council of Australia and has very similar assessment categories as BREEAM. The Japan Sustainable Development Group uses CASBEE.

A comparison of green building certificates BREEAM, LEED, Green Mark and CASBEE is presented in table 3.1.3. The comparison shows that most green building certificates were introduced around the millenium, except for BREEAM that was already introduced in the beginning of the 90s. The categories of BREEAM are highly similar to the categories Green Mark. And the categories of LEED are highly similar to CASBEE. Overall, the categories of all certificates relate to similar subjects.

BREEAM has the most variety in schemes for building types, while CASBEE only has schemes for housing and building. LEED and Green Mark do also have a scheme for interiors of buildings, something that is not offered by the other certificates.

Reed, Bilos, Wilkinson and Schulte (2009) also performed an international comparison of green building certificates. They found that variety in focus and characteristics of green building certificates create a barrier on an international level. They concluded that more standardized international green building certificates would enhance the use amongst international real estate investors.

## Comparison of green building certificates





	<b>BREEAM</b>	<b>LEED</b>	<b>Green Mark</b>	<b>CASBEE</b>
<b>Developer</b>				
<i>Organisation</i>	Building Research Establishment (BRE)	United States Green Building Council	Green Building Council of Australia	Japan Sustainable Development Group
<i>Year</i>	1990	1998	2003	2004
<i>Country of origin</i>	United Kingdom	United States	Australia	Japan
<b>Assessment Categories</b>	Management Health and Wellbeing Energy Transport Water Materials Waste Land use and Ecology Pollution	Sustainable Sites Water Efficiency Energy and- Atmosphere Materials and- Resources Indoor Environmental- Quality Innovation in Design	Management Indoor Environmental- Quality Energy Transport Water Materials Land Use and Ecology Emissions Innovation	Indoor Environment Quality of Service Outdoor Environment- on Site Energy Resources and- Materials Offsite Environment
<b>Ratings Level</b>	Pass Good Very Good Excellent Outstanding	Certified Silver Gold Platinum	One star Two star Three star Four star Five star Six star	Poor Fairy Poor Good Very Good Excellent
<b>Schemes Building type</b>	Residential Office Education Retail Meeting Hotel Bespoke Datacenter Industrial	Residential Commercial Education Retail Healthcare Interior	Residential Office Education Retail Healthcare Interior Industrial	Housing Building

Table 3.1.3: Comparison of green building certificates (own illustration)

### Exploring the research field

According to Scopus, research on the topic of green building certificates originated in 1999. In that year, Curwall et al. (1999) published an article about the Green Building Challenge process in the United Kingdom and the future development of environmental assessment of buildings. From 2005, research on the topic of green buildings certificates started to develop exponentially. Since 2008, the average number of research papers that are published is around 75 per year. Most publications find their origin in The United States. The United States outperforms any other country with almost 400 publications. The second place is for Canada with 43 publications. China and South Korea share a third place with 40 publications. The Netherlands is on the 18th place with seven publications. The publications are presented by year and country in figure 3.1.4.

## Analysis of publications - Year and country

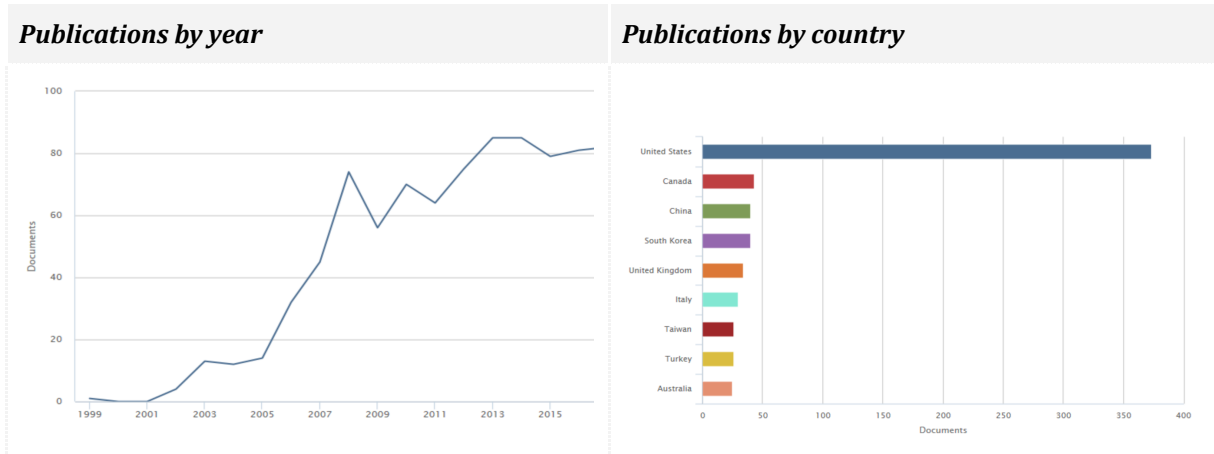


Figure 3.1.4: Analysis of publications by year and country based on Scopus (own illustration)

Figure 3.1.5 presents the publications by subject area and affiliation. The affiliation shows a more diversified origin of publications compared to the countries. The top ten affiliations published eight to fourteen articles. Four affiliations are from the United States, of which two affiliations are from Illinois. Another four affiliations are from Asia, more specific, from China, South Korea, Singapore and Taiwan. The single affiliation from the Netherlands is Maastricht University that published four articles. Furthermore, the United States Green Building Council (USGBC) published four articles and Building Research Establishment (BRE) published two articles.

More than half of all the publications are related to the subject area Engineering. This is followed by the subject area Environmental Sciences and Energy. Other common related subject areas are Social Sciences and Business, Management and Accounting.

## Analysis of publications - Subject area and affiliation

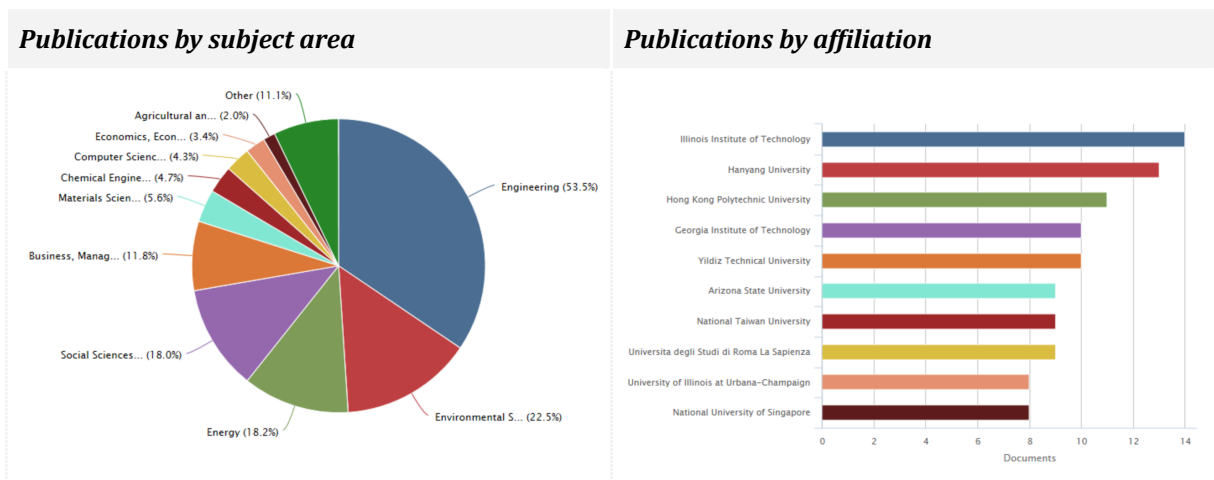


Figure 3.1.5: Analysis of publications by subject area and affiliation based on Scopus (own illustration)

The publications by source and author are presented in figure 3.1.6. The source with the highest number of publications is the Journal of Green Building (37). HPAC Heating Piping Air Conditioning Engineering (31) has the second most publications. Although this source published the earliest articles on this topic, no articles were published after 2012. Procedia Engineering (19) started

publishing in 2014 and is relatively new to the research field. However, with the high rate of publications in 2015 and 2016 it is already in the fourth place.

The top ten authors published five to ten publications. Arditi, D. and Gurgun, A.P. wrote both ten publications and do also collaborate with each other. In 2014, Arditi, Gurgun and Komorlu wrote their most cited article: Applicability of LEED's energy and atmosphere category in three developing countries. The article is a guideline for the implementation of green building certificates in developing countries.

### ***Analysis of publications - Source and author***

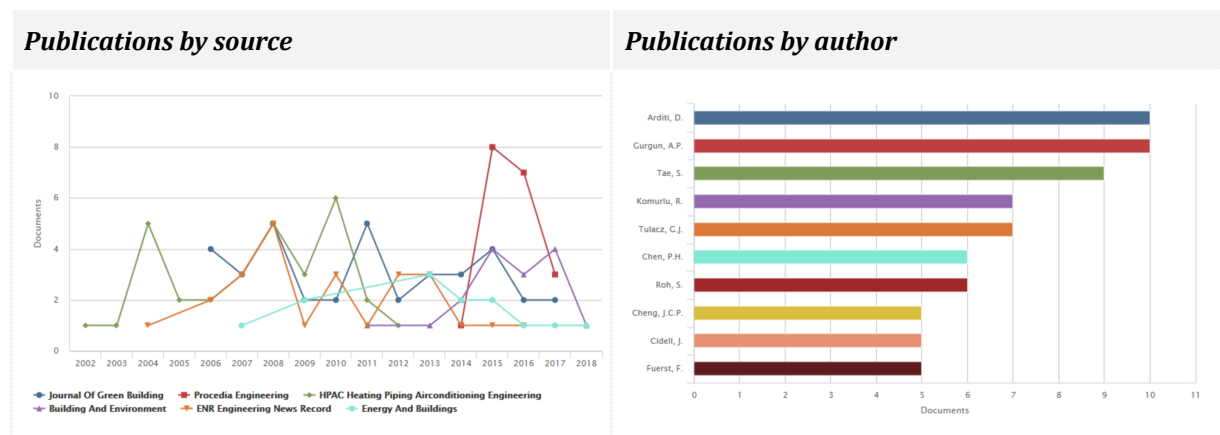


Figure 3.1.6: Analysis of publications by source and author based on Scopus (own illustration)

The last part of the analysis of publications presents the most cited publications (figure 3.1.7). The most cited publication is about the energy savings of LEED-certified buildings, as well as the fourth and ninth publication. Other publications are about social and psychological barriers towards green building, health and wellbeing in certified green buildings and the support of certified green buildings towards sustainable cities.

The second most cited publication is written by the authors Fuerst and McAllister. This research paper represents an important branch within research on green building certificates, namely, comparative research about certified green buildings and non-certified buildings.

Their article 'Green Noise or Green Value? Measuring the Effects of Environmental Certification on Office Values' was published in 2011 and studies price differences between certified and non-certified office buildings. Franz Fuerst is a researcher at the Department of Land Economy at the University of Cambridge. Patrick McAllister is researcher Real Estate and Planning for the University of Reading. Fuerst and McAllister collaborated on the publication of multiple articles about price effects between certified and non-certified office buildings. And also for the energy performance of office buildings in their article 'The impact of energy performance certificates on the rental and capital values of commercial property assets' (2011). The findings of Fuerst and McAllister are further discussed in 3.2.

The article 'Supply, Demand and the Value of Green Buildings' was published in 2014 and is listed as seventeenth. The article is written by Eichholtz, P., Kok, N. and Chegut, A. and discusses the impact of BREEAM certifications on the rent rates and asset values of office buildings. Piet Eichholtz is a professor Finance at the School of Business and Economics at the University of Maastricht. Nils Kok is an associate professor in Finance and Real Estate at the University of Maastricht. Also Eichholtz and Kok collaborated on more research papers on this topic. Their research papers are also further discussed in paragraph 3.2.

## Analysis of publications - Citations

### Publications by number of citations

Documents	Citations	<2014	2014	2015	2016	2017	2018	Subtotal	>2018	Total
		Total	925	490	568	753	1013		145	
1 Do LEED-certified buildings save energy? Yes, but...	2009	75	36	37	45	35	2	155		230
2 Green Noise or Green Value? Measuring the Effects of Environ...	2011	51	31	38	31	30	7	137		188
3 TRACI 2.0: The tool for the reduction and assessment of chem...	2011	20	27	21	32	42	3	125		145
4 Do LEED-certified buildings save energy? Not really...	2009	36	23	22	30	20	2	97		133
5 Overcoming the social and psychological barriers to green bu...	2008	36	23	13	20	28	5	89		125
6 Lean processes for sustainable project delivery	2006	65	14	13	11	12	2	52		117
7 The compelling "hard case" for "green" hotel development	2008	34	13	9	11	11	1	45		79
8 Building environmental assessment schemes for rating of IAQ ...	2011	43	16	6	4	7	1	34		77
9 Efficacy of LEED-certification in reducing energy consumptio...	2013		8	8	19	14	4	53		53
10 City buildings-Eco-labels and shades of green!	2007	26	11	9	4	1		25		51

Figure 3.1.7: Analysis of publications by number of citations on Scopus (own illustration)

### 3.2 Certified Green Buildings versus Non-certified Buildings

Many comparative research is done about certified green buildings versus non-certified buildings. This paragraph outlines a summary of findings around this research topic. Starting with price effects related to asset value and rent price.

#### Asset value and rent price

Fuerst and McAllister (2011a) measured the effects of green building certificates on the asset value and rent rates using hedonic regression analysis. Their analysis was based on a CoStar database of office buildings in the United States. A sample of 626 office buildings certified with LEED were compared with a 15,000 benchmark buildings located in the same metropolitan region. The hedonic model controlled building characteristics such as age, height and location. Fuerst and McAllister (2011a) found that certified offices had a rental premium of, on average, 4-5%.

Devine and Kok (2015) did a similar research on the implications of green building certificates and rent rates in North America. Their research also entailed a hedonic pricing model wherein building characteristics were controlled for age, location and size. A total of 12,000 lease contracts were analysed and they found a rent premium of 3.7% for office buildings certified with LEED. Samples from Canada were consistent with samples from the United States.

The findings of Fuerst and McAllister (2011a) and Devine and Kok (2015) both indicate a rent premium for certified office buildings. This is driven by increased occupancy rates, higher tenant retention and satisfaction and lower operating expenditures. Both research papers also studied the price effects for Energy Star. In this research Energy Star is seen as an energy label instead of a green building certificate and therefore does not fall within the scope of this research.

Fuerst and McAllister (2011a) also measured the price effects for the asset value. This research followed up on research done by Miller, Spivey and Florance (2008) and Wiley, Benefield and Johnsen (2010) that also used the CoStar database.

Miller, Spivey and Florance (2008) indicated a sale price premium of 11% for office buildings certified with LEED. Wiley, Benefield and Johnsen (2010) found a price premium of \$130 dollar per square foot. According to Fuerst and McAllister (2011a) these research papers did not properly adjust for location premia in metropolitan regions.

In their research, another sample was taken of transaction prices from 6.153 office buildings certified with LEED. They found that certified office buildings had a high sale price premium compared to the benchmark. On average this sale price premium was 25%. Furthermore, it was found that green building certificates with higher scores had a higher premia.

In the discussion of the results it is explained that the asset value premium could be the result of other possible effects such as increased rent rates, lower operating expenditures, increased occupancy rates, reputational benefits and lower risk profiles.

## **Occupancy rate, tenant satisfaction and retention**

Devine and Kok (2015) studied the implications of green building certificates for occupancy rates, tenant satisfaction and operating expenditures. This was done in the United States and Canada using a dataset provided by a large real estate service firm. The dataset covered 12.000 lease contracts over a period of ten years coming from 300 buildings.

The researchers were able to calculate the occupancy rates and found that LEED certified office buildings were associated with occupancy rate premia. This premium was 8,5% in Canada and 4% in The United States.

The availability of biannual tenant satisfaction surveys made it possible to study tenant satisfaction scores. The certified buildings scored on average 6% higher in satisfaction compared to non-certified buildings. However, the results of LEED certified buildings were not significant.

The likelihood of lease renewal was also observed. It showed that certified buildings had a higher probability of lease renewal. However, again the results of LEED certified buildings were not significant.

The findings of the research showed that certified green buildings perform better in occupancy rate, tenant satisfaction and retention. Although, the sample that was used for this research is relatively small and some of the results should be handled carefully.

## **CSR, SRI, GRESB and reputational benefits**

The impact of real estate on the environment determines the sustainability performances of an organization's housing policy. Eichholtz, Kok & Quigley (2016) analyzed tenancy decisions of more than 11.000 tenants in their research paper 'Ecological Responsiveness of Corporate Real Estate'.

They found that real estate is becoming an important aspect of an organization's Corporate Social Responsibility (CSR). Institutional pressure and economic advantage are important drivers for organizations to determine their real estate decisions. According to Ramus and Montiel (2005), this seems to be dependent on the industry of an organization. Industries with environmental sensitive activities, such as the oil industry, are prominent users of certified green buildings. This is driven by institutional pressure and to offset negative reputational effects (Eichholtz et al., 2016). Other prominent users are the financial and legal sector. These are space-intensive sectors and are driven by economic advantage of operating and productivity benefits related to certified green buildings.

An organization's decision for sustainable real estate does also influence the sustainability performance of the real estate provider, the asset manager. Asset managers are the main providers of corporate space. Eichholtz, Kok and Yonder (2013) found that asset managers or Real Estate Investment Trusts (REITs) with sustainable real estate portfolios experience a lower cost of debt and a better credit rating. Also capital providers or investors that invest in funds offered by asset managers, increasingly demand Social Responsible Investments (SRI). Internationally, major investors have incorporated SRI principles in their investment strategies (PRI, 2018). This means that an investor invests consciously and seeks both financial and social return.

A commonly used tool for screening the sustainability of real estate funds is the Global Real Estate Sustainability Benchmark (GRESB). GRESB responds to an increasing number of investors that incorporated Environmental, Social and Governance (ESG) criteria in the investment



process. GRESB is a rating tool that measures the sustainability performance of funds using ESG data. In 2017, 850 asset managers and funds participated in the Real Estate Assessment representing 3 trillion euros worth of assets. The GRESB benchmark is used by 70 major institutional investors.

Environmental responsibility can enhance a firm's image resulting in reputational benefits or competitive advantage. Van der Voordt and Koppels (2013) researched how international firms use real estate as a means to strengthen their corporate identity and image. Seven case studies were conducted and showed how brand values were translated into the real estate strategy.

Sustainability is one the most commonly used brand values by firms. It is used to express sustainability internally towards the employees of an organisation and externally towards stakeholders. It was found that sustainable real estate is used to communicate a firm's CSR strategy (Thyssen, 2011). This is done through buying or leasing buildings that are certified with BREEAM or LEED. Other interests regarding certified green buildings were lower operating expenditures and higher employee productivity. Similar to Eichholtz et al. (2016) it was also found that some organisations were driven by the offset of a negative image coming from environmental sensitive activities.

## **OPEX and CAPEX**

Operating Expenditures (OPEX) are the day-to-day costs for operation, management and maintenance of a commercial building. These are, for instance, costs related to utility consumption, marketing and building maintenance.

In The Netherlands, costs for utility consumption determine approximately 10% of the total operating expenditures of commercial real estate (Dukers, 2004). Utility consumption consists of electricity, gas and water consumption. These costs are included in the rent price and paid by tenants in the form of service costs. Energy and water efficient buildings are therefore interesting for tenants.

Devine and Kok (2015) also analyzed the utility consumption of certified green buildings and non-certified buildings. They found that, in the United States, 14% less energy is consumed by LEED-certified buildings. Other results for utility consumption were insignificant. Devine and Kok (2015) expect that more operation focused green building certificates would cause a decrease in utility consumption. This is probably because the building use has a high influence on the building consumption.

Capital Expenditures (CAPEX) are costs or rather investments for the acquisition of a building or for extending a building's life. These are, for instance, costs related to energy efficient measures that improve the sustainability performance.

Several governments introduced tax incentives and subsidies to encourage sustainability measures and development of sustainable buildings. There are subsidies available for LEED in the United States and for BREEAM in The Netherlands. On the website of BREEAM-NL (2017) examples of Dutch subsidies are presented for the Environmental Tax Deduction (MIA), Energy Investment Deduction (EIA) and Stimulative Regulation Sustainable Energy Production (SDE+).

The benefits of increased occupation, tenant retention and lower operating expenditures of certified green buildings are drivers for lower capital expenditures. In the research paper of Fuerst and McAllister (2011a) the term holding costs is used, their description of this term seems very similar to the term capital expenditures. Fuerst and McAllister (2011a) expect that lower operating expenditures, tax incentives and subsidies and tenant retention should lead to lower holding costs. Furthermore, advanced building technologies and a high building quality could also lead to a reduced building depreciation.

## Decreased risks

Risk premium and risk profile are terms used by real estate investors to indicate risks related to their acquisitions. Regulatory changes or increased vacancy levels are examples of risks that could cause uncertainties in incomes from real estate investments. A building that is exposed to less risks is often called future proof.

Risk is an important factor in acquisition decisions of real estate investors. Examples of risks related to real estate are regulatory risks, vacancy risks and market related risks. The decision of the Dutch government to require a minimum energy label C for all office buildings from 2023 is a regulatory risk. Office buildings that do not fulfill this requirement in time are exposed to the consequences of this risk.

Real estate investors developed several tools to determine the risks related to their acquisitions. The risk premium is a figure that indicates the difference between the interest rate on ten year government bonds and the initial yield (ABN Amro, 2015). Risk premiums can be calculated for an entire national market but is also used to specify the difference between certified green buildings and non-certified buildings. Risks profiles are developed and used within organisations of real estate investors. Risks profiles indicate the distribution of risks in investment portfolios or classes.

Fuerst and McAllister (2011a) argued that the reduced risk premium of certified green buildings is one of the drivers for an increased asset value. This is because certified green buildings are generally exposed less regulatory risks and have less uncertainty in incomes due to better occupancy levels.

### 3.3 New Construction versus In Use

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Green building certificates are not only used for newly constructed buildings, it is also possible to certify existing buildings that are in use. Two years after the introduction of BREEAM-NL New Construction a second assessment was launched. In 2011, BREEAM-NL In Use was introduced to the market for existing buildings that are in use. Similar assessments are available for LEED Existing Buildings, Green Mark Existing Non-Residential Buildings and CASBEE for Existing Buildings.

In contrast with newly constructed buildings, an existing building is not designed in line with the principles of BREEAM. The performance is merely measured against the criteria of BREEAM-NL In Use. It can be assessed with the 'Asset', 'Management' and/or 'Use' assessment. If an existing building performs well enough, a certificate can be obtained without physical adjustments.

Next to a current state of the building there is also a current context of stakeholders. For instance, a building is owned by an institutional investor, used by tenants and managed by a property manager. This context consists of agreements between stakeholders. For example, 5 to 10 year tenancy contracts between a tenant and owner.

The ability to obtain a certificate for an existing building that is in use enables a non-certified building to become a certified green building. This can be realized without improving the sustainability performance of a building and without changing the agreements between stakeholders. This has implications for some of the findings of previous research described in 3.2.

## Research gap

In previous research, the benefits of certified green buildings versus non-certified buildings are based on research wherein the certified green buildings do not clearly distinct newly constructed and existing buildings. However, when a non-certified building becomes a certified green building it does not necessarily mean that the benefits described in 3.2 will apply.

An example is given for rent rate. When an existing building is being certified with BREEAM-NL In Use, there is a low probability that the building owner will break up a long term tenant contract and increase the rent rate. There is even a lower probability that the tenant will accept an increase in rent rate because the sustainability performance of the building does not have to improve during certification. Similar examples can be given for the benefits of lower operating expenditures, higher asset value and other benefits described in 3.2.

If the main benefits of a green building certificate do not apply in case of in use office buildings it can be questioned why many in use office buildings are being certified. The current body of literature does not provide enough insight in the interests of stakeholders regarding certification of existing office buildings. Furthermore, there is a lack of insight in the involvement of stakeholders within the certification process. A conceptual model of this research problem is presented in the next paragraph.

### 3.4 Design of Theoretical Framework

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The design of the theoretical framework is explained through a description of the stakeholders and conceptual model.

#### **Stakeholders**

This research has a focus on three types of stakeholders: investors, asset managers and tenants. These stakeholders were chosen because of their interests towards BREEAM-NL In Use certificates which is demonstrated by their large share in certified office buildings.

More than 50% of all office buildings certified with BREEAM-NL In Use are located in the top four cities of The Netherlands. These cities are Amsterdam, Rotterdam, Utrecht and The Hague and are all located within the Randstad metropole region. A comprehensive analysis of the BREEAM database is presented in chapter 4.

#### *Asset managers*

A large part of these buildings are large multi-tenant office buildings managed by asset managers. Asset managers are property companies that offer real estate investment funds for private and institutional investors. Real estate investment funds enable investors to indirectly invest in real estate. Instead of direct ownership of real estate assets, an investors buys shares of real estate portfolios. Thereby, allowing a third party that is specialized in asset management of real estate, to manage the investments.

Indirect investment in real estate portfolios come with several advantages. Investments can be easily diversified over different asset classes of sectors, regions and building types. Next to large institutional investors, it allows even small investors that do not have enough capital to acquire a building to invest in real estate. It does also provide access to investments in international real estate markets.

In The Netherlands, real estate investment funds are Fiscal Investment Institutions (FBI). This is a tax-transparent investment structure that avoids double taxation (Eichholtz & Kok, 2007). Normally, corporate tax is paid over rental income and again shareholder tax is paid over shareholder income. Fiscal Investment Institutions are exempted for corporate tax to avoid this.

Examples of asset managers with BREEAM-NL In Use certified offices are Bouwinvest and Union Investment GmbH. Bouwinvest Real Estate Investment is Dutch real estate investor that offers five sectoral funds, a residential, office, retail, hotel and healthcare. Union Investment Real Estate GmbH is major real estate investor from Germany that offers global, European, domestic and other funds.

### *Investors*

Investors that invest in the funds offered by asset managers are private or institutional investors. Institutional investors are pension funds, insurances or real estate funds.

The Amsterdam School of Real Estate calculated that the total size of the real estate investment market in The Netherlands was 75 billion euros in 2016 (Klapwijk, Nijskens & Buitelaar, 2017). The total capital of real estate investments by domestic institutional investors was 47 billion euros. This is divided over pension funds (24 billion euros), insurances (11 billion euros) and real estate funds (13 billion euros). The total capital invested by foreign real estate investors equals 22 billion euros.

Real estate is an important part of investment portfolios of institutional investors. The real estate market offers multiple diversification options in order to reduce risks. Investment capital can be spread over asset classes in different market sectors, geographical regions and property types.

Real estate investments are not the primary task of institutional investors. Therefore, institutional investors invest their capital in real estate funds provided by asset managers. In 2016, Dutch pension funds invested 70% and insurances 45% of their capital indirectly via real estate investment funds (Klapwijk, 2017).

### *(Corporate) Tenants*

Office buildings in the portfolios of an asset manager such as Bouwinvest often have corporate anchor tenants. During the last decade, companies increasingly report and set targets regarding their energy use and emissions. Also the Dutch government implemented regulations to enforce companies to reduce their environmental impact.

In The Netherlands, companies are restricted by law to take energy efficient measures with a return on investment within five years. This is regulated in the Environmental Management Act (Wet Milieubeheer). On a yearly basis, these energy efficient measures require an investment of approximately 200 million euros.

The Dutch Association for Sustainable Development (VBDO) researched energy efficient measures in offices for listed companies. This research was commissioned by the Dutch government (AgentschapNL, 2012). Their study covered 71 listed companies and 666 offices representing 1.2 million square meters.

The researchers found that listed companies are increasing their environmental transparency by reporting data about energy use and emissions in annual reports. About two third of the companies set targets regarding energy use and emissions. About half of the companies use external verification systems, such as Global Reporting Initiative (GRI), Dow Jones Sustainability Index (DJSI) or Carbon Disclosure Project (CDP). Some of these companies demand BREEAM-NL certified office buildings in their housing policy.

## **Conceptual Model**

The context of stakeholders, their actions and level of interest towards green building certificates are illustrated in figure 3.4.1. The conceptual model is explained as follows.

The investor invests indirectly in real estate by buying shares of real estate funds. Examples of these institutional investors are pension funds, insurances, mutual funds and private savers. The level of interest regarding green building certificates is expressed with a percentage of 'green' investments.

The asset managers offer real estate funds, these are portfolios wherein multiple assets are combined. Examples of asset managers are Bouwinvest, Union Investment GmbH, CBRE Global Investors and Deka Immobilien. The level of interest regarding green building certificates is expressed with a number of certified assets within a portfolio.

The tenants demand office space to operate their businesses. Some tenants, often corporate tenants, have preferences for renting in office buildings that are certified with green building certificates. This is described in their corporate social responsibility strategies. This

preference or requirement can be realized by seeking certified office space or certifying the current office space. Examples are large multinational organizations that provide products or services in the financial or oil industries. Their level of interest is expressed with a tenancy in a certified green building.

### Conceptual model

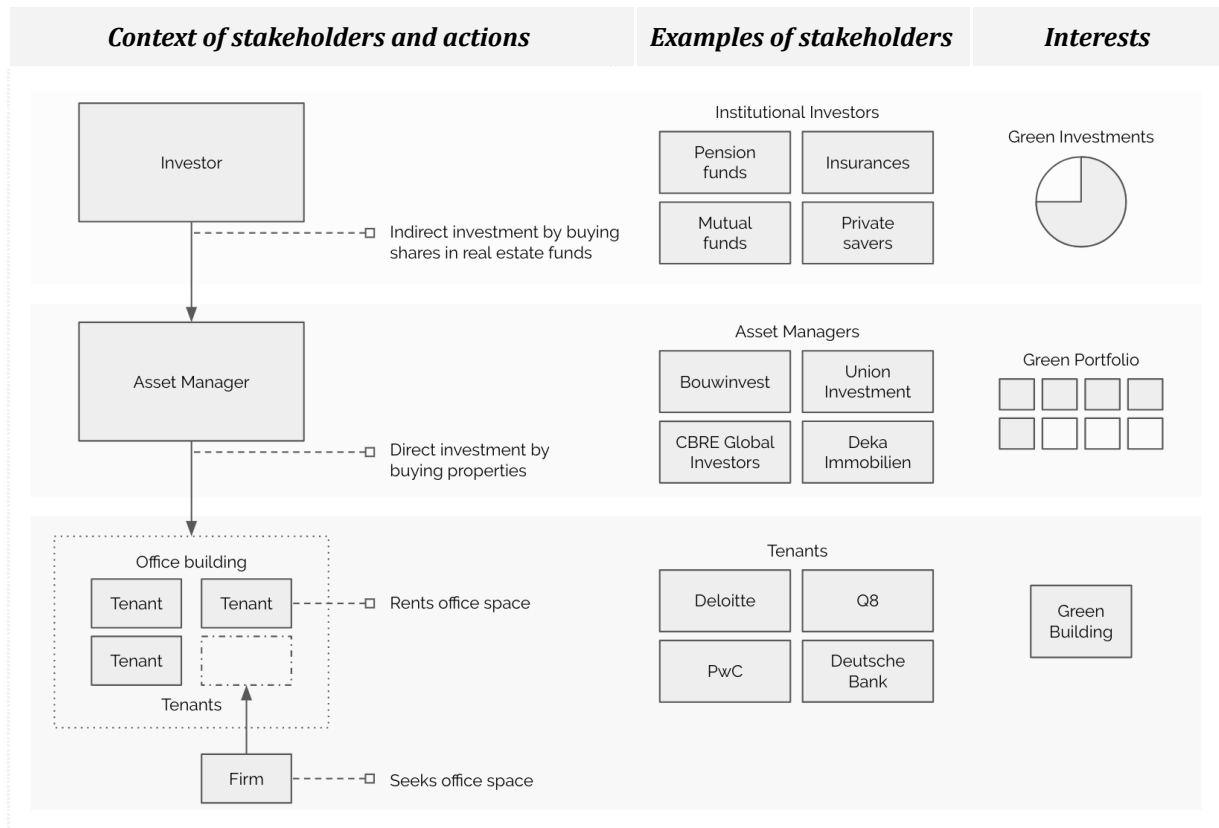


Figure 3.4.1: Conceptual model: Context of stakeholders, actions and level of interest (own illustration)

### Theoretical Framework

The findings of the literature review and the conceptual model are combined into the design of a theoretical framework. The theoretical framework will be used to test the findings in an empirical research that is performed in the next chapter. Therefore, the theoretical framework is used as a bridge between academic research and practice. The theoretical framework is designed in three steps.

The first step is related to paragraph 3.2 Certified Green Buildings versus Non-certified buildings. The findings of the literature review are used as a list of benefits related to certified green buildings.

The second step is related to the conceptual model. It is assumed that when an existing office building is being certified, stakeholders have different interests regarding the green building certificate. For example, an asset manager could have interests regarding a higher rent price, an investor regarding lower risks and a tenant regarding reputational benefits.

In the third step the findings of the literature review and conceptual model are combined. The benefits of certified green buildings are translated into potential interests for asset managers, investors and tenants.

The theoretical framework consists of a list of interests, definitions of these interests and applicability per stakeholder. This is presented in table 3.4.1.

The eleven interests are listed in the first column. The second column provides a concise definition of each interest. The third column indicates the applicability of interests for each stakeholder based on the stakeholder description in the conceptual model.

### ***Definition of interests and applicability per stakeholder***

<b><i>Interest</i></b>	<b><i>Definition</i></b>	<b><i>App.</i></b>			
<i>Achieving sustainability ambitions or CSR (Eichholtz, Kok &amp; Quigley, 2016)</i>	Sustainability ambitions are part of an organization's Corporate Social Responsibility strategy. An organization's performance data is reported and targets are described in annual reports that can be found on their website.	I	A	T	✓ ✓ ✓
	<i>Legend</i> investor: I asset manager: A tenant: T				
<i>Decreased risks (Fuerst &amp; McAllister, 2011a)</i>	Real estate is exposed to certain risks, such as regulatory risks, vacancy risks and market related risks. Risk premia and risk profiles are tools used to indicate risks. A building that is exposed to less risks is often called 'future proof'.	I	A	T	✓ ✓ ✓
<i>SRI (Eichholtz, Kok &amp; Yonder, 2015)</i>	Social Responsible Investments are used amongst investors and asset managers. SRI principles and Environmental, Social and Governance criteria are integrated in investment strategies to stimulate financial and social return.	I	A	T	✓ ✓ X
<i>GRESB rating</i>	The Global Real Estate Sustainability Benchmark (GRESB) is a rating tool that measures the sustainability performance of funds using ESG data. Green building certificates are part of the assessment.	I	A	T	✓ ✓ X
<i>Reputational benefits (Van der Voordt &amp; Koppels, 2013)</i>	Sustainable real estate can be used to communicate a firm's CSR strategy. Environmental responsibility can enhance a firm's image resulting in reputational benefits and competitive advantage.	I	A	T	✓ ✓ ✓
<i>Increased asset value (Fuerst &amp; McAllister, 2011a; Wiley, Benefield &amp; Johnsen, 2010)</i>	Several research papers found an asset value premium for certified green buildings. This could be the result of other possible effects such as increased rent rates, lower operating expenditures, increased occupancy rates, reputational benefits and lower risk profiles.	I	A	T	✓ ✓ X
<i>Lower CAPEX (Fuerst &amp; McAllister, 2011a)</i>	Capital Expenditures (CAPEX) are costs or rather investments for the acquisition of a building or for extending a building's life. Increased occupation, tenant retention and lower operating expenditures of certified green buildings are drivers for lower capital expenditures.	I	A	T	✓ ✓ X
<i>Increased rental income (Devine &amp; Kok, 2015; Fuerst &amp; McAllister, 2011a)</i>	Certified buildings have higher rental incomes compared to non-certified buildings (Devine & Kok, 2015; Eichholtz, Kok & Quigley, 2015). The rental premium results from a higher market demand, higher tenant retention and less vacancy.	I	A	T	✓ ✓ X
<i>Reduced OPEX (Devine &amp; Kok, 2015)</i>	Operating Expenditures (OPEX) are the day-to-day costs for operation, management and maintenance of a commercial building. Generally, certified green buildings have lower operating expenditures compared to non-certified buildings, because of less consumption and maintenance costs.	I	A	T	✓ ✓ ✓
<i>Increased occupancy rate (Devine &amp; Kok, 2015)</i>	Certified green buildings have higher occupancy rates compared to non-certified buildings. This is driven by competitive advantage, better tenant satisfaction and retention.	I	A	T	✓ ✓ ✓
<i>Insight in sustainability performance</i>	A green building certificates provides a detailed insight in the sustainability performance of a building. This insight could be used to improve the building, analyze portfolios and can be communicated to third parties.	I	A	T	✓ ✓ ✓

**Table 3.4.1: Theoretical Framework: Definition of interests and applicability per stakeholder (own illustration)**

### 3.5 Conclusion

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This chapter described the process from literature review towards the design of the theoretical framework. The main findings are summarized as follows:

- Green building certificates are designed to assess and acknowledge buildings that meet sustainability requirements (WorldGBC, 2016). From 2004, academic research on this topic gained more awareness resulting in an increasing number of publications each year.
- Comparative research about certified green buildings and non-certified buildings is an important branch within academic research on the topic of green building certificates
- In the literature review, several benefits of certified green buildings were found and are related to:
  - Asset value and rent price (Fuerst & McAllister, 2011a; Devine & Kok, 2015)
  - Occupancy rate, tenant satisfaction and retention (Devine & Kok, 2015)
  - CSR, SRI, GRESB (Eichholtz, Kok & Yonder, 2013; Eichholtz, Kok & Quigley, 2016) and reputational benefits (Van der Voordt & Koppels, 2013)
  - OPEX (Devine & Kok, 2015) and CAPEX (Fuerst & McAllister, 2011a)
  - Decreased risks (Fuerst & McAllister, 2011a)
- Previous research papers do not clearly differentiate their findings between newly constructed and existing certified green buildings. Therefore, it is not clear whether the benefits of certified green buildings do apply when a non-certified building becomes a certified green building.
- A large part of the certified office buildings are multi-tenant and managed by asset managers. Asset managers are property companies that offer real estate investment funds for private and institutional investors.
- Investors, asset managers and tenants were chosen as the main stakeholders because of their interests towards BREEAM-NL In Use certificates which is demonstrated by their large share in certified office buildings.

The literature review introduced and described the terms green buildings and green building certificates and gave an overview of the research field. This marked the beginning of an exploration of the benefits of certified green buildings compared to non-certified buildings.

A research gap was found in the missing distinction between benefits for newly constructed and existing certified green buildings. Furthermore, there is a lack of insight in the interests of stakeholders regarding certification and their involvement during the certification process.

The context of stakeholders consisting of asset managers, investors and tenants was described with the conceptual model. The theoretical framework combines the findings of the literature review with the stakeholders in the conceptual model. The benefits related to certified green buildings are translated into potential interests for asset managers, investors and tenants. The theoretical framework consists of a list of interests, definitions of these interests and applicability per stakeholder.

In the following chapter, the conceptual model and theoretical framework are used to test the findings in an empirical research.

# 4. Empirical research

The applicability of theoretical framework in practice is tested through empirical research. A multiple case study research is performed to gather empirical evidence from office buildings, certification processes and stakeholders. This chapter starts with an explanation of the technique behind the case study approach. This is followed by a description of the three case studies and the case study reports. The chapter ends with a cross case analysis and concludes with the most important findings.

## 4.1 Case Study Research Method

In this chapter the certification of in use office buildings and interests of stakeholders are studied through ex-post case studies of multiple projects. The main question is, in simple words, why do organizations certify an office building that is already in use? Three office buildings in The Netherlands that were certified with BREEAM-NL In Use are analysed. The investors, asset managers and tenants were interviewed as stakeholders. Also the property managers were interviewed.

A case study research is used as a method to describe the presence of a phenomenon within its real-life context (Yin, 2014). In this case, the phenomenon is the certification of existing office buildings. The real-life context is consists of stakeholders and their interests.

A case study research investigates why decisions were made, how these were implemented and with what result (Schramm, 1971). The theoretical framework lists findings from prior research about benefits of certified green buildings. These benefits are potential interests for stakeholders. Therefore, the theoretical framework is used to guide the data collection and analysis. The interviews with stakeholders and project analysis are used as sources of evidence.

The method that is used for this case study research was developed by Yin (2014) and is described in the book Case Study Research: Design and Methods. The method is visualized in figure 4.1.1.

### Case study research method

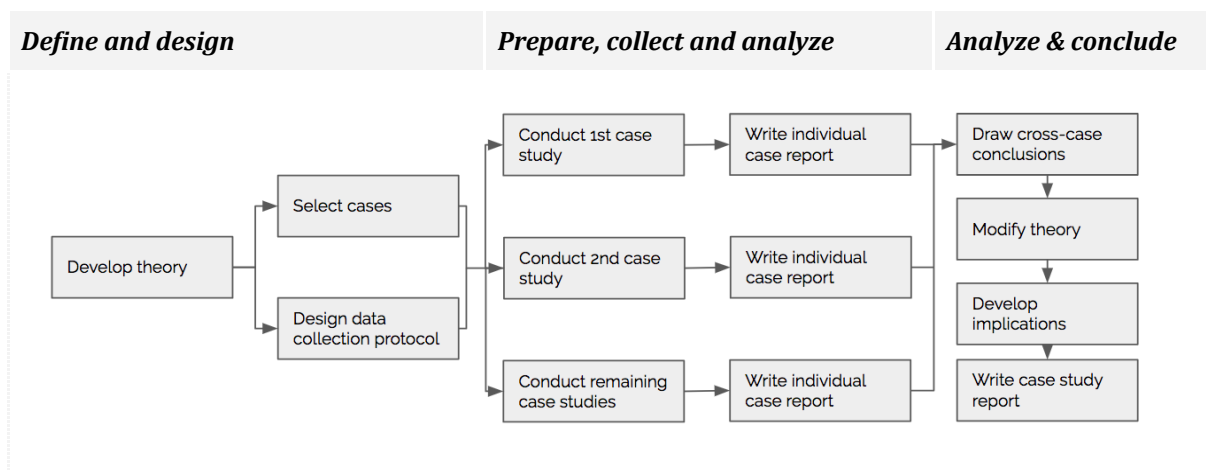


Figure 4.1.1: Visualization of case study research method based on Yin (2014) (own illustration)



The method is structured in three phases that will be followed through this chapter.

The first phase 'define and design' consists of three blocks. The block 'develop theory' was already done with the design of theoretical framework. This is the starting point for the selection of cases and design of the data collection protocol. In order to select three cases an analysis is made of all BREEAM-NL projects in The Netherlands. The data collection protocol is an elaborated version of how each case study is conducted and how data is used to draw conclusions.

In the second phase 'prepare, collect and analyse' the case studies are conducted. Each case study project is analysed and in total twelve interviews with stakeholders will be held. These are documented in individual case reports for all projects.

In the third phase 'analyze and conclude' the three case reports are compared in a cross case analysis. From this comparison of data, conclusions can be drawn.

## **Case study selection**

In the previous part it was already mentioned that a total of three case studies are executed. This part describes the selection process of the case study projects. This process starts with formulating selection criteria, an analysis of the BREEAM-NL database and ends with the selection of potential case study projects.

Selection criteria are formulated for the selection of case study projects. Some selection criteria are based on the theoretical framework and some selection criteria are based on the analysis of the BREEAM-NL database.

Based on chapter III: Theoretical Framework some selection criteria can already be formulated. The case studies must fulfill the following requirements:

- Office building in The Netherlands
- BREEAM-NL In Use certified
- Stakeholders include a tenant, asset manager and investor. Additionally, these stakeholders were already committed to the building when it was being certified.

The selection process is continued with an analysis of the BREEAM-NL project database. The analysis will provide more insight in the supply of BREEAM-NL projects. Note that this analysis is performed in the fall of 2017 and figures will change over time. Based on this analysis, additional selection criteria are formulated to enhance the representation of the case study selection.

The Dutch Green Building Council is responsible for the management and registration of BREEAM-NL certifications in The Netherlands. On their website 'breeam.nl', DGBC offers a publicly accessible database with all BREEAM-NL project registrations. Figure 4.1.2 presents a screenshot of the project map.

### *Project map*

Within the project map it is possible to sort BREEAM-NL registrations by type of certificate, building function, date of certification and project phase. All types of certificates combined, BREEAM-NL New Construction, BREEAM-NL In Use, BREEAM-NL Area Development and BREEAM-NL Demolition, represent a total of 786 certificates. 445 certificates belong to New Construction and 327 certificates belong to In Use. Only 20 certificates are issued for Area Development and Demolition.

## BREEAM-NL Project map

### Overview of BREEAM-NL project registrations in The Netherlands

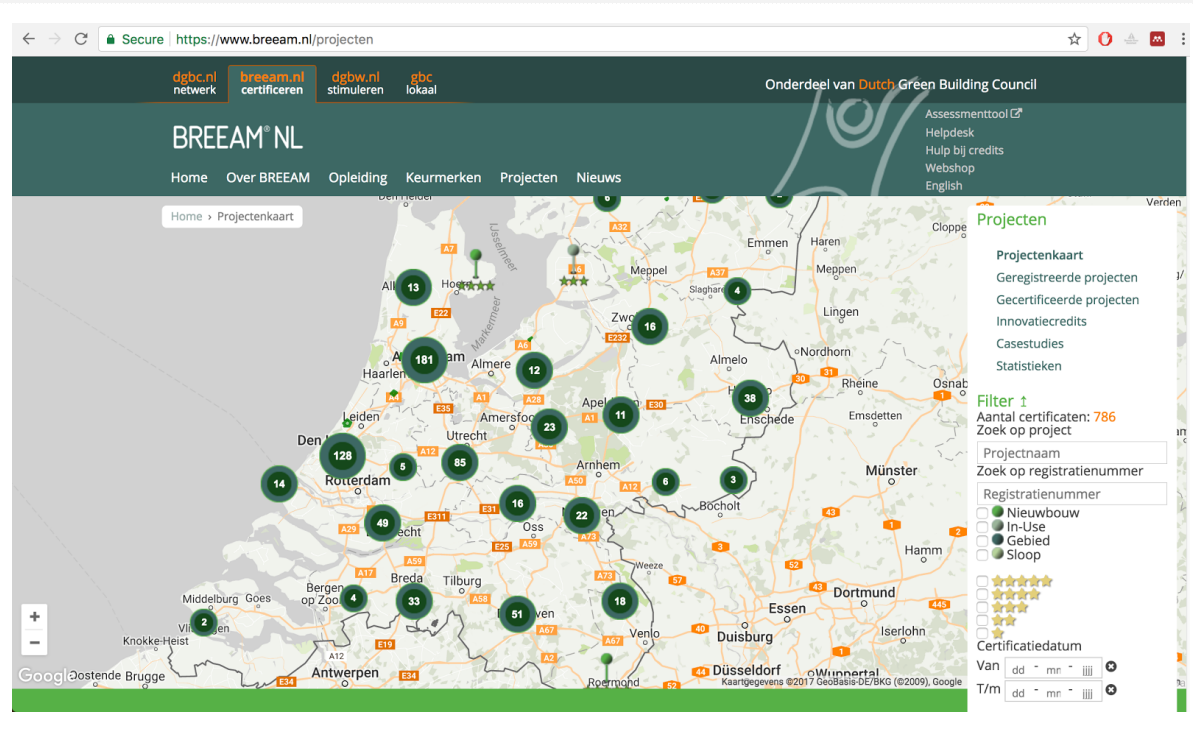


Figure 4.1.2: Screenshot of BREEAM-NL project map (DGBC, 2017)

#### Building functions

The distribution of building functions per type of certificate are presented in figure 4.1.4. The figures show two peculiarities. Firstly, there is more diversity in building functions for New Construction compared to In Use. Secondly, it becomes clear that the sum of all certificates is higher than the total certificates. The surplus of certificates is caused by mixed-use buildings that contain multiple functions and are counted for each building function. Therefore, observations that are drawn from this figure must clarify this distinction.

### BREEAM-NL certificates per building function

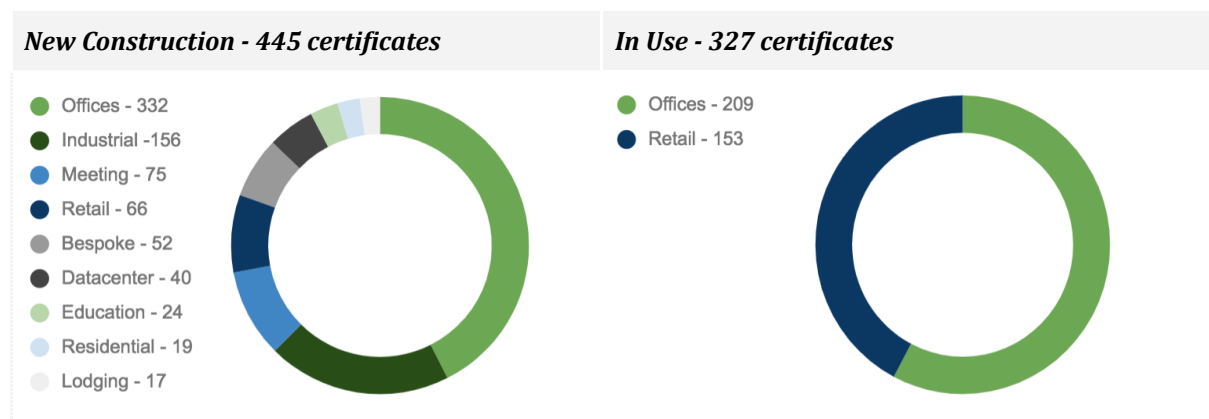


Figure 4.1.3: BREEAM-NL certificates per building function for New Construction and In Use (own illustration)

Office buildings are the most certified building function amongst both New Construction (74,5%) and In Use (63,9%). Note that in these figures monofunctional office buildings and multifunctional buildings with office space are combined. For In Use, 83,3% are monofunctional office buildings. The other 16,7% is a combination of retail and office functions in a single building. Industrial buildings score second highest for New Construction certificates. This building function is often combined with office space, for instance in distribution centres.

#### *Distribution over The Netherlands*

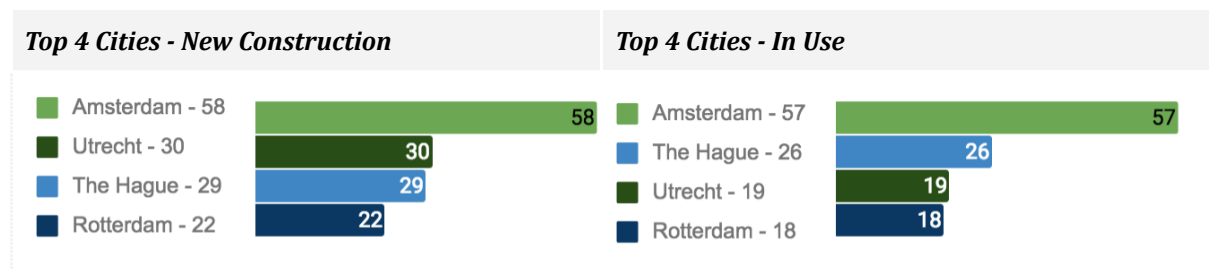
Looking at the spread of certificates over The Netherlands it is observed that most certificates are issued in the largest cities of the Randstad region. The top four cities with the most BREEAM-NL certificates are presented in figure 4.1.4.

For New Construction, Amsterdam has the highest score with 58 certification. This is followed by Utrecht (30), The Hague (29) and Rotterdam (22). Also for In Use, Amsterdam has the highest score with a total of 57 certificates. This is followed by The Hague (26), Utrecht (19) and Rotterdam (18).

Foreign investors predominate the top office locations in The Netherlands, such as Zuid-as in Amsterdam, Beatrixkwartier in The Hague and the city center of Rotterdam (ABN Amro, 2015). The locations offer relatively stable cash flows because of high occupancy rates and low vacancy risks.

The city of Rotterdam scores relatively low in certificates compared to Amsterdam. The office market of Rotterdam experiences difficulties in the recovery since the credit crisis. In 2016, the vacancy rates in Amsterdam decreased by 35 percent and in Rotterdam this was only 6 percent (Cushman & Wakefield, 2016). Rotterdam seems not able to attract international companies that currently prefer an headquarters in the capital city.

#### ***Distribution of BREEAM-NL certificates over The Netherlands***



*Figure 4.1.4: Distribution of BREEAM-NL certificates over the Netherlands - Top 4 Cities (own illustration)*

#### *Ratings*

After a project is being certified it is rated with one to five stars. The highest rating is 'Outstanding' and is achieved when a project receives five stars (>85%). The lowest rating is 'Pass' and receives one star (<30%). The distribution of BREEAM-NL ratings is presented in figure 4.1.5. In the database, most projects are rated with three stars (>55%) or 'Very Good'. This accounts for both New Construction and In Use. For New Construction there is also a large part that is rated with four stars (>70%) or 'Excellent'.

There are in total four In Use certificates rated with five stars. Three of these buildings are shopping malls, of which two are combined with office space. The fourth building is a monofunctional office building, namely the ABN-Amro head office at the Zuid-as. 23 In Use certificates are rated with four stars.

## Distribution of BREEAM-NL ratings

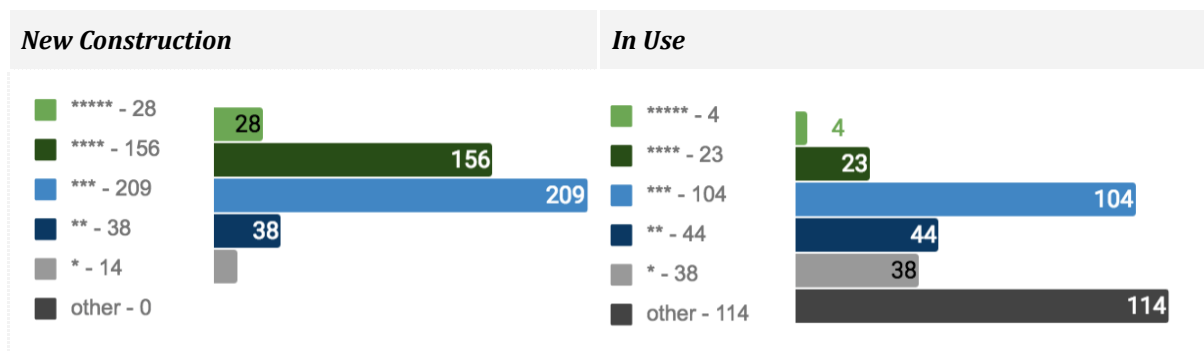


Figure 4.1.5: Distribution of BREEAM-NL ratings (own illustration)

Remarkable is that about one-third of all In Use certificates does not have a rating (other - 114). These certificates expired and were not recertified. This reflects an important difference between both types of certificates.

In Use certificates can expire, whereas certificates for New Construction cannot expire. Once an In Use certificate is issued, this certificate is valid for one year and can be extended each year up to two years if no major (negative) changes were made to the building (BREEAM-NL, 2016). After three years the In Use certificate expires and it is no longer allowed to use the certificate or BREEAM-NL logo until the building is being recertified.

From this analysis the following can be concluded:

- The most certified building function are office buildings
- Most certified buildings are located in top four cities in the Randstad region
- The most common rating is 'Very Good'

These conclusions are added to the selection criteria to enhance the representativeness of the case studies. The case study projects must fulfill the following requirements:

- Office building in The Netherlands, located in the top four cities
- BREEAM-NL In Use certified, with at least a 'Very Good' rating
- Stakeholders include a tenant, asset manager and investor. Additionally, these stakeholders were already committed to the building when it was being certified.

By combining the selection criteria with the project database, a first selection of projects can be made. There are 98 office buildings certified with BREEAM-NL In Use that received at least a 'Very Good' rating. ABN-Amro has a prominent share in this with 29 certified office buildings representing in total 286.810 sqm.

ABN Amro is one of the largest commercial banks in the Netherlands. In line with their sustainability policy (ABN Amro, 2017), ABN Amro certified 40 of their offices and stores with in-use certificates. This includes their 126.000 sqm headquarters located at the Amsterdam Zuid-as.

The location requirement reduces the selection towards 43 office buildings that are located in the top four cities. Clients that commissioned the certifications include large asset managers, such as Union Investment GmbH, CBRE Global Investors and Bouwinvest. These office buildings are often multi-tenant according to a search on Google Maps. Information about the investors is not directly available.

The last step in the case study selection process is dependent on the ability of stakeholders to collaborate. The three case studies that were selected are presented in table 4.1.6.

## Case study selection




<b>Building</b>	<b>Location</b>	<b>Stakeholders</b>	<b>GFA</b>	<b>Certification</b>
 <p><i>Haagsche Zwaan</i></p>	The Hague	<i>Tenant:</i> a.o. Q8, Deloitte <i>Asset Manager:</i> Union Investment GmbH <i>Investor:</i> confidential <i>Property Manager:</i> Savills	17.800 sqm	Opening: 2010 Certification: 2015
 <p><i>WTC The Hague</i></p>	The Hague	<i>Tenant:</i> a.o. PwC, Belastingdienst <i>Asset Manager:</i> Bouwinvest <i>Investor:</i> bpfBOUW <i>Property Manager:</i> CBRE	72.800 sqm	Opening: 2005 Certification: 2016
 <p><i>Hojel City Center</i></p>	Utrecht	<i>Tenant:</i> de Volksbank <i>Asset Manager:</i> CBRE Global Investors <i>Investor:</i> confidential <i>Property Manager:</i> JLL	40.022 sqm	Opening: 1994 Certification: 2015

Table 4.1.6: Case study selection (own illustration)

## Design of data collection protocol

A data collection protocol is essential for conducting a multiple case study research. It is a procedure that guides the researcher in carrying out the data collection and therefore increases reliability (Yin, 2014).

The data collection protocol is build up with four parts. It starts with an overview of the case study research that presents the mission and objectives. This is followed by a data collection plan that describes which sources of data are used to collect the data that is needed. A format is designed for the data collection questions which will be used during the interviews. Lastly, the guide for the case study report is described.

### Overview of the case studies

Three case studies are conducted with The Haagsche Zwaan, WTC The Hague and Hojel City Center. In each case study separate interviews are held with stakeholders.

The mission is to understand why an office building that is already in use is being certified with BREEAM-NL In Use. Objectives are:

- Analyse each project by gathering information about the building, certificate and stakeholders.
- Reconstruct the certification process from initiative to implementation.
- Evaluate the interests and impact regarding the implementation of BREEAM-NL In Use for each stakeholder.

The Theoretical Framework from Chapter 2 is used as starting for the case study design. It defines the scope and provides the interests that are evaluated.

### Data collection plan

The data collection plan describes the sources of evidence that are used to collect data. This is divided in a project analysis and interviews with stakeholders.

The project analysis is an objective description of each case study project and presents facts and figures. The project analysis combines qualitative and quantitative data that is collected through a document study based on sources found by searching the internet. It contains a brief description of the building, its stakeholders and the certificate. Other relevant data that is collected from the interviews will be added to the project analysis afterwards.

Separate interviews are conducted with a tenant, asset manager, investor and property manager. The aim of the interviews is two-sided. Firstly, it is aimed to reconstruct the certification process. Interviewees will be asked to describe their involvement during the certification process and how they collaborated with other stakeholders. Secondly, it is aimed to identify interests and evaluate the impact of certification for each stakeholder. The interviewee will be provided with the interests that followed from the theoretical framework.

Figure 4.1.7 illustrates the model for data collection. Each step in the data collection process ends with a documentation for the case study report.

## Data collection model

### Overview of the data collection process

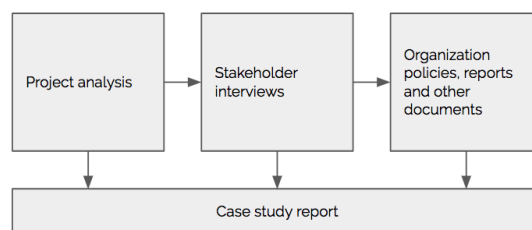


Figure 4.1.7: Data collection model (own illustration)

During the interviews the interviewees are provided with an A3-format. The format helps with structuring the interview and stimulates the interviewee to answer the questions. Because often time for interviews is limited, this gives the interviewee a sense of the length of the interview. The interview will be recorded and transcribed afterwards. Afterwards, the transcripts are sent to the interviewee for a review.

Being an observer of real life phenomenons makes the researcher dependent on its interviewees. Therefore, the interviews should be designed as simple as possible for the interviewee. This requires some flexibility and preparation of the researcher. As a result the interviews are designed to fit in one hour.

It is important to highlight that individuals are interviewed while the unit of analysis is the organization. Conclusions for each organization can therefore not be primarily based on the interviewees as a source of information. Therefore, interviewees will be asked to complement their answers by referring to documents and policies of the organization.

### Data collection questions

A data collection format is designed to structure the project analysis and interviews. This format is build up with three parts: project analysis, reconstruction certification process and evaluation of interests and impact.

In the project analysis, data is collected and categorized in building information and certificate information. An example of this format is presented in figure 4.1.8. In building information, general information is summarized for the building metrics, location and stakeholders. Narrative details about the building are given in the project description.

Certificate information provides all details regarding the certificate performance, date of certification and expiry date. This information can be found for each project on the website of DGBC. The third category presents key figures of the building (this part was removed afterwards, because interviewees were not able to share this data).

## Data collection format - Part 1

### Project analysis

**Case:** \_\_\_\_\_

**TU Delft**

## Building image

**Certificate information**  
Certificate information covers information about the date of certification, assessor and scores for Asset, Management and Use. This data is needed to compare case studies on their sustainable performance.

Certificate: BREEM-NL in Use \_\_\_\_\_  
Date of certification: \_\_\_\_\_  
Expiry date: \_\_\_\_\_  
Assessor: \_\_\_\_\_

Score:  
Asset: \_\_\_\_\_ %  
Management: \_\_\_\_\_ %  
Use: \_\_\_\_\_ %

Asset	Management	Use
Table	Table	Table

**Building information**  
Building information covers general information about the age of the building, location and stakeholders. This data is needed to compare other case studies on location, GFA and functions.

Location: \_\_\_\_\_  
Address: \_\_\_\_\_  
Postal code: \_\_\_\_\_

GFA: \_\_\_\_\_ sqm  
Opening: \_\_\_\_\_  
Building function: \_\_\_\_\_  
Energy label: \_\_\_\_\_  
Other certificates: \_\_\_\_\_

Owner: \_\_\_\_\_  
Manager: \_\_\_\_\_  
Tenants: \_\_\_\_\_

Project description:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Key figures**  
In this part stakeholders will be asked to provide quantitative information about rents, costs and use. By having insight in these figures over a certain period wherein the certification was executed some price or use effects could become visible.

<p><b>Asset value</b> The asset value that is calculated annually by the owner.</p> <p style="text-align: center; font-size: 1.5em;">Figure</p>	<p><b>Rent rate</b> The annual rent per sqm that is paid by the tenant.</p> <p style="text-align: center; font-size: 1.5em;">Figure</p>	<p><b>Capital Expenditures</b> Required investments by the owner. This includes fiscal benefits and other incentives that come with investing in certified buildings.</p> <p style="text-align: center; font-size: 1.5em;">Figure</p>
<p><b>Occupancy rate</b> The occupancy rate is calculated by the owner by dividing the leased floor area with lettable floor area.</p> <p style="text-align: center; font-size: 1.5em;">Figure</p>	<p><b>Energy consumption</b> The energy consumption is calculated by the owner. This includes electricity, heating and cooling.</p> <p style="text-align: center; font-size: 1.5em;">Figure</p>	<p><b>Operating costs</b> The annual operating costs per sqm that is paid by the owner. This includes maintenance costs and utilities.</p> <p style="text-align: center; font-size: 1.5em;">Figure</p>

Figure 4.1.8: Data collection format Part 1 - Project analysis (own illustration)


The interviews are aimed to reconstruct the certification process and evaluate interests and impact for each stakeholder.


During the interviews, stakeholders are provided with all three data collection formats. Firstly, stakeholders are asked to confirm their stakeholder description that was made on beforehand. Then the stakeholder is asked to describe its involvement during the certification process. The stakeholder is provided with a timeline and is asked to draw the process and collaboration with other stakeholders. The timeline is also aimed to stimulate the stakeholder to describe the process verbally. This is recorded and added to the case study report afterwards. An example of the data collection format part 2 is presented in figure 4.1.9.

## Data collection format - Part 2

### Reconstruction certification process

Case: \_\_\_\_\_  
Stakeholder: \_\_\_\_\_





Source: \_\_\_\_\_

### 2. Reconstruction process

The aim of this part is to reconstruct the certification process. An empty timeline is given below.

Could you explain how your organization was involved during the certification process and fill in the timeline? An example of how this could be done is also given.

Some questions that could help you start:

Was your organization involved in the certification process?

When was the moment that your organization was involved in the certification process? Initiative, during certification or after certification? Involvement could also be defined as the moment that your organization received an email about the certification.

How were you involved in the certification process?

If your organization was not involved in the process, would you have preferred to be involved? And why?

### 1. Stakeholder description

This part contains general information about the organization and the role of the interviewee within the organization.

Could you confirm the text below? Do you have suggestions for information that should be added?

Type of stakeholder: \_\_\_\_\_  
 Name of organization: \_\_\_\_\_  
 Tenancy contract since: \_\_\_\_\_  
 Name of interviewee: \_\_\_\_\_  
 Role within organization: \_\_\_\_\_  
 Description of organization: \_\_\_\_\_

**Please fill in the timeline below**

	2010	2011	2012	2013	2014	2015	2016	2017
Investor								
Asset Manager								
Tenant								
Building Manager								
_____								

**Example of timeline**




Figure 4.1.9: Data collection format part 2 - Reconstruction certification process (own illustration)

In the last part of the interview, the stakeholder is asked to evaluate their interests and impact regarding certification. Each type of stakeholder is provided with a data collection format that lists the interests that were selected for their type of stakeholder. An example of the data collection format for tenants is presented in figure 4.1.10.

Each interest is shortly described. Firstly, the stakeholder is asked to explain for each interest whether it was applicable for their organization. Additionally, they are asked to substantiate each answer with references to policies, reports and other documents of their organization. Secondly, the stakeholder is asked to evaluate the impact of each interest. Lastly, the stakeholder is asked whether the impact was above or below their expectations.

Each answer is recorded, transcribed and afterwards added to the case study report. The format also includes multiple choice boxes for each question and interest. This is done to



stimulate the stakeholder to answer each question and gives the interview the opportunity to ask why an answer was given.

## Data collection format - Part 3

### Evaluation of interests and impact

Case: \_\_\_\_\_  
Stakeholder: \_\_\_\_\_



#### 3. Drivers regarding a certified building

In this part you are asked about the interests of your organization towards a certified building. A theoretical framework was designed to summarize the interests that were identified in previous research. Each of these interests are described below.

Please follow this guide to answer the question:

1. Could you explain for each of the interests below whether they were applicable in case of your organization? It is highly appreciated if you answer with references to your organization's policies or other documents.
2. Could you rate, from your organization's perspective, how much influence each of the interests had in your organization's decision to obtain a certificate for this building?

Achieving sustainability ambitions or CSR	Sustainability ambitions are often described in the organization's policies, or can be found on their website, ambitions or CSR. Often the term Corporate Social Responsibility is used.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Decreased risks	Risks are often related to regulatory risks (Fuerst & McAlister, 2018) and future-proof assets (GPII, 2017).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SR	Social Responsible Investments are used amongst investors and their shareholders to communicate sustainable business strategies (Eichholtz, Kok & Vonder, 2016).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
GRESB rating	The Global Real Estate Sustainability Benchmark, provides an index where real estate portfolios are compared on their sustainable performance (GRESB, 2017).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reputational benefits	Communication of sustainability could lead to competitive advantages. It could be used to support the firm's brand, attract human capital and improve stakeholder reputation (Van der Noordt & Hoopede, 2013).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increased asset value	The asset value could increase because of higher rental income (increased demand, lower holding costs, lower taxes) and lower regulatory risks (Fuerst & McAlister, 2018).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lower holding costs	Reduced holding costs are the result of higher tenant retention, fiscal benefits, and other incentives (Fuerst & McAlister, 2018).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increased rental income	Certified buildings have higher rental incomes compared to non-certified buildings (Devine & Kok, 2016; Eichholtz, Kok & Quigley, 2016). The rental premium results from a higher market demand, higher tenant retention and less vacancy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduced operating costs	Certified green buildings offer reduced operating costs compared to non-certified buildings (Devine & Kok, 2016). This results from less energy consumption and decreased maintenance costs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increased occupancy rate	Certified buildings have higher occupancy rates compared to non-certified buildings (Devine & Kok, 2016). This results from higher tenant retention and higher demand.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Insight in sustainable performance	Certification of a building gives insight in a building's sustainable performance. The outcome could be used to improve the building, analyze portfolios and can be communicated to third parties.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

#### 4. Evaluation of certification

Now you are asked to evaluate the impact of the certification on your organization and/or building.

Please follow this guide to answer the question:

1. Could you explain how each of the interests was realized from the moment the certificate was obtained? It is highly appreciated if you answer with references to your organization's policies or other documents.
2. Could you rate how much influence each of the interests have realized after the certificate was obtained?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

#### 5. Recap

This is the last part of the interview. During the recap a summary of the answer is given by the interviewer. In the last few questions the interviewee is asked about future steps on this topic, missing information and recommendations.

Would your organization continue with the certification of its buildings? Why? What would you do different? How? After the current certificate expires, would you try to recertify? Why?

Do you have any further comments? Do you have any recommendations?

Thank you for having this interview!

Figure 4.1.10: Data collection format part 3 - Evaluation of interests and impact (own illustration)

### Guide for the case study report

For each case study and individual report is written. The data collection formats that were designed are used to outline the case study reports. The case study reports combine all gathered data from the project analysis, transcripts from interviews and referenced organizational documents.

Each case study report starts with a description of the project and the project analysis. Then each stakeholder presented with a description of their organization and the context of stakeholders is visualized.

All answers regarding the reconstruction of the certification process are combined into one description. The timelines drawn by the stakeholders and the process description are combined into one visualization of the certification process.

The answers of the stakeholders regarding the evaluation of interests and impact are combined into one table. Referenced documents are integrated in their answers.

Finally, each case study report ends with a summary of the most important findings.

The first case study is the Haagsche Zwaan and starts on the next page.

## 4.2 Case Study I: Haagsche Zwaan

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### Introduction

The first case study is the Haagsche Zwaan in The Hague (figure 4.2.1). Interviews were held with asset manager Union Investment GmbH, tenant Deloitte and property manager Savills.

### *The Haagsche Zwaan*

#### *Beatrixkwartier, The Hague*



*Figure 4.2.1: The Haagsche Zwaan building in The Hague*

*Source: [https://www.haagschezwaan.com/.imaging/mte/uir-objects-module-theme/1200/dam/haagschezwaan.com/The-building/DenHaag-Haagsche-Zwaan-025\\_1609.jpg/jcr:content/DenHaag-Haagsche-Zwaan-025\\_1609.jpg](https://www.haagschezwaan.com/.imaging/mte/uir-objects-module-theme/1200/dam/haagschezwaan.com/The-building/DenHaag-Haagsche-Zwaan-025_1609.jpg/jcr:content/DenHaag-Haagsche-Zwaan-025_1609.jpg)*

## Project analysis

### Building information

*General information about the building, location and stakeholders.*

Location:	The Hague
Address:	Schenkkade 50
Postal code:	2595 AR
GFA:	17.817 sqm
Opening:	October 26th, 2010
Building function:	Office
Energy label:	B
Other certificates:	-
Investor:	confidential
Asset Manager:	Union Real Estate Investment GmbH
Tenants:	Deloitte, Q8 and many more
Property Manager:	Savills

### *Project description*

Haagsche Zwaan is a multi-tenant office building located in the business district of The Hague. The building is over 70 meters high and has 20 floors. It is an icon in the skyline of The Hague because of the swan-like shape and its glass facade. The building was designed by ZZDP Architects and developed by OVG. It was originally built for one of the main tenants Deloitte that combined several offices in the region into one office. During the construction of the building Deloitte's demand for office space decreased because of the credit crisis. With the result that less floors were rented by Deloitte and the building had a high vacancy level from the moment the building was opened in 2010. Over the past few years new tenants entered the building because of economic upturn and now it is almost fully occupied. In 2015, the building was certified as 'Very Good' with BREEAM-NL In Use.

### Certificate information

*Information about the date of certification, assessor and scores for Asset, Management and Use.*

Certificate:	BREEAM-NL In Use 2014 v1.0
Date of certification:	August 25th, 2015
Expiry date:	August 25th, 2018
Assessor:	ir. Hannah van der Leij
Score:	***
Asset:	56,34 %
Management:	29,55 %
Use:	-

A detailed overview of assessment ratings per category is presented in figure 4.2.2.

## Assessment per category

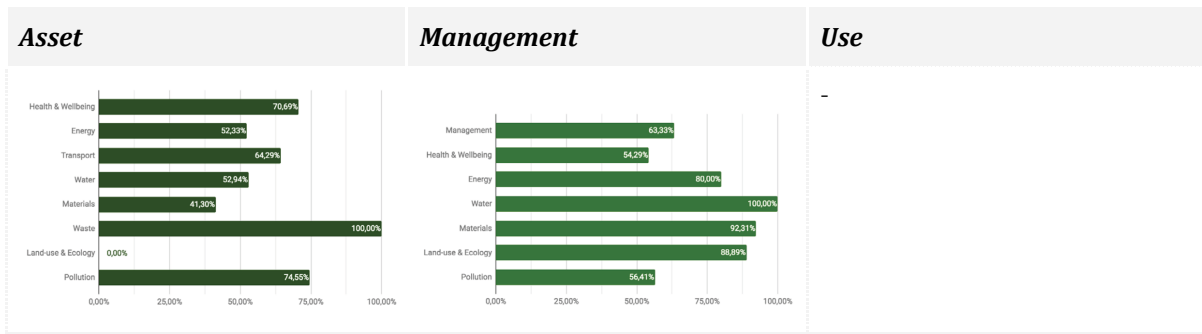


Figure 4.2.2: Assessment per category (own illustration)  
Source: <https://www.breeam.nl/projecten/de-haagsche-zwaan-0>

## Stakeholders

During the project analysis it was found that tenant Deloitte had an important role in the initiation of the building development. Therefore, Deloitte was selected for the tenant interview. The asset manager of the Haagsche Zwaan is Union Investment GmbH. The German investment manager has directed all contacts regarding the building towards property manager Savills. Unfortunately, no organization was found for the 'investor' stakeholder. Union Investment GmbH was not able to share information about their investors because confidentiality agreements.

A schematic overview of the stakeholders of the Haagsche Zwaan is illustrated in figure 4.2.3.

## Stakeholders

### Schematic overview

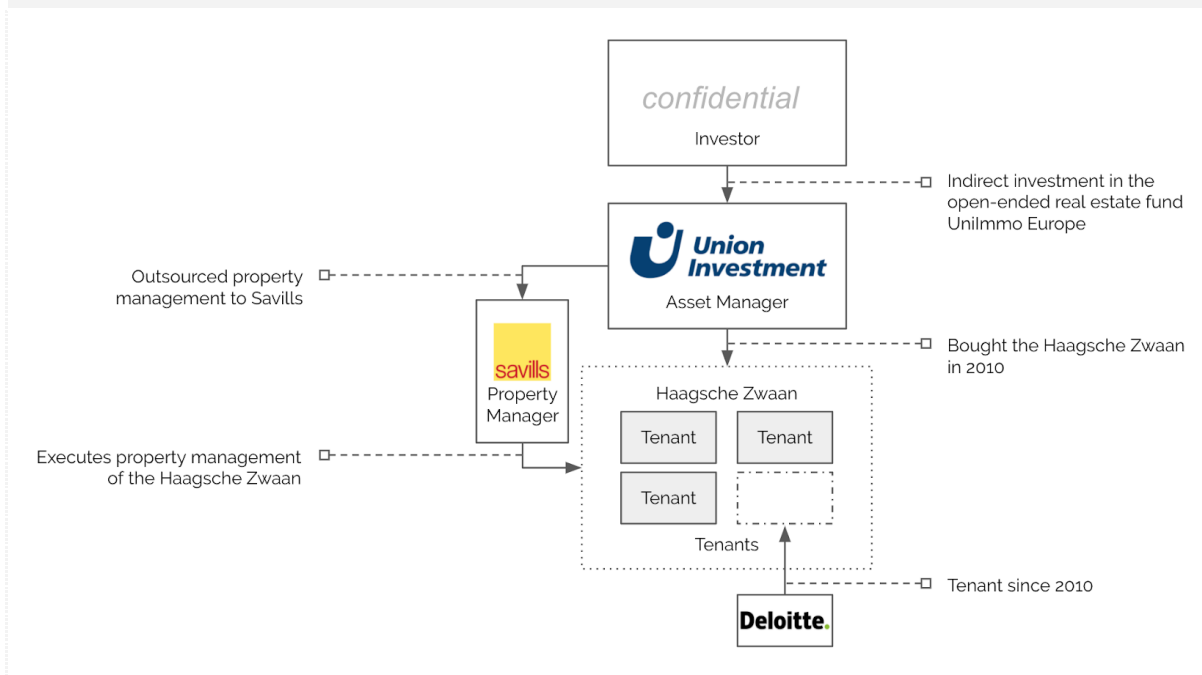


Figure 4.2.3: Schematic overview of stakeholders concerning the Haagsche Zwaan (own illustration)

Each of the stakeholders is introduced with a brief description of their organization.

#### *Union Investment GmbH*

Union Investment Real Estate GmbH is the largest property investment association in Germany. It is one of the fifteen subsidiaries of Union Asset Management Holding AG, an investment arm of the DZ Bank Group. Union Investment has a total of 365 assets under management (Union Investment, 2017). The assets are spread over 23 countries and have a total value of 29,6 billion euros. Union Investment offers a range of funds categorized in Global, European, German and thematic portfolios. The Haagsche Zwaan is part of the open-ended real estate fund Unilmmo Europe.

#### *Deloitte*

Deloitte Touche Tohmatsu Limited, better known as Deloitte, is one of the 'Big Four' accounting firms in the world. In the Netherlands, Deloitte provides corporate companies with professional services in the fields of accounting, consultancy and financial advice. Deloitte NL counts a total of 5,047 employees (Deloitte NL, 2017). Their fifteen offices are spread all over the country and are often located in office districts of the largest Dutch cities. As part of their operational strategy, several offices in the region of The Hague were combined in 2010 into one location: the Haagsche Zwaan.

#### *Investor*

confidential

#### *Savills*

Savills is a globally operating firm that provides a wide range of real estate services and consultancy (Savills, 2017). It is listed on the London Stock Exchange and has over 700 offices and 30.000 employees all over the world. In the Netherlands, Savills offers services ranging from project consultancy to building management. In case of the Haagsche Zwaan Savills is responsible for the property management. This entails building maintenance and management of tenancy contracts. Their total building management portfolio in the Netherlands covers 1.2 million square meters.

## **Reconstruction of certification process**

The certification process of the Haagsche Zwaan was reconstructed based on the interviews with Union Investment GmbH, Deloitte and Savills.

The idea of certifying the Haagsche Zwaan with BREEAM-NL In Use was initiated in 2014 by Union Investment. Within Union Investment the asset manager of the fund can make the decision to obtain a green building certificate for a certain building. When an asset manager decides to obtain a certificate there are two possibilities. One possibility is to assign a sustainability manager within Union Investment. The sustainability manager then decides which certificate does fit best with the building, local market and budget. The certification is then tendered and Assessor is commissioned. The other possibility is an initiative of the asset manager in collaboration with the property manager and local parties. This was done in case of the Haagsche Zwaan.

The asset manager of Union Investment notified property manager Savills and commissioned C2N Advisors for the execution of the certification process as a BREEAM Expert. C2N is a local real estate consultant and has experience with BREEAM, LEED and WELL certification, as well as with GRESB-ratings. C2N started with a quickscan of the building in order to design a plan of approach. The quickscan covered an analysis of the current situation of the building and the desired situation of the building. This was translated into a matrix and from this an indicative score was calculated. This led to the design of a plan of approach. In this plan of

approach was described what kind of documentations and information had to be collected for the BREEAM Assessor. Also quick wins were identified. The second plan of approach described the measures that were needed to be taken over a period from two to five years. Savills was responsible for collecting a large part of the required documentations and filing this on the portal of the Dutch Green Building Council. Examples of what was required was detailed information regarding the energy label, building data, development details, maintenance contracts, cleaning procedures and exploitation data.

Union Investment decided to assess the Haagsche Zwaan with the 'Asset' and 'Management' assessment. The building was not assessed with the 'Use' assessment and there is a little chance that this will be done in the near future. The reason for this is because the Haagsche Zwaan is a multi-tenant building. The 'Use' assessment needs all the tenants to be involved and it is very difficult to expect the same involvement from all tenants. Savills argued that the feasibility of the 'Use' assessment increases when there are less tenants in a building or in case of a single tenant building. It is important to develop a shared vision on sustainability and this is easier with less people involved. The tenants did not have an active role in the certification process. According to Deloitte, the tenants received an email in April 2015 with an advance notice of the property manager Savills. In this email tenants were notified about the sustainability assessment of their building and it contained information about the BREEAM certificate.

On the 25th of August 2015, the Haagsche Zwaan was assessed by Build2Live and received a BREEAM-NL In Use certificate with the rating 'Very Good'.

The reconstruction of the certification process is visualized in figure 4.2.4. The timeline shows the actions that were taken by each stakeholder and which stakeholders were involved from the moment of initiative until receiving the certification.

## Certification process

### Schematic overview of certification process based on stakeholder interviews

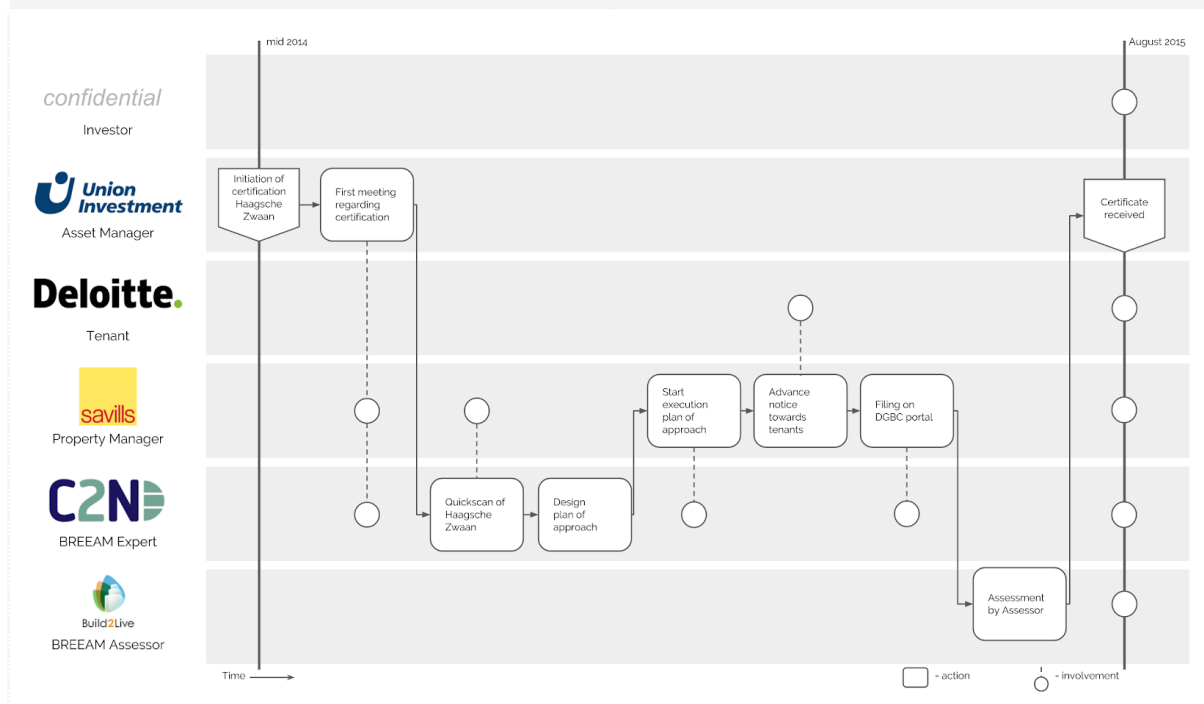


Figure 4.2.4: Schematic overview of the certification process of the Haagsche Zwaan based on stakeholder interviews (own illustration)

## Evaluation of interests and impact

Each stakeholder was questioned about the interests of their organisation regarding BREEAM-NL In Use. The results are summarized in table 4.2.5.

### Evaluation of interests

#### Applicability of interests and impact from a stakeholder perspective

Interest	Asset manager 	Tenant <b>Deloitte.</b>	Investor <i>confidential</i>
<i>Achieving sustainability ambitions or CSR (Eichholtz, Kok &amp; Quigley, 2016)</i>	Sustainability is a key element in the global investment strategy of Union Investment (Union Investment, 2016a). Over the past ten years, Union Investment has worked with sustainability tools and developed methods to achieve the main goal, which is optimizing the portfolios and buildings. Union Investment has sustainability goals for 2020, 2030 and 2050. These goals are for instance related to portfolio KPI's of CO2-reduction, energy consumption, green lease etc. On building level, certification is a tool to make sustainability transparent for users and other stakeholders. Targets regarding green building certificates depend on the strategy per fund. The type of certificate is examined per individual building (Union Investment, 2016a).	In 2012, Deloitte has set a target for 2016 for having 70% of office space certified with BREEAM-NL of at least 'Very Good' (Deloitte, 2012). BREEAM was chosen because of the wide application in The Netherlands and it goes further than energy labels. Deloitte was not actively involved in certification of the Haagsche Zwaan. As an organization, if you want to achieve a real sustainability impact you must look towards the whole building portfolio instead of single buildings. For instance, 1600 sqm in Zwolle is not interesting compared to 30.000 in Amsterdam. In our corporate strategy we want to 'make an impact that matters' (Deloitte NL, 2017). We did this with our headquarters The Edge in Amsterdam by making it the most sustainable building of The Netherlands.	
<i>Decreased risks (Fuerst &amp; McAllister, 2011a)</i>	Union Investment has buildings in over 22 countries. In each country the Building Codes, market and expectations are different. We maintain a global strategy that aims to be ahead of for instance regulatory risks in all countries. Green building certificates are standards that we use to achieve this.	A BREEAM certificate can contribute to decreased risks. For instance, the new policy that will require a minimum energy label C for offices in 2023. A certified building will not be affected by this. However, this does not necessarily account for certified buildings. There are also energy efficient and sustainable buildings that are not certified.	
<i>SRI (Eichholtz, Kok &amp; Yonder, 2015)</i>	Union Investment embraced the concept of SRI in an early stage and is committed demonstrate sustainability (Union Investment, 2016a). A		

	<p>comprehensive analysis was conducted of the sustainability of the global real estate fund portfolios. The results are published and make sustainability benchmarking possible. Green building certificates are also included.</p>	
<i>GRESB rating</i>	<p>GRESB is used to rate our nine funds. Depending per fund, Union Investment scores from average to very high. Points can be received for BREEAM and other green building certificates. However, we do not just certify our buildings for a higher GRESB rating.</p>	
<i>Reputational benefits (Van der Voordt &amp; Koppels, 2013)</i>	<p>The sustainability of the assets is not just demonstrated with a green building certificate. It is part of the company strategy. Union has developed instruments to analyze the building performance at different levels. This is done every year so it can be assured that the settled standards are maintained in time. Union manages different kinds of funds. Green building certification will depend on what the investors of each fund are focused on. Union is always trying to improve the building performance but not necessarily with certificates. The overall goal is to improve the economic performance of the portfolio and make it more attractive for investors. There are several communication instruments (sustainability reports, website, meetings, etc) that are used to improve the transparency of what is done to build more confidence for investors.</p>	<p>BREEAM and similar green building certificates are becoming a standard for organizations of our size. The Haagsche Zwaan does not really communicate the sustainability of our organization. We made a statement with The Edge in Amsterdam, which supported Deloitte as a brand. Sustainability is broadly supported within our organization. Multiple initiatives help making Deloitte stand out of the competition.</p>
<i>Increased asset value (Fuerst &amp; McAllister, 2011a; Wiley, Benefield &amp; Johnsen, 2010)</i>	<p>Certification can have a positive effect on market value. However, high scores become more important in market segments where certifications become standard. This indicates that certification alone is not enough (Union Investment, 2017b). Certification makes a building more competitive in the market, but this is</p>	



	<p>very hard to quantify. Our buildings are almost always certified with at least BREEAM 'Very Good' without any physical changes. This is because we are always busy improving our buildings. This is not possible for companies that do maintenance every ten years. If costs for building improvements and certification are made, this is often paid back through having a better product. The building consumes less, increased marketing value, contributes to GRESB ratings, improves tenant satisfaction/relationships. All of this is very hard to quantify. Our buildings are not just certified to reimburse the investment.</p>	
<p><i>Lower CAPEX (Fuerst &amp; McAllister, 2011a)</i></p>	-	
<p><i>Increased rental income (Devine &amp; Kok, 2015; Fuerst &amp; McAllister, 2011a)</i></p>	<p>Certification can have positive effect on (net) rental income. This is probably because the market regards energy as a driver of value (Union Investment, 2017b). If a building consumes less energy and water, the tenant will pay less service costs. The ability to offer our services for a better price can be attractive for potential tenants.</p>	
<p><i>Reduced OPEX (Devine &amp; Kok, 2015)</i></p>	<p><i>See increased rental income</i></p>	<p>The BREEAM certificate of the Haagsche Zwaan did not influence the service costs over time. After the building was certified there was also no decrease in energy consumption. Last year we have asked the property manager to instal energy meters for each floor. Usually the total energy costs were split between all tenants. We have insight in the energy consumption of all our fifteen offices in The Netherlands. This has already lead to a discussion with one of the building owners that promoted the building as being sustainable, while the energy consumption was higher than the average.</p>
<p><i>Increased occupancy rate (Devine &amp; Kok, 2015)</i></p>	<p>Certified office space can be an advantage for</p>	<p>BREEAM and similar green building certificates are</p>

	<p>organizations but it is not often a requirement. Some tenants, mainly larger organizations like Deloitte, have this preference. But we have all kinds of tenants, also smaller organizations.</p>	<p>becoming a standard for organizations of our size. Q8, the other tenant, would probably have also taken it into their decision. However, a certificate is just a small part of the decision to rent space in a certain building. These organizations look for more factors that determine this decision such as a large office building, strategic location, open floors and good architecture.</p>
<p><i>Insight in sustainability performance</i></p>	<p>The core of sustainability management at Union Investment is the Portfolio Sustainability Management platform (PSM) (Union Investment, 2016). The software delivers insight in sustainability performance of portfolios and objectives that derived from it. PSM manages three instruments: KPI's, Sustainable Investment check and Internal Benchmarking. From this, goals are set for building improvement and measures are discussed. When a certificate for a building is obtained, there is insight in the quality of the building. However, this does not mean that users will operate in a proper way. Therefore, sustainability goes further than certification.</p>	<p>Deloitte has insight in the energy consumption of all fifteen offices in The Netherlands. The statistics are monitored and negative developments are identified and examined. Deloitte also calculates the organizational carbon footprint every year and sets ambitious targets to reduce this (Deloitte NL, 2017). But the feasibility of these targets depends on many factors. If the economy grows and so does our organization, more office space is needed as well as cars. With the result that the target is not achieved. However, we are able to steer these trends by for instance stimulating the use of public transport.</p>
<p><i>Other comments</i></p>	<p>The 'Use' Assessment is very challenging for multi-tenant buildings. In Germany there are three buildings that have this certificate, one of them is ours. The dilemma is the split-incentive, we pay for the certificate and tenants get the benefits because of lower service costs. The issue is that consumption behaviour of tenants is not within our influence. If tenants do want this certificate, we are happy to deliver the full package but this has not yet occurred. For example, in case of hotels this is even more difficult because they must change their own building management and they are not always willing to do that.</p>	<p>Experience tells, when it comes to sustainable performance, that the influence of one tenant in a multi-tenant building is very small. This triggers an internal discussion about making impact in the bigger picture. We can take sustainable measures, but when the tenant next door opens the windows all day there is no win. It is difficult to create a shared vision amongst multiple tenants. To improve the sustainability of the Haagsche Zwaan tenants must be made more conscious. We have learned this with The Edge, when parking your car you see electric chargers. Sustainability and public transportation data is presented in the atrium.</p>

**Table 4.2.5: Applicability of interests and their impact from the stakeholder perspective (own illustration)**

## **Most important findings**

### *Project analysis*

- Haagsche Zwaan is a multi-tenant office building and received a BREEAM-NL In Use 'Very Good' rating.

### *Certification process*

- The asset manager initiated the certification process.
- The asset manager involved the property manager and a BREEAM Expert.
- The property manager is responsible for collecting a large part of the required documents.
- The 'Use' assessment is not preferred for multi-tenant buildings because the feasibility decreases when more tenants are involved.
- The tenants were not involved and only notified about the certification process.

### *Evaluation of interests and impact*

- An international asset manager can use green building certificates to maintain a international sustainability strategy.
- Investors that invest in non-listed real estate funds are confidential.
- Tenants can use green building certificates for their sustainable real estate strategy.
- A certificate does not have to result in less service costs for tenants.

## 4.3 Case Study II: WTC The Hague

### Introduction

The second case study is the World Trade Center in The Hague (figure 4.3.1). Interviews were held with investor bpfBOUW, asset manager Bouwinvest, tenant PwC and property manager CBRE.

### *World Trade Center The Hague*

#### *Beatrixkwartier, The Hague*



*Figure 4.3.1: The World Trade Center building in The Hague*

Source:

<http://www.belastingwinkelrotterdam.nl/clienten/wp-content/uploads/sites/2/2015/12/WTC.jpg>

## Project analysis

### Building information

*General information about the building, location and stakeholders.*

Location:	The Hague
Address:	Prinses Margrietplantsoen 25
Postal code:	2595 AM
GFA:	72.805 sqm
Opening:	2005
Building function:	Office
Energy label:	A
Other certificates:	-
Investor:	bpfBOUW
Asset Manager:	Bouwinvest
Property Manager:	CBRE
Tenants:	PwC, Belastingdienst, AstraZeneca and more.

### *Project description*

WTC The Hague was built in 2005 next to the Beatrixkwartier station in the Hague. It is one of the four buildings of the Prinsenhof building complex. The last developments of the complex were completed in 2006. In 2012, Tower E was officially recognized as a World Trade Center. The top of the tower reaches 109,5 meter, what makes it a remarkable building in the skyline of the Hague. A large part of the building is reserved for office space, but the building also has a hotel, apartments, restaurants and other functions. In 2016, it was the first multi-tenant building in The Netherlands that received a BREEAM-NL In Use certificate with the 'Excellent' rating. The building was constructed with sustainable materials, has a heat storage and only uses renewable energy.

### Certificate information

*Information about the date of certification, assessor and scores for Asset, Management and Use.*

Certificate:	BREEAM-NL In Use 2014 v1.0
Date of certification:	December 16th, 2016
Expiry date:	December 16th, 2019
Assessor:	Marleen Lubberding
Score:	****
Asset:	70.04 %
Management:	73.71 %
Use:	-

A detailed overview of assessment scores per category is presented in figure 4.3.2.

## Assessment per category

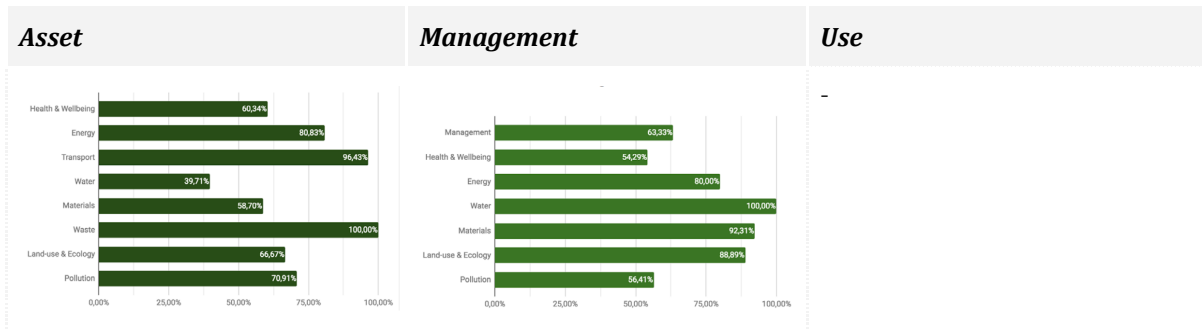


Figure 4.3.2: Assessment per category (own illustration)  
 Source: <https://www.breeam.nl/projecten/wtc-hague-kantoren-0>

## Stakeholders

The stakeholder selection started during the project analysis. It was found that Bouwinvest is the asset manager of WTC The Hague. Bouwinvest is a real estate investment manager and WTC The Hague is part of their Bouwinvest Dutch Institutional Office Fund N.V.. A search about the origin of Bouwinvest lead to one of their main investors bpfBOUW. The tenant was selected by contacting multiple organizations that are based in WTC The Hague, this lead to an interview with PwC.

A schematic overview of the stakeholders of WTC The Hague is illustrated in figure 4.3.3.

## Stakeholders

### Schematic overview

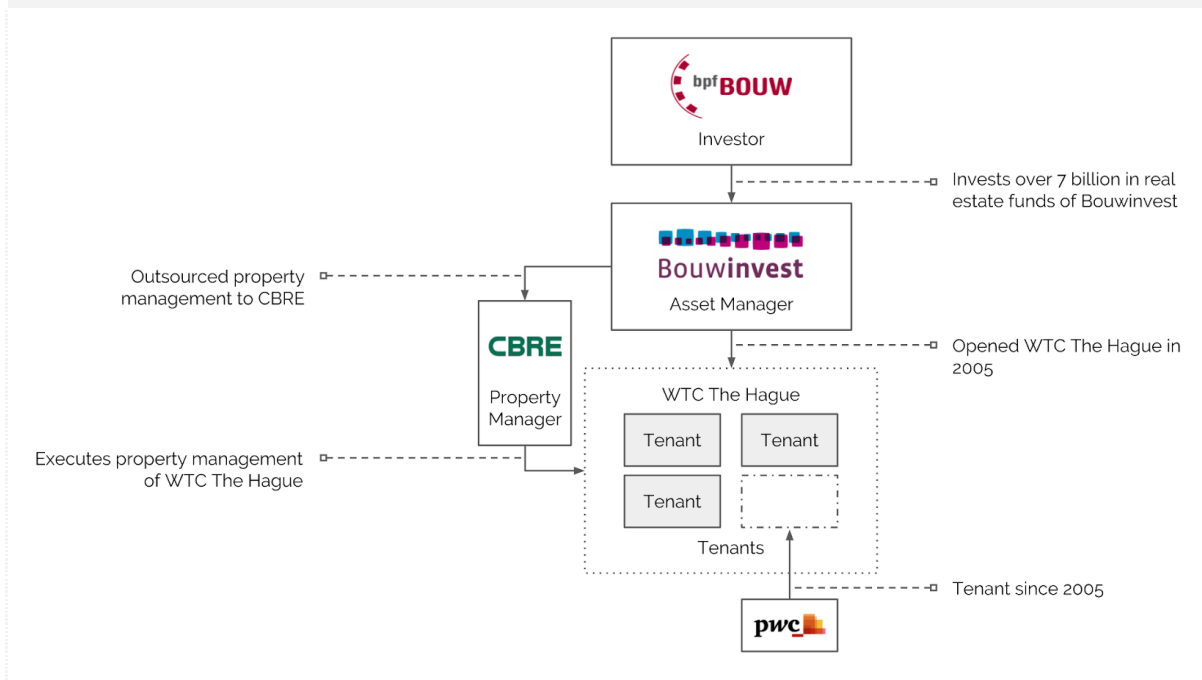


Figure 4.3.3: Schematic overview of stakeholders concerning WTC The Hague (own illustration)

Each of the stakeholders is introduced with a brief description of their organization.

#### *Bouwinvest*

Bouwinvest Real Estate Investment Management originated in 1955 as a real estate investor for the bpfBOUW pension fund but works independently since 2003 (Bouwinvest, 2017). It is an investment manager specialized in real estate investment for institutional investors. In 2017, the total capital invested by Bouwinvest is 8.8 billion euros. Bouwinvest offers national and international investment funds. The national funds are divided in five sector funds: Residential, Office, Hotel, Retail and Healthcare. The international funds are offered via indirect investment in international listed and unlisted real estate funds. WTC The Hague is part of the portfolio of the Bouwinvest Dutch Institutional Office Fund.

#### *bpfBOUW*

bpfBOUW is a pension fund for the Dutch construction sector. It was founded by employers and employees and is today responsible for a quarter million pension plans (Scheepens, 2016). The total capital that is reserved for investments is estimated on 55 billion euros. This is invested by Bouwinvest (real estate) and APG (stocks, bonds and others). Over eight billion euros is invested in real estate. GRESB and BREEAM are integrated in bpfBOUW's ESG policies for assessing the sustainability performance of buildings and portfolios.

#### *PwC*

PricewaterhouseCoopers (PwC) is the second largest professional services company in the world and is one of the Big Four firms. PwC is active in 158 countries and has more than 236.000 employees (PwC, 2018). Their services include tax and consulting. In the Netherlands, PwC has 4800 employees and fourteen offices spread across the country. The office in The Hague is located in The World Trade Centre, where PwC is a tenant since the opening in 2005.

#### *CBRE*

CBRE Group is the largest real estate organization in the world. CBRE offers a wide range of real estate services and is mainly known for their consultancy services for owners, investors and tenants of commercial real estate. In 1973, CBRE opened their offices in the Netherlands. Today, CBRE has seven offices spreading across the country and has over 1400 employees (CBRE, 2018). Since 2009, CBRE is responsible for the property management of WTC The Hague.

### **Reconstruction of certification process**

The certification process of WTC The Hague was reconstructed based on the interviews with stakeholders.

The BREEAM-NL In Use certificate for WTC The Hague was initiated by Bouwinvest in 2015. The idea originated from their vision on sustainability. Sustainability is an inherent part of Bouwinvest's corporate mission and their license to operate. Their ambition is to stay in the leading group of real estate funds (Bouwinvest, 2016).

Under the Dutch motto 'meten is weten', Bouwinvest commissioned a quickscan to design a plan of approach. The quickscan was done on portfolio level as well as on building level. This was executed by property manager CBRE in 2015. Bouwinvest choose CBRE because of their experience with BREEAM and expertise that is available within their organization. CBRE has developed methods for the documentation that is needed in the certification process. The methods are also used by Bouwinvest to optimize their documentation process.

From the quickscan followed a baseline calculation and quick wins were identified. CBRE determined that the 'Excellent' rating could be achieved. Most buildings are certified with 'Very good' and in area where more buildings are certified, 'Excellent' is definitely a plus. CBRE

proposed this ambition and Bouwinvest agreed on this because the building carries the World Trade Center brand and it is one of their 'trophy' assets in their portfolio. A plan of approach was designed by CBRE. In general, this contains required investments, constructions and time.

For the 'Asset' assessment it was determined by CBRE that the building was already of high quality. Also during the ecological research it was found that for instance 'swallow nest stones' were placed in the facade. For the 'Management' assessment meetings were organized with the installation company. Discussion took place about additional clauses in the contract. For instance, the ability to receive data of the building management system more frequently.

The building was not assessed with the 'Use' assessment. Bouwinvest explained that this decision was made because it is very hard to execute the 'Use' assessment with approximately hundred tenants. Bouwinvest already had experience with the 'Use' assessment in their project the Nieuwe Vaart in Utrecht. The building has a cluster of sustainable organizations that had to collaborate intensively to fulfil the 'Use' Assessment.

CBRE almost never performs 'Use' assessments, especially not for multi-tenant buildings. It is an intensive process with the tenants and the score is determined by lowest performing tenant. Also the information that is needed may not be shared by tenants because of privacy issues. Furthermore, as the name says it is about the 'use' and not about the 'asset' or 'management'. If a tenant wants to say that it rents in a certified building, this is already possible with the 'Asset' assessment. And the 'use' does not necessarily influence the asset value or rent price.

A kickoff meeting was organized by CBRE together with the most important stakeholders. The stakeholders that are invited depends on the level of ambition. A 'Good' rating can be achieved with the property manager, but for 'Excellent' more parties must be involved because more detailed documentation is needed. The documentation phase is the most intensive part because of the stakeholders that are involved and the criteria that are set for filing the documents. Construction drawings of the installation company can be very technical. An Assessor does not necessarily have the expertise to read these drawings, so they must be very clear to show it fulfills the requirement to earn the credit. During the process tenants were not involved.

On the 16th of December 2016, WTC The Hague was assessed by W4Y. It was awarded as the first multi-tenant building in The Netherlands with a BREEAM-NL In Use 'Excellent' rating.

The reconstruction of the certification process is visualized in figure 4.3.4. The timeline shows the actions that were taken by each stakeholder and which stakeholders were involved from the moment of initiative until receiving the certificate.



# Certification process

## Schematic overview of certification process based on stakeholder interviews

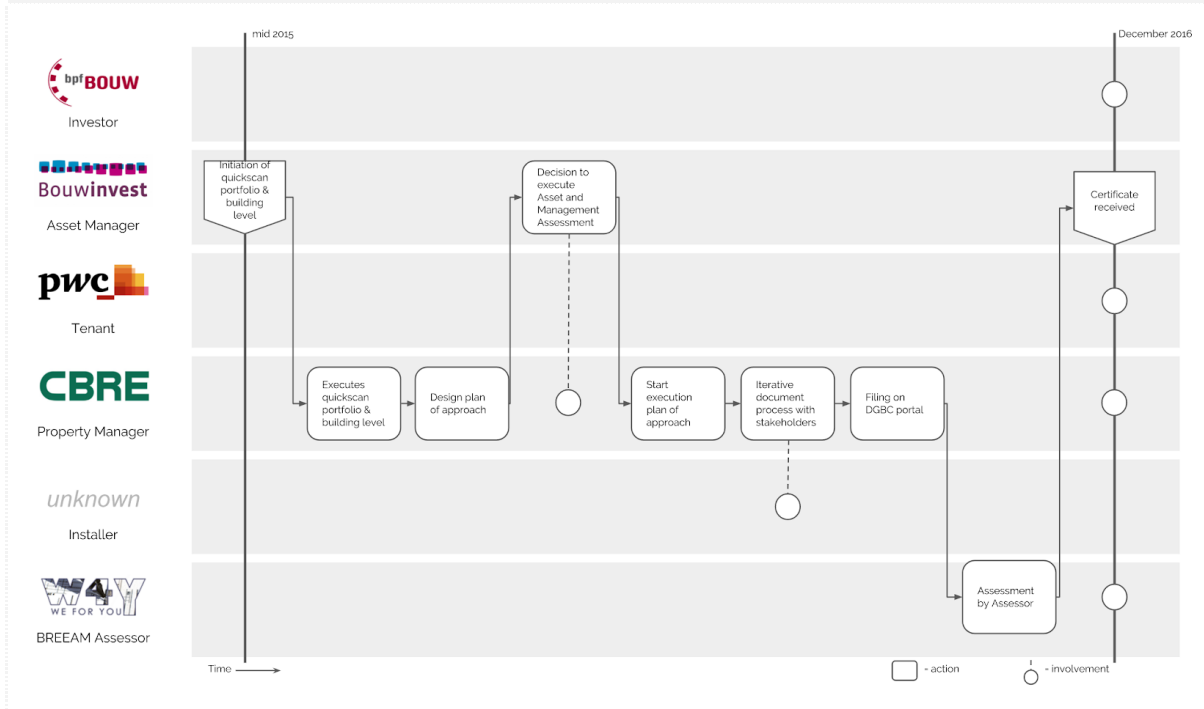


Figure 4.3.4: Schematic overview of the certification process of WTC The Hague based on stakeholder interviews (own illustration).

## Evaluation of interests and impact

Each stakeholder was questioned about the interests of their organisation regarding BREEAM-NL In Use. The results are summarized in table 4.3.5.

### Evaluation of interests

#### Applicability of interests and their impact from a stakeholder perspective

Interest	Asset manager 	Tenant 	Investor 
<p><i>Achieving sustainability ambitions or CSR (Eichholtz, Kok &amp; Quigley, 2016)</i></p>	<p>Bouwinvest developed a CSR strategy wherein Environmental, Social and Governance (ESG) criteria were incorporated for responsible investments (Bouwinvest, 2016). Bouwinvest aims to achieve long term performance, building value for stakeholders and sustainable partnerships with stakeholders. Investment in sustainability improves the competitive position of the funds and adds value for investors and tenants. Targets and tools are formulated for four scopes (Bouwinvest, 2016). The target for the fund is retaining the 'Green Star' GRESB-rating. For assets, BREEAM and EPC are used to create transparency, improve quality and reduce operating costs. For tenants, Green Lease and Energy Panel are used to increase awareness. For property managers, Energy Panel and contracts are used to achieve CSR targets. The target for 2017 is to certify all assets with BREEAM, except for small monumental buildings. The target for 2020 is achieving a minimum rating of 'Very Good' for all assets. BREEAM is chosen because it is an international standard and is a common definition for sustainability between our organization and stakeholders. BREEAM certificates are not a goal but a means to enhance buildings.</p>	<p>PwC NL has the ambition for achieving zero waste by 2020 and being circular and climate neutral by 2030 (PwC, 2017). To realize these and other sustainability targets roadmaps are developed and executed by the departments, including facility management. PwC always communicates directly with asset managers when there is a need for office space. Thereby, it requires a minimum of energy label A and BREEAM certificates for 'Asset' and 'Management'. During the tenancy it is aimed to increase the BREEAM rating with one level. Also asset managers must have performed an European Energy Efficiency audit. The BREEAM certificates give PwC insight in the performance of the building and measures that can be taken to increase sustainability. It is one of the tools to realize our ambitions for 2020 and 2030.</p>	<p>bpfBOUW developed its own Environmental, Social and Governance (ESG) policy. This policy is aimed to contribute to a broad consensus amongst our clients for our investments. In 2017, sustainability targets for 2020 were formulated which will be published in 2018. Examples of these targets are related to GRESB, emission reductions and investment in sustainability. The condition is that it may not influence the yield and risks negatively (bpfBOUW, 2016). The targets are measurable and are used as key performance indicators (KPI's). With KPI's progress is measured as well as the representation of the interests of our clients. Sustainability targets and ESG are communicated to clients via the website, annual reports and policy documents. In the document 'Sustainable Building and Energy Efficiency' clients are informed about GRESB and BREEAM (bpfBOUW, 2016). Although BREEAM is known, GRESB ratings are used rather than BREEAM certifications. bpfBOUW invests in sectoral real estate funds. Therefore, bpfBOUW makes decisions on fund level and decisions on building level made by the asset manager.</p>

<p><i>Decreased risks</i> (Fuerst &amp; McAllister, 2011a)</p>	<p>Bouwinvest manages a risk return model of all managed assets. BREEAM is incorporated in this model because sustainable buildings have a lower risk profile.</p> <p>Bouwinvest uses both BREEAM-NL In Use and New Construction. During acquisitions it can be that the certification is part of the deal. This was the case when Bouwinvest bought the Hourglass building in Amsterdam.</p> <p>Bouwinvest has a focus on future proof office buildings. The better the BREEAM rating, the lower the regulatory and environmental risks (Bouwinvest, 2016).</p>	<p>PwC does not use BREEAM certificates to indicate decreased risks related to their office buildings.</p>	<p>bpfBOUW manages an enormous capital and is responsible for a quarter millions pension plans. Therefore, bpfBOUW is under strict supervision of De Nederlandsche Bank and Authority Financial Markets.</p> <p>As a pension fund, bpfBOUW invests with low risk profiles. Therefore, bpfBOUW invests in real estate that is less volatile than for instance shares. And within the real estate market, sustainable real estate is even less volatile. GRESB and BREEAM are used to indicate sustainability of real estate (bpfBOUW, 2016).</p>
<p><i>SRI</i> (Eichholtz, Kok &amp; Yonder, 2015)</p>	<p>Bouwinvest wants to contribute to the energy transition and reduce the environmental impact of its assets. GRESB and BREEAM are tools to measure and recognize sustainability performance. It makes the operations transparent and shows that Bouwinvest goes further than the Building Code.</p>		<p>For the investments of bpfBOUW an investment plan is developed. The real estate investment plan is developed in collaboration with Bouwinvest. Eventually, the investment plan is confirmed by the board of bpfBOUW and executed by the fund managers of Bouwinvest. bpfBOUW's ESG-criteria are also integrated in the service level agreement. The execution is reported through quarterly reports.</p> <p>bpfBOUW is also member of Principles for Responsible investments (PRI), an international network of investors that work together and bring the principles into practice.</p>
<p><i>GRESB rating</i></p>	<p>The Bouwinvest Office Fund received a five star rating. This 'Green Star' rating is the highest rating that can be achieved with GRESB. With GRESB, fund managers are able to analyse and enhance their sustainability policy (Bouwinvest, 2016).</p> <p>Investors that invest in the funds offered by Bouwinvest increasingly demand investments in sustainability. Instead of developing their own method, Bouwinvest chose GRESB because it is an international standard. And BREEAM certifications are part of GRESB.</p> <p>GRESB is also used as a tool to communicate the</p>		<p>The sustainability targets related to GRESB determine the performance of bpfBOUW's real estate investments. bpfBOUW requires a minimum of four star GRESB-ratings for their investments. It would be logically to increase this over time towards five star GRESB-ratings. However, GRESB also increases its requirements over time and maintaining a four star rating is already difficult to achieve.</p> <p>The three real estate funds of Bouwinvest in which bpfBOUW invests are rated with the GRESB-Green Star label (bpfBOUW, 2016). This is the highest score that can</p>

	sustainability of funds towards investors.		be achieved. bpfBOUW sees this as an acknowledgement for their sustainable investments.
<i>Reputational benefits (Van der Voordt &amp; Koppels, 2013)</i>	Bouwinvest aims to look further than the competition that is mainly oriented on energy labels. This accounts for sustainability in general. BREEAM is part of one of the sustainability themes. It is interesting for current and future corporate tenants. It makes the market demand of assets more future proof. In case of WTC The Hague, sustainability is stimulated together with the Green Business Club and local authorities to improve the reputation of the Beatrixkwartier. Sustainability is also important for attracting human capital. An organization that is responsible towards the environment and society will become more important for the next generation entering the workforce.	PwC formulated a 'purpose' for their organization, which says: 'contribute to societal trust and help solving important problems' (PwC, 2018). Sustainability is an important value for our organization. By regularly expressing this value PwC could be an interesting employer for future employees that share this value.	bpfBOUW says it has a good reputation regarding sustainable real estate investments. bpfBOUW's most important stakeholders are the clients. Their clients work in the construction sector or are already retired. It is regulated by law that their retirement is managed by bpfBOUW. bpfBOUW is determined to support the interests of their clients. The focus is on real estate in The Netherlands. The average client is involved in these real estate projects and they are proud of this. Bouwinvest and bpfBOUW share an alignment of interest regarding sustainable real estate investments.
<i>Increased asset value (Fuerst &amp; McAllister, 2011a; Wiley, Benefield &amp; Johnsen, 2010)</i>	Green building certificates contribute to an increase in asset value. Internationally many research is done in the field of this topic. For instance, research by Eichholtz and Kok. In case of BREEAM In Use it does not necessarily mean that when a non-certified building becomes certified the rent price, occupancy and asset value increase. This depends on many more factors. However, one of our office buildings in Utrecht was certified in collaboration with the tenants and this building is now fully occupied.		Operational investments do not fall within the governance of bpfBOUW. The investment plan is executed by Bouwinvest. Bouwinvest is responsible for the asset values, rental incomes, operating expenditures and occupancy rates. However, bpfBOUW adds that it strives for multiple benefits (bpfBOUW, 2016): investments in sustainability are beneficial for the environment, tenant and investor.
<i>Lower CAPEX (Fuerst &amp; McAllister, 2011a)</i>	Bouwinvest is a Fiscal Investment Institution. Therefore, it is excluded from payment of corporate taxes. That also means that it is not able to receive subsidies for investments in sustainability measures.		<i>see answer increased asset value</i>
<i>Increased rental income (Devine &amp; Kok, 2015; Fuerst &amp; McAllister, 2011a)</i>	The rent price for tenants does not increase when a building receives a BREEAM certificate.		<i>see answer increased asset value</i>

<p><i>Reduced OPEX (Devine &amp; Kok, 2015)</i></p>	<p>WTC The Hague was assessed for BREEAM 'Asset' and 'Management'. This resulted in a calculated sustainability performance. However, there is still a large difference with the operating performance. It does not necessarily mean that a building is operated in a sustainable way. This is similar to Energy Labels, a building can receive an Energy Label A while it operates at a level C. The 'Use' assessment can be very difficult in multi-tenant buildings (see comments).</p>	<p>The BREEAM assessment is very comprehensive and it is likely that this will cause a reduction in operational expenses because of lower energy and water consumption. For example, by generating renewable energy with solar panels. However, to realize this, investments must be made and the question is whether this does also reduce the capital expenses. Currently we are working on an a project wherein the return on investment will not be achieved within ten years. But it will bring us a step further in achieving our ambitions. PwC offers asset managers the possibility to fix the energy price in the tenancy contract to stimulate investments in energy efficient measures, similar to a green lease. However, asset managers are not always willing to invest in these measures.</p>	<p><i>see answer increased asset value</i></p>
<p><i>Increased occupancy rate (Devine &amp; Kok, 2015)</i></p>	<p>BREEAM is a brand that is in demand by corporate firms. It is now incorporated in their real estate strategies. This does not account for all our tenants. However, it is needed to retain and attract corporate firms in the future.</p>	<p>-</p>	<p><i>see answer increased asset value</i></p>
<p><i>Insight in sustainability performance</i></p>	<p>Bouwinvest monitors energy and water consumption, GHG-emissions and waste for all assets. This data is used to calculate the environmental impact. The results are compared with other years and gaps are identified for further investigation. The outcomes are used to set new targets. BREEAM is used as a starting point for improving the quality of a building.</p>	<p>BREEAM was not used as a tool to provide insight in GHG-emissions and energy and water consumption. PwC was already monitoring this before using BREEAM. PwC uses BREEAM as means to achieve a higher level. It helps us with defining what we want to upgrade in a particular office. For instance, installation of water efficient fixtures.</p>	<p>GRESB-ratings provide insight in the sustainability performance of Bouwinvest's funds. In 2014, energy consumption reductions were realised: residential fund: 4,1%, office fund 4,8% and retail fund 13,8% (bpfBOUW, 2016). BREEAM certifications provide insight in sustainability on building level. Although this is executed by Bouwinvest, bpfBOUW is able to request the sustainability of buildings in their funds. For instance, for informing their clients. This also accounts for the energy dashboard of Bouwinvest that is used for the office portfolio.</p>
<p><i>Other comments</i></p>	<p>Bouwinvest follows a strategy of having multi-tenant buildings on A-locations in The Netherlands. The Nieuwe</p>	<p>Normally, BREEAM is a green building certificate for buildings. PwC took another approach by initiating a 'Use' assessment for their entire</p>	<p>bpfBOUW does not have an office building for their own organisation. The organisation has only 14 employees that work for the</p>

	<p>Vaart in Utrecht a multi-tenant building that was also certified with the 'Use' assessment of BREEAM. Experience showed that this was very difficult to achieve. The whole process is in collaboration with the tenants. Tenants did not always understand what was asked and did not achieve high scores. Even for Max Havelaar, which is a very sustainable organization. It seems that there is a mismatch between the assessment and reality. Positive is that the building is now fully occupied.</p>	<p>office portfolio in The Netherlands. In collaboration with DGBC a portfolio approach was designed (DGBC, 2017). With the result that PwC is the first organization in The Netherlands awarded with a 'Excellent' rating for all their offices. An advantage of this approach is that costs less time. It took nine months and a project manager of PwC worked on this for 20 hours per week. Unica Energy Solutions was involved as a BREEAM Expert and helped with the documentation process. PwC set an example and wants to stimulate asset managers to involve tenants to perform the 'Use' assessment. The 'Use' certificate is not a certificate to hang on the wall, it is a roadmap towards becoming more sustainable.</p>	<p>board office. They are part time representatives from the construction sector, retirees and independent experts.</p>
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*Table 4.3.5: Applicability of interests and their impact from the stakeholder perspective (own illustration)*

## Most important findings

### *Project analysis*

- WTC The Hague is a multi-tenant office building with over hundred tenants. The building was awarded with a BREEAM-NL In Use 'Excellent' rating

### *Certification process*

- The asset manager initiated the certification process
- The property manager executed the certification process and possessed the required expertise to perform as a BREEAM Expert
- An ambition for the level of certification is determined on basis of the quickscan and baseline calculation
- The 'Use' assessment is not preferred in case of a multi-tenant building because it is an intensive process and unclear incentives
- The documentation phase is the most intensive phase of the certification process because of the amount of required documents, stakeholders that must be involved and the knowledge gap between technicians and the Assessor
- Tenant PwC initiated a 'Use' assessment for their entire office portfolio in The Netherlands

### *Evaluation of interests and impact*

- The asset manager applies a low risk profile for certified green buildings because of lower regulatory and environmental risks
- The asset manager uses GRESB to communicate sustainability towards investors and BREEAM to communicate sustainability towards tenants
- The asset manager cannot apply for sustainability subsidies when the asset manager is a Fiscal Investment Institution
- The tenants do not pay an increased rent rate after certification
- The investor uses GRESB ratings to indicate the sustainability of real estate funds
- The investor regards sustainable real estate as less volatile

## 4.4 Case Study III: Hojel City Center

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### Introduction

The third case study is the Hojel City Center in Utrecht (figure 4.4.1). Interviews were held with tenant de Volksbank and property manager JLL.

### *Hojel City Center*

#### *City Center, Utrecht*



*Figure 4.3.1: The Hojel City Center building in Utrecht*

Source: <https://nos.nl/data/image/2015/07/26/179140/xxl.jpg>

## Project analysis

### Building information

*General information about the building, location and stakeholders.*

Location:	Utrecht
Address:	Croeselaan 1-3 & Graadt van de Roggenweg 100-350
Postal code:	3521 BJ
GFA:	40.022 sqm
Opening:	1994
Building function:	Office
Energy label:	B
Other certificates:	-
Investor:	confidential
Asset Manager:	CBRE Global Investors
Tenants:	de Volksbank, ACTIAM, Regus and more.
Property Manager:	JLL

### *Project description*

Hojel City Center is a building complex of three office buildings in Utrecht. The building complex is located in the city center near the train station and Jaarbeurs event halls. In 1990, ING Real Estate commissioned Van Den Broek en Bakema Architects to design the northern and western buildings. These buildings were opened in 1994. The eastern building was developed in a later stage. The tower marks the headquarters of de Volksbank. The building height is 72 metres and has 20 floors. In 2011, ING Real Estate was acquired by CBRE Global Investors, including Hojel City Center.

### Certificate information

*Information about the date of certification, assessor and scores for Asset, Management and Use.*

Certificate:	BREEAM-NL In Use 2014 v1.0
Date of certification:	June 3rd, 2015
Expiry date:	June 3rd, 2018
Assessor:	Daniel van der Flier
Score:	***
Asset:	51,90 %
Management:	58,36 %
Use:	45,47 %

A detailed overview of assessment ratings per category is presented in figure 4.4.2.



## Assessment per category

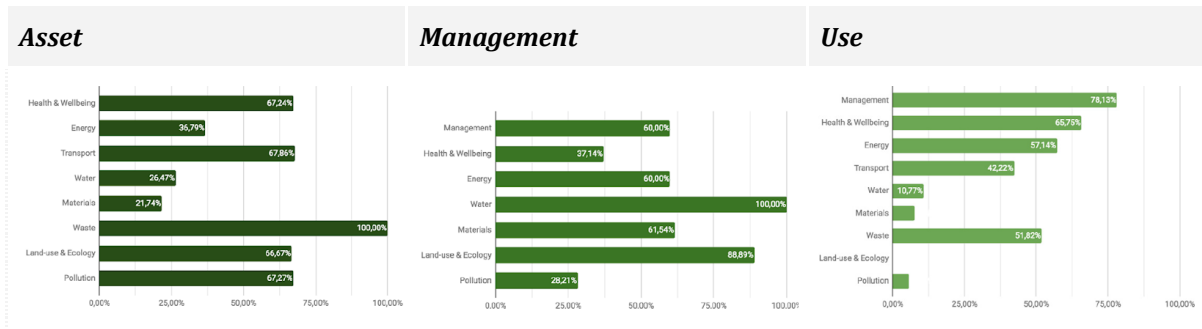


Figure 4.4.2: Assessment per category (own illustration)  
 Source: <https://www.breeam.nl/projecten/hojel-bouwdeel-b-0>

## Stakeholders

The stakeholder selection started during the project analysis. The tower of the Hojel City Center is the headquarters of de Volksbank. de Volksbank was therefore selected as the tenant. During the project analysis it was found that the owner of Hojel City Center is CBRE Global Investors. The BREEAM certificate lead to the property manager JLL.

A schematic overview of the stakeholders of Hojel City Center is illustrated in figure 4.4.4.

## Stakeholders

### Schematic overview

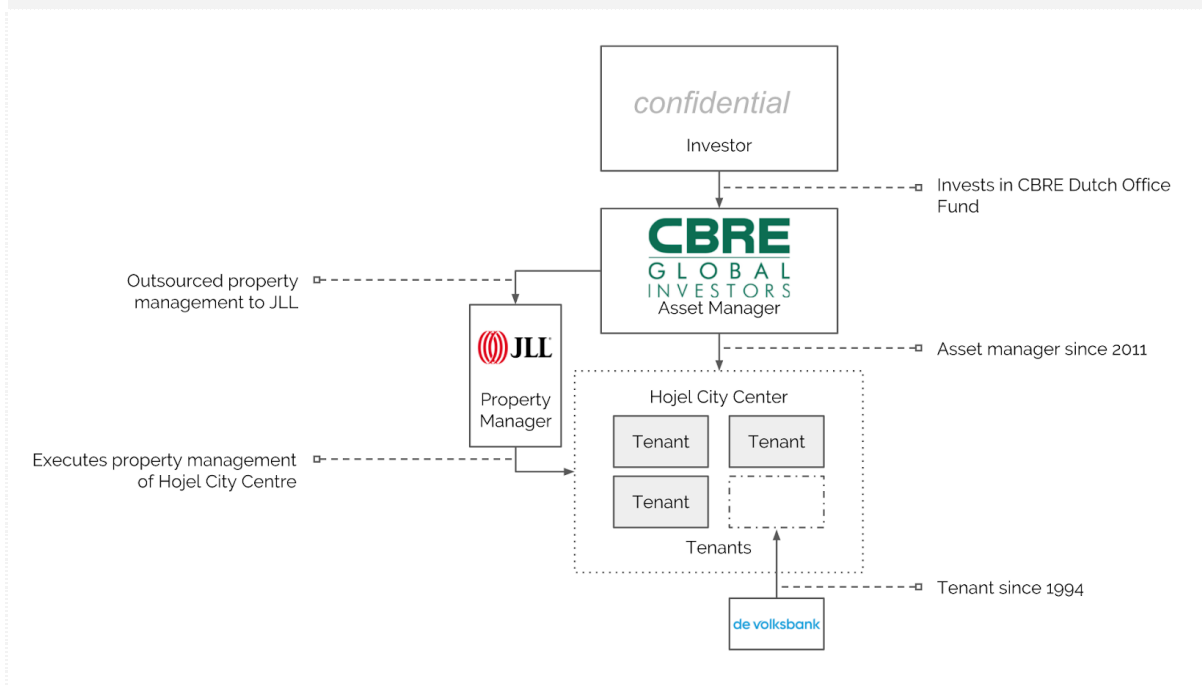


Figure 4.4.4: Schematic overview of stakeholders concerning Hojel City Center (own illustration)

Each of the stakeholders is introduced with a brief description of their organization.

#### *de Volksbank*

de Volksbank is a bank controlled by the Dutch government since 2013. de Volksbank manages multiple brands including SNS, ASN Bank and RegioBank. Their banks offer mortgages, savings and insurances for individuals and small companies. de Volksbank has 3 million clients and the total value of assets managed by de Volksbank is 62 billion euros. de Volksbank has 3,830 employees and their headquarters is located the Hojel City Center.

#### *CBRE Global Investors*

CBRE Global investors is one of the largest real estate investment managers in the world. It was founded in 1972 and in 2017 their total assets under management equals 82,6 billions euros. CBRE Global Investors is part of CBRE Group but acts as an independently operated affiliate. CBRE Global Investors has over 500 institutional clients and invests in office, industrial, retail, multifamily, mixed-use and infrastructure assets. In 2011, CBRE Global Investors acquired ING Real Estate including their assets. Hojel City Center is part of the CBRE Dutch Office Fund. This is a non-listed institutional office fund with a value of 1,5 billions euros. The investment strategy is aimed at multi-tenant office buildings in the four largest cities in the Netherlands.

#### *Investor*

confidential

#### *JLL*

Jones Lang Lasalle (JLL) is the second largest real estate organisation in the world. In 1999, Jones Lang Wootton and La Salle Partners were combined into Jones Lang Lasalle. JLL provides specialized services in real estate and investment management for real estate owners, occupiers and investors. Worldwide 82.000 employees work for JLL and their offices operate in more than 80 countries. 200 employees work in The Netherlands and are spread across three offices in Amsterdam, Rotterdam and Eindhoven.

## **Reconstruction of certification process**

The certification process of Hojel City Center was reconstructed based on the interviews with stakeholders.

The BREEAM-NL In Use certificate for Hojel City Center was initiated by de Volksbank in 2014. The office building was opened in 1994. From 2008, several measures were taken by de Volksbank to improve the building. In 2014, Hojel City Center was being certified as a final step to measure the sustainability performance. This is managed by the Facility Management Department of de Volksbank.

BREEAM was chosen as an objective measurement of the building sustainability. Before Hojel City Center was being certified, de Volksbank already had gained experience with BREEAM during the certification of their office in Amstelveen. de Volksbank uses BREEAM to measure the current performance and help identify further improvements. In case of Hojel City Center a point is now reached that it is hard to implement improvements that are cost effective.

At the start of the certification process de Volksbank involved the asset manager CBRE Global Investors and BREEAM Expert Corporate Facility Partners (CFP). de Volksbank already had worked with CFP, a company that provides sustainability and efficiency services for buildings and organisations. CFP was responsible for the coordination of the certification process. Property manager JLL was involved in the documentation phase and was responsible for the documentation for the 'Asset' assessment.

During the quickscan of the Hojel City Center it became clear that it was possible to achieve a rating of three stars. The building already performed well because of the measures that were taken from 2008. These measures included a climate ceiling, energy efficient lighting, motion sensors and water efficient fixtures. Because of these measures, no major investments were required in the plan of approach. However, the certification process had led to a few small measures that were taken. For instance, an ecological research was executed and nesting boxes were installed.

The majority of costs related to the certification process were paid by de Volksbank. These were the costs related to the 'Management' and 'Use' assessment. The costs related to the 'Asset' assessment were paid by CBRE Global Investors.

On the 3rd of June 2015, Hojel City Center was assessed by W4Y. It was awarded as the first office building in Utrecht with a BREEAM-NL In Use 'Very good' rating. Currently, de Volksbank is working on renewing the certification in June 2018.

The reconstruction of the certification process is visualized in figure 4.4.5. The timeline shows the actions that were taken by each stakeholder and which stakeholders were involved from the moment of initiative until receiving the certification.

## Certification process

### Schematic overview of certification process based on stakeholder interviews

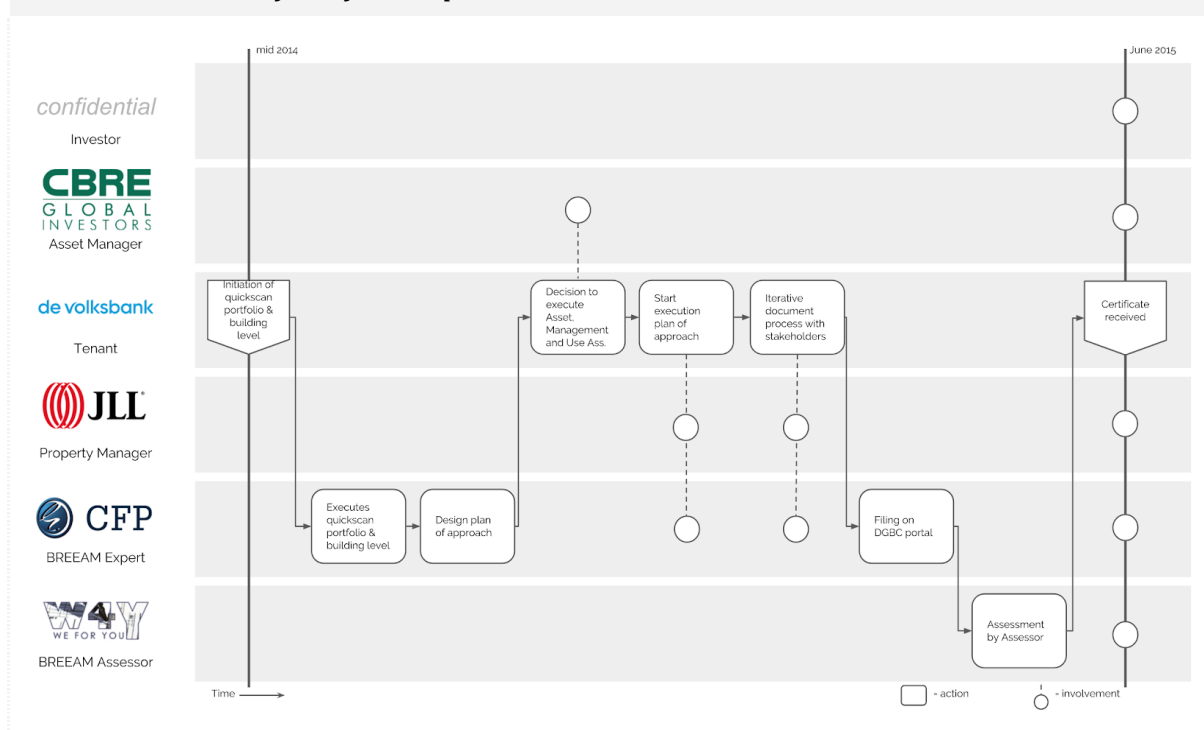




Figure 4.4.4: Schematic overview of the certification process of Hojel City Center based on stakeholder interviews (own illustration)

## Evaluation of interests and impact

Each stakeholder was questioned about the interests of their organisation regarding BREEAM-NL In Use. The results are summarized in table 4.4.5.

### *Evaluation of interests*

#### **Applicability of interests and their impact from a stakeholder perspective**

<i>Interest</i>	<i>Asset manager</i> 	<i>Tenant</i> 	<i>Investor</i> <i>confidential</i>
<i>Achieving sustainability ambitions or CSR</i> <i>(Eichholtz, Kok &amp; Quigley, 2016)</i>		<p>de Volksbank has the ambition of being climate neutral by 2030 (de Volksbank, 2016). This includes their operational management and their investments. Examples of targets for operational management are: 20% CO2 reduction in 2017 and 50% of purchasement of goods, energy and water is circular (de Volksbank, 2017). This is reported with the Green House Protocol.</p> <p>de Volksbank did not use the BREEAM certificate to set targets. BREEAM was used as an objective measurement and verification of the sustainability performance of their office buildings. Therefore, certification was not a goal on itself. It was used as a checklist and it helped with the determination of further sustainability improvements for the office building.</p>	
<i>Decreased risks</i> <i>(Fuerst &amp; McAllister, 2011a)</i>		<p>Risk was not a driver of de Volksbank for the use of BREEAM.</p>	
<i>SRI</i> <i>(Eichholtz, Kok &amp; Yonder, 2015)</i>			
<i>GRESB rating</i>			
<i>Reputational benefits</i> <i>(Van der Voordt &amp; Koppels, 2013)</i>		<p>Sustainability is a brand value of de Volksbank. After the certificate was received, the results were broadly communicated. This was done both externally and internally. de Volksbank is proud of their achievement. And BREEAM helped with</p>	

		the verification of this achievement. The certificate is presented on the wall in the cafe of the building.	
<i>Increased asset value</i> (Fuerst & McAllister, 2011a; Wiley, Benefield & Johnsen, 2010)			
<i>Lower CAPEX</i> (Fuerst & McAllister, 2011a)			
<i>Increased rental income</i> (Devine & Kok, 2015; Fuerst & McAllister, 2011a)			
<i>Reduced OPEX</i> (Devine & Kok, 2015)		The reduction in OPEX was not related to the certification process. This was the result of the measurements that were taken from 2008 to 2014.	
<i>Increased occupancy rate</i> (Devine & Kok, 2015)		de Volksbank indicates that the building occupancy and the relation with BREEAM does not fall within their interests as a tenant.	
<i>Insight in sustainability performance</i>		de Volksbank used BREEAM as a tool to provide insight in the current sustainability performance of their office building. Furthermore, it helps with the determination of further improvements.	
<i>Other comments</i>		<p>Hojel City Center is certified with the 'Asset', 'Management' and 'Use' assessment. Certificates were issued for building parts A, B and C.</p> <p>de Volksbank was asked how much effort it took for the initiative and carrying out all three assessments. de Volksbank replied that it was not too much effort. This is because sustainability is part of their operational management. The acquaintance with ISO 14001 and other systems are an advantage when working with BREEAM.</p> <p>de Volksbank also replied that the assessment becomes more difficult with an increasing number of tenants that are involved.</p>	

*Table 4.4.5: Applicability of interests and their impact from the stakeholder perspective (own illustration)*

## Most important findings

### *Project analysis*

- Hojel City Center is a multi-tenant office building that was assessed with 'Asset', 'Management' and 'Use' and was awarded with a BREEAM-NL In Use 'Very Good' rating.

### *Certification process*

- The tenant initiated the certification process, this was part of their sustainability measures.
- The tenant involved the asset manager and a BREEAM Expert.
- The BREEAM Expert was commissioned to coordinate the certification process, execute the quickscan, design a plan of approach and filing the documents on the DGBC portal.
- The tenant paid the certification costs related to the 'Management' and 'Use' assessment, the asset manager paid the certification costs related to the 'Asset' assessment.
- The tenant compiled documents for the 'Management' and 'Use' assessment, the property manager compiled documents for the 'Asset' assessment.

### *Evaluation of interests and impact*

- The tenant uses the BREEAM certificate as a tool to verify and communicate the sustainability achievement of their office building.
- According to the tenant, the reduction in OPEX was realized before the certification process and is therefore not related to BREEAM.
- The feasibility of the 'Use' assessment decreases with an increasing number of tenants.

## 4.5 Cross Case Analysis

The cross case analysis studies and compares the data that is gathered in the case study reports. This is done by examining similarities, differences and themes across the three case studies, commonly referred as a cross case analysis.

A cross case analysis is the second level of analysis in the case study research method (Yin, 2014). It is a means for combining the outcomes across cases in order to formulate research findings.

In this paragraph, the cross case analysis is performed for each part of the case study report. It starts with a comparison of the project analysis, followed by the certification processes and the evaluation of interests and impact.

### Comparison of project analyses

The results of the project analysis of all three case studies are compared in table 4.5.1. The rows categorize the data in building information, certificate information and stakeholder information.

#### Comparison of project analyses

	<i>Haagsche Zwaan</i>	<i>WTC The Hague</i>	<i>Hojel City Center</i>
<b>Building information</b>			
<i>Location</i>	The Hague	The Hague	Utrecht
<i>GFA</i>	17.817 sqm	72.805 sqm	40.022 sqm
<i>Building function</i>	Office	Office	Office
<i>Tenancy</i>	Multi-tenant	Multi-tenant	Multi-tenant
<i>Opening</i>	2010	2005	1994
<b>Certificate information</b>			
<i>Date of certification</i>	August 25th, 2015	December 16th, 2016	June 3rd, 2015
<i>Expiry date</i>	August 25th, 2018	December 16th, 2019	June 3rd, 2018
<i>Score</i>	***	****	***
<i>-Asset</i>	56,34 %	70,04 %	51,90 %
<i>-Management</i>	29,55 %	73,71 %	58,36 %
<i>-Use</i>	-	-	45,47 %
<b>Stakeholder information</b>			
<i>Investor</i>	<u>confidential</u>	<u>bpfBOUW</u>	<u>confidential</u>
<i>-type of investor</i>	-	-pension fund	-
<i>-country of origin</i>	-	-The Netherlands	-
<i>-investment capital</i>	-	-45 billion euros	-
<i>Asset Manager</i>	<u>Union Investment GmbH</u>	<u>Bouwinvest</u>	<u>CBRE Global Investors</u>
<i>-investment scope</i>	-National, Europe & Global	-National & International	-National & International
<i>-country of origin</i>	-Germany	-The Netherlands	-United States
<i>-total capital</i>	-38,1 billion euros	- 8,8 billion euros	- 82,6 billion euros
<i>-name of fund</i>	-Unilmmo Europe	-Dutch Institutional Offices	-CBRE Dutch Office Fund
<i>-type of fund</i>	-non-listed	-listed	-non-listed
<i>Tenant</i>	<u>Deloitte</u>	<u>PwC</u>	<u>de Volksbank</u>
<i>-sector</i>	-Accounting and consulting	-Accounting and consulting	-Financial
<i>-number of employees</i>	-5.047 fte (in NL)	-4.800 fte (in NL)	-3.830 fte
<i>-start tenancy</i>	-2010	-2005	-1994
<i>Property Manager</i>	<u>Savills</u>	<u>CBRE</u>	<u>JLL</u>

Table 4.5.1: Cross case analysis - Project analysis (own illustration)

### *Building information*

In general, the buildings that were analyzed are very similar in location, function and tenancy. The three buildings are multi-tenant office buildings located in business districts of the largest cities in The Netherlands.

All three buildings are large office buildings, but within the term large there is variety. Hojel City centre is two times larger than the Haagsche Zwaan, WTC The Hague is two times larger than the Haagsche Zwaan. This variety does not have any consequences for the case study research, but it should be taken into account that WTC The Hague has a relatively high number of tenants.

The building age of Hojel City Center is an outlier compared to the other buildings that were built between 2005 and 2010. This could have consequences for the 'Asset' assessment within BREEAM-NL In Use. This was not the case, the 'Asset' score for Hojel City Center (51,90%) is only four percent lower than the Haagsche Zwaan (56,34%). This can be explained by the building measures that were taken in the Hojel City Center in 2008.

### *Certificate information*

All buildings were certified within a few years after BREEAM-NL was launched in 2014. The scores that were achieved range from three to four stars. The buildings were all assessed with the 'Asset' and 'Management' assessment and one of the buildings was assessed with 'Use'.

WTC The Hague achieved the highest scores for 'Asset' and 'Management'. Irrespective of the fact that the score depends on many criteria, there is large difference in scores for the 'Management' assessment. This might also imply a difference in expertise of parties that were involved and collaboration during the certification process. In case of WTC The Hague, the property manager possessed the expertise to execute the certification process. In case of The Haagsche Zwaan and Hojel City Center this was done by a third party and the property manager delivered only the documentation.

### *Stakeholder information*

The context of stakeholders in all three case studies was similar to the conceptual model with the asset manager, investor, tenant and property manager.

The three buildings have three different asset managers. Bouwinvest, Union Investment GmbH and CBRE Global Investors are large real estate investment managers. The asset managers differentiate from being domestic or foreign investors and offer listed or non-listed funds. The buildings are part of their real estate portfolios that are offered to investors through real estate investment funds.

bpfBOUW was the only investor that could be interviewed. The investors of Haagsche Zwaan and Hojel City Center were confidential and could not be interviewed. Unfortunately, this has the consequence that there are no results for investors to compare. And the interview with bpfBOUW is the only evidence for representing the category institutional investors.

The tenants Deloitte, PwC and de Volksbank are organizations with over 3.500 employees in The Netherlands. They have multiple offices spread over the country, often located in large representative office buildings in business districts with good access to public transportation.

Deloitte and PwC provide accounting and consulting services, de Volksbank provides financial services and products. All the tenants are part of the financial sector. This is in line with Eichholtz, Kok and Quigley (2015) who found that firms in the financial sector are prominent users of green building certificates.

## **Comparison of certification processes**

The certification processes are compared based on the timelines and narrative reports. The results can be divided in the involvement of stakeholders and actions that were taken during the process.



Across the timelines of the certification processes it is observed that there is a high consistency in the actions that were taken. For instance, each certification process starts with an initiative that is followed by a quickscan. Because of this consistency it is possible to name process blocks or actions. In general, the following actions occur chronologically:

1. Initiative - *initiation of certification*
2. Quickscan - *quickscan to determine the feasibility of certification. This is done on building level, but is also possible for portfolio level.*
3. Design plan of approach - *the plan of approach describes the goals for certification and actions that need to be taken including by whom.*
4. Decision to execute plan - *the moment the client decides to certify or not.*
5. Collection of documents - *collection of required documentation for certification. For instance, detailed information about maintenance contracts and exploitation data.*
6. Filing on DGBC portal - *submission of required data into assessment reports on DGBC portal.*
7. Assessment - *execution of QA-process to determine performance regarding BREEAM-NL In Use criteria. If successful, the building is awarded with a certificate which is handed over to the client.*

The involvement of each stakeholder and allocation of actions is presented in table 4.5.2.

### Comparison of certification processes

	<b>Haagsche Zwaan</b>	<b>WTC The Hague</b>	<b>Hojel City Center</b>
<b>Stakeholder involvement</b>			
<i>Investor</i>	X	X	X
<i>Asset Manager</i>	✓	✓	✓
<i>Tenant</i>	X	X	✓
<i>Property Manager</i>	✓	✓	✓
<i>BREEAM Expert</i>	✓	X	✓
<i>BREEAM Assessor</i>	✓	✓	✓
<b>Allocation of actions</b>			
<i>1. Initiative</i>	Asset Manager	Asset Manager	Tenant
<i>2. Quickscan</i>	BREEAM Expert	Property Manager	BREEAM Expert
<i>-scope</i>	Building level	Building & portfolio level	Building level
<i>3. Design plan of approach</i>	BREEAM Expert	Property Manager	BREEAM Expert
<i>4. Decision to execute plan</i>	<i>Already done in step 1</i>	Asset Manager	Tenant + Asset manager
<i>5. Execution of plan</i>	Property Manager	Property Manager	Tenant + BREEAM Expert
<i>6. Collection of documents</i>	Property Manager	Property Manager	Tenant + Property manager
<i>7. Filing on DGBC portal</i>	Property Manager	Property Manager	BREEAM Expert
<i>8. Assessment</i>	BREEAM Assessor	BREEAM Assessor	BREEAM Assessor
<i>-client</i>	Asset Manager	Asset Manager	Asset Manager

Table 4.5.2: Cross case analysis - Certification process (own illustration)

#### Allocation of actions

In general, the two certification processes of Haagsche Zwaan and WTC The Hague are very similar. In both cases it was the asset manager that took the initiative. This initiative entailed the set up of a meeting wherein the asset manager commissions the certification process. There are two variants. One variant is that the asset manager commissions this to the property manager. In the other variant a third party is involved as a BREEAM Expert. The certification process of Hojel City Center is different. This is because the tenant took the initiative and all three assessments were performed.

After the initiative is taken the next step is a quickscan. This is performed by the BREEAM Expert. The quickscan consists of determination of the feasibility and identification of quick wins.

This is done on building level, but could also be done on portfolio level. From the quickscan follows the design of a plan of approach.

The plan of approach is presented to the asset manager and the decision is made to execute the plan. In two cases, Haagsche Zwaan and WTC The Hague, it was the asset manager that paid for the costs related to the certification process. The costs related to certification process of Hojel City Center were divided between the tenant and asset manager.

In the next steps the plan is executed, documents are collected and filed on the portal. The documentation phase is the most intensive part of the certification process. The BREEAM Expert has the responsibility of managing this phase. The documents are collected by the property manager and for the 'Use' assessment this is done by the tenant. All the required information and documents are uploaded into the DGBC portal. This is reviewed by an independent BREEAM Assessor. The Assessor performs a QA-process and determines the score per assessment. Finally, the certificate is awarded to the client. According to the BREEAM certificates this is the asset manager in all three cases.

#### *Stakeholder involvement*

The table shows that investors are not involved in certification processes. bpfBOUW argues that operational investment does not fall within their governance. Investors make their decisions on fund level and not on building level. That is the responsibility of the asset manager. Investors can specify their criteria for sustainable real estate investments in the service level agreement with the asset manager.

Also tenants are not involved, unless the initiative is taken by a tenant. If a building is not assessed with the 'Use' assessment no involvement of tenants is needed. During the certification process, the involvement of tenants does not go further than a notification of the asset or property manager about the certification of the building.

#### *Sustainability measures*

In all three case study projects there were no (physical) measures taken that had an impact on the sustainability performance of the building. During the certification process the building sustainability is rather measured that improved.

In case of Hojel City Center several measures were taken to improve the building sustainability, but this was done in the years before the building was being certified. The certification process was seen as the final step to measure the sustainability performance.

The measures that are taken during the certification process are often 'quick wins' that receive extra points. Examples are an ecological research and instalment of 'swallow nest stones'. The certification process can be a moment wherein sustainability measures are determined for a period towards recertification. The impact of these measures should therefore become visible when the buildings are being recertified after three years.

### **Comparison of interests and impact**

The comparison of the interests and impact is a comprehensive analysis. The answers are compared per type of stakeholder. Table 4.5.3 presents the comparison for asset managers, table 4.5.4 presents the comparison for investors and table 4.5.5 presents the comparison for tenants. To facilitate the comparison, each answer of the stakeholders is aggregated into concisely formulated sentences that present the interest and impact.

## Comparison of interests and applicability for asset managers

Interests	App.	Haagsche Zwaan	WTC The Hague	Hojel City Center
<p>Achieving sustainability ambitions or CSR (Eichholtz, Kok &amp; Quigley, 2016)</p> <p><u>Legend:</u> interest: ► impact: ▷</p>	A ✓	<p>► Achieving global sustainability strategy to optimize portfolios and buildings.</p> <p>▷ An international tool to create transparency in building sustainability.</p> <p>▷ Common definition for sustainability between users, organization and other stakeholders on a global level.</p> <p>▷ No specific certification targets.</p>	<p>► Achieving CSR strategy and ESG policy and invest responsibly.</p> <p>▷ An international tool create transparency, improve quality and reduce operating costs.</p> <p>▷ Common definition for sustainability between stakeholders and organization.</p> <p>▷ Certificate is not a goal but a means to enhance buildings.</p> <p>▷ Specific certification targets including performance.</p>	
Decreased risks (Fuerst & McAllister, 2011a)	A ✓	<p>► Maintain a global strategy that aims to be ahead of for instance regulatory risks.</p> <p>▷ Certificates as a tool to maintain a global strategy.</p>	<p>► Maintaining future proof office buildings with low regulatory and environmental risks.</p> <p>▷ Certificates integrated with low risk profiles in risk return model.</p> <p>▷ Certificates integrated in acquisition agreements.</p>	
SRI (Eichholtz, Kok & Yonder, 2015)	A ✓	<p>► Demonstrate sustainability with Social Responsible Investments</p> <p>▷ Certificates are part of sustainability analysis of real estate funds and enable international benchmarking.</p>	<p>► Contribute to energy transition and reduce environmental impact of assets.</p> <p>▷ Use GRESB and BREEAM to measure and recognize sustainability performance.</p>	
GRESB	A ✓	<p>► Determine and communicate sustainability of funds towards investors.</p> <p>▷ BREEAM is part of GRESB rating.</p>	<p>► Analyse and enhance sustainability on fund level.</p> <p>► Determine and communicate sustainability of funds towards investors.</p> <p>▷ BREEAM is part of GRESB rating.</p>	
Reputational benefits (Van der Voordt & Koppels, 2013)	A ✓	<p>► Offer attractive real estate funds for investors.</p> <p>▷ Use of certificates and information on sustainable performance depends per fund strategy.</p>	<p>► Sustainability as organizational value to outperform competition that is mainly oriented on energy labels.</p> <p>▷ BREEAM is part of one of the sustainability themes.</p>	
Increased asset value (Fuerst & McAllister, 2011a; Wiley, Benefield & Johnsen, 2010)	A ✓	<p>► Optimize asset value.</p> <p>▷ Certification of buildings can increase asset values because of better marketing, less consumption, contribution to GRESB</p>	<p>► Optimize asset value.</p> <p>▷ Certification of buildings can increase asset values, but this depends on many factors.</p>	

			and tenant satisfaction. ▷ Increase in asset value is hard to quantify and varies per market segment.	
<i>Lower CAPEX</i> (Fuerst & McAllister, 2011a)	A	X	▶ - ▷ -	▶ - ▷ No lower CAPEX.
<i>Increased rental income</i> (Devine & Kok, 2015; Fuerst & McAllister, 2011a)	A	X	▶ Optimize assets. ▷ Certification can lead to an increase in rent rate when service costs are lower because of less consumption.	▶ Optimize assets. ▷ No increase in rent rate for tenants.
<i>Reduced OPEX</i> (Devine & Kok, 2015)	A	X	▶ Optimize assets. ▷ Certification can lead to lower consumption and reduced operating costs.	▶ Optimize assets. ▷ Certification does not necessarily lead to better operating performance.
<i>Increased occupancy rate</i> (Devine & Kok, 2015)	A	X	▶ Optimize assets. ▷ Certified office space can attract particular tenant types, for instance large corporates.	▶ Optimize assets. ▷ Certified office space can retain and attract particular tenant types, for instance large corporates.
<i>Insight in sustainability performance</i>	A	✓	▶ Insight in sustainability performance of portfolios and objectives. ▷ Use data of BREEAM and GRESB to monitor and improve energy, water, emissions and waste for all assets.	▶ Insight in sustainable performance and reduce environmental impact. ▷ Use data of BREEAM and GRESB to monitor and improve energy, water, emissions and waste for all assets.

Table 4.5.3: Cross case analysis - Comparison of interests and applicability for asset managers (own illustration)

### Comparison of interests and applicability for investors

<b>Interests</b>	<b>App.</b>	<b>Haagsche Zwaan</b>	<b>WTC The Hague</b>	<b>Hojel City Center</b>
<i>Achieving sustainability ambitions or CSR</i> (Eichholtz, Kok & Quigley, 2016)	I	✓		▶ Achieving ESG policy without influencing yield and risks negatively. ▷ No specific certification targets on building level, it falls outside the governance of an investor. Only indirectly on portfolio level via GRESB.
<i>Decreased risks</i> (Fuerst & McAllister, 2011a)	I	X		▶ Less volatile real estate investments with low risk profiles. ▷ Use GRESB ratings to determine less volatile real estate investments. Not directly with specific certification requirements.

<i>SRI</i> (Eichholtz, Kok & Yonder, 2015)	/	✓		<ul style="list-style-type: none"> <li>▶ Investments that contribute to a broad ESG consensus amongst clients.</li> <li>▷ Integrated ESG-criteria in service level agreement with asset manager.</li> </ul>	
<i>GRESB</i>	/	X		<ul style="list-style-type: none"> <li>▶ Achieving sustainability targets related to GRESB.</li> <li>▷ Requiring a minimum of four star GRESB ratings.</li> <li>Acknowledgement for GRESB 'Green Star' ratings.</li> </ul>	
<i>Reputational benefits</i> (Van der Voordt & Koppels, 2013)	/	✓		<ul style="list-style-type: none"> <li>▶ Having a good reputation towards clients.</li> <li>▷ GRESB and BREEAM are used to inform clients about sustainable real estate.</li> </ul>	
<i>Increased asset value</i> (Fuerst & McAllister, 2011a; Wiley, Benefield & Johnsen, 2010)	/	X		<i>Falls outside governance</i>	
<i>Lower CAPEX</i> (Fuerst & McAllister, 2011a)	/	X		<i>Falls outside governance</i>	
<i>Increased rental income</i> (Devine & Kok, 2015; Fuerst & McAllister, 2011a)	/	X		<i>Falls outside governance</i>	
<i>Reduced OPEX</i> (Devine & Kok, 2015)	/	X		<i>Falls outside governance</i>	
<i>Increased occupancy rate</i> (Devine & Kok, 2015)	/	X		<i>Falls outside governance</i>	
<i>Insight in sustainability performance</i>	/	✓		<ul style="list-style-type: none"> <li>▶ Reducing environmental impact of real estate investments.</li> <li>▷ Asset manager gives the investor insight in this via GRESB and energy dashboard.</li> </ul>	

*Table 4.5.4: Cross case analysis - Comparison of interests and applicability for investors (own illustration)*

## Case study comparison - Interests and applicability for tenants

Interests	App.	Haagsche Zwaan	WTC The Hague	Hojel City Center
<i>Achieving sustainability ambitions or CSR (Eichholtz, Kok &amp; Quigley, 2016)</i>	T ✓	<ul style="list-style-type: none"> <li>▶ Achieve corporate strategy by making a sustainable impact.</li> <li>▷ A tool to set targets for sustainability of the office portfolio.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Achieve corporate strategy by making a sustainable impact.</li> <li>▷ A tool to set minimum requirements and targets of the office portfolio.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Achieve corporate strategy by making a sustainable impact.</li> <li>▷ A tool to measure and verify sustainability performance of the office building.</li> <li>▷ A tool to determine further improvements.</li> </ul>
<i>Decreased risks (Fuerst &amp; McAllister, 2011a)</i>	T X	<ul style="list-style-type: none"> <li>▶ No major risks related to tenancy. Except for new energy label requirements.</li> <li>▷ BREEAM could indicate decreased risks, but is not used as tool.</li> </ul>	<ul style="list-style-type: none"> <li>▶ No major risks related to tenancy in office buildings.</li> <li>▷ BREEAM is not used to indicate decreased risks.</li> </ul>	<ul style="list-style-type: none"> <li>▶ No major risks related to tenancy in office buildings.</li> <li>▷ BREEAM is not used to indicate decreased risks.</li> </ul>
<i>Reputational benefits (Van der Voordt &amp; Koppels, 2013)</i>	T ✓	<ul style="list-style-type: none"> <li>▶ Communicate sustainability as a brand value</li> <li>▷ BREEAM has a minor role in communication of sustainability.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Communicate sustainability as a brand value.</li> <li>▷ BREEAM has a minor role in communication of sustainability.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Communicate sustainability as a brand value.</li> <li>▷ BREEAM is used to verify and communicate the sustainability achievement.</li> </ul>
<i>Reduced OPEX (Devine &amp; Kok, 2015)</i>	T X	<ul style="list-style-type: none"> <li>▶ -</li> <li>▷ Certification did not reduce consumption and related service costs.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Reducing environmental impact.</li> <li>▷ Certification did not reduce consumption and related service costs. This requires measurements.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Reducing environmental impact.</li> <li>▷ A reduction in OPEX was not related to certification.</li> </ul>
<i>Increased occupancy rate (Devine &amp; Kok, 2015)</i>	T X	<ul style="list-style-type: none"> <li>▶ -</li> <li>▷ Certified office space is one of the factors that determines a decision for office space.</li> </ul>	<ul style="list-style-type: none"> <li>▶ -</li> <li>▷ -</li> </ul>	<ul style="list-style-type: none"> <li>▶ <i>outside interests</i></li> <li>▷ -</li> </ul>
<i>Insight in sustainability performance</i>	T ✓	<ul style="list-style-type: none"> <li>▶ Use insight in emissions and consumption to reduce environmental impact.</li> <li>▷ BREEAM is not used for insight in emissions and consumption.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Improving sustainability performance.</li> <li>▷ BREEAM is not used for insight in emissions and consumption.</li> <li>▷ BREEAM is used as a tool to improve sustainability performance.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Improving sustainability performance.</li> <li>▷ BREEAM is not used for insight in emissions and consumption.</li> <li>▷ BREEAM is used as a tool to measure and improve sustainability performance.</li> </ul>

Table 4.5.6: Cross case analysis - Comparison interests and applicability for tenants (own illustration)

Based on the tables that present the comparison of interests and applicability, outcomes can be formulated for the case study research. This is done in the next part. To increase readability, interests are combined per subject. The outcomes are discussed with the literature that was reviewed in Chapter II: Theoretical Framework.

### *Asset value, rent price and occupancy rate*

The case study results show that after certification the rent price was not increased, but there is an increase in asset value. There is no evidence for an increased occupancy rate.

The asset manager of WTC The Hague replied that the rent price was not increased after certification. The asset manager of the Haagsche Zwaan added that there could be an increase in net rental income, because of lower service costs as a result of energy efficient measures. The asset managers cannot confirm an increased occupancy rate. This depends on too many other factors, such as economic cycle, location and type of tenant. Therefore, an increase in occupancy rate after certification and cannot be directly related to certification. The asset managers of WTC The Hague and the Haagsche Zwaan do confirm an increased asset value as a result of certification. The building becomes acknowledged for its sustainability performance, has a better marketing value and becomes more competitive in the market. However, the increase cannot be easily quantified.

Previous research by Fuerst and McAllister (2011a), Devine and Kok (2015) and Spivey, Miller and Florance (2008) indicated a rent premium, occupancy rate and asset value premium for certified office buildings. The case study results cannot confirm these findings for rent price and occupancy rate. This probably highlights the difference between New Construction and In Use certification. Asset managers do not increase the rent price after a building is being certified and changes in occupancy rates cannot be directly related to certification. The findings do confirm an increased asset value as a result of certification.

In the literature review it was mentioned that rent price and occupancy rate are drivers for asset value. Therefore, it seems contrary that the asset value increases while there is no change in rent price and occupancy rate. A possible explanation could be that green building certificates are more often integrated in real estate appraisals (Vastgoedmarkt, 2017). Another possible driver could be lower risk profiles.

### *Decreased risks*

The case study results show that all stakeholders acknowledge that green building certificates can be used as an indicator for decreased risks related to an office building. This is mostly used by the asset managers.

The asset manager of WTC The Hague replied that better BREEAM ratings indicate lower environmental and regulatory risks. They have incorporated BREEAM in the risk return model and related it with low risk profiles. The asset manager of the Haagsche Zwaan added that green building certificates can be used as a standard for being ahead of regulatory risks in a global market. The investor of WTC The Hague stated that a pension fund is interested in investments with low risk profiles, such as future proof buildings. GRESB and BREEAM can be used as indicators for less volatile investments. The tenant of the Haagsche Zwaan replied that BREEAM certificates can indicate lower environmental and regulatory risks related to office buildings. However, all tenants replied that there are relatively low risks related to tenancy. Therefore, tenants do not use green building certificates as an indicator for decreased risks.

Previous research of Fuerst and McAllister (2011a) argued that certified green buildings have reduced risk premia. This is because of less regulatory risks and less uncertainties in rental incomes due to better occupancy rates. Moreover, they argued that this could be a driver for an increased asset value. The case study results confirm green building certificates as an indicator for decreased risks. This interest is mostly applicable for asset managers.

### *CSR, SRI, GRESB and reputational benefits*

The case study results show that sustainability is an important aspect for organisations of investors, asset managers and tenants. Asset managers and investors use SRI and GRESB to analyse and indicate sustainable real estate investments. All stakeholders use sustainability as a brand value and green building certificates are part of this.

All stakeholders have developed policies to achieve their sustainability ambitions, asset managers and tenants integrated green building certificates in these policies. The asset managers of the Haagsche Zwaan and WTC The Hague use green building certificates as an international tool to create transparency in building sustainability and as a common definition between their stakeholders and organization. The asset manager of WTC The Hague has incorporated specific certification requirements as targets in their policies. All three tenants replied that green building certificates were used in their policies, but each tenant practises the policies differently. The tenant of the Haagsche Zwaan sets certification targets for its offices. The tenant of WTC The Hague sets certification targets for offices and requires asset managers to improve the sustainability of the building. The tenant of Hojel City Center uses certificates to measure and verify the sustainability of their facility management. The investor does not directly use certificates to achieve sustainability ambitions because the focus is on fund level.

The asset manager and investor of WTC The Hague and the asset manager of the Haagsche Zwaan use green building certificates and GRESB to indicate SRI. The investor uses GRESB to indicate the sustainability of funds and requires a minimum of four star ratings. Furthermore, the investor integrated ESG-criteria in the investment plan and service level agreement with the asset manager. The asset managers use GRESB to analyse and communicate the sustainability of funds towards investors. It is used as an international sustainability benchmark and green building certificates are part of the rating.

All stakeholders use sustainability as a brand value, green building certificates are part of this and the use depends per organisation. The investor communicates sustainable real estate investments and information about BREEAM towards their clients. It is a pension fund for the construction sector and these investments represent the interests of their clients. The asset managers of the Haagsche Zwaan and WTC The Hague both use sustainability as competitive advantages but this depends per fund strategy. Green building certificates are used as part of the communication of sustainability towards investors and tenants. Green building certificates fit well with the sustainability values of tenants. The use of green building certificates in expressing this brand value seems to be dependent on the involvement during certification. The tenant of Hojel City Center initiated the certification and communicated their achievement internally and externally. This is similar to the tenant of WTC The Hague. The tenant of the Haagsche Zwaan was not involved during certification and expresses sustainability with other achievements.

Previous research of Ramus and Montiel (2005) and Eichholtz et al. (2016) stated that real estate is becoming an important aspect of an organisation's CSR. The case study results confirm that tenants have incorporated sustainability targets for their offices and use green building certificates as a means. However, it seems that this is mainly driven by CSR and not necessarily by economic advantage and institutional pressure. Previous research of Eichholtz et al. (2013) stated that investors have incorporated SRI principles. The results confirm this for the investor that seeks both financial and social return. Furthermore, the results confirm that asset managers and the investor use GRESB to indicate the sustainability of real estate funds and that green building certificates are part of this rating. Previous research of Van der Voordt and Koppels (2013) stated that organisation use sustainability as a brand value. The results confirm this for all stakeholders and add that organisations can use green building certificates to express this brand value.

#### *OPEX and CAPEX*

The case study results show that certification is no guarantee for a decreased OPEX and CAPEX.

The asset manager of WTC The Hague replied that the 'Asset' and 'Management' assessment do not guarantee a decrease in OPEX. This depends on the measurements that are taken for energy and water efficiency and how the building is used by the tenants. If a building already performs well enough, it can be certified without any measurements. The tenant of the Haagsche Zwaan replied that after certification the service costs did not decrease. The tenant of WTC The Hague replied that the 'Use' assessment could cause a reduction in OPEX but this does



also depend on the measurements taken by the tenant. The tenant of Hojel City Center already took measurements before the certification, the reduction in OPEX can therefore not be related to the certification.

If measurements are taken to increase the energy and water efficiency, investments are required. These measurements might reduce the OPEX but will increase the CAPEX. Dutch asset managers are Fiscal Investment Institutions and are not eligible for subsidies. The feasibility of investments increases when Green Lease agreements are made between the asset manager and tenants.

In previous research by Devine and Kok (2015) it was found that certified green buildings offer a reduction in OPEX. The case study results do not confirm a decrease in OPEX after certification. This depends on measurements that are taken by the asset manager or tenant, and buildings can be certified without physical or use measurements. Fuerst and McAllister (2011a) expected that a lower OPEX, tax incentives and subsidies should lead to a lower CAPEX. The case study results do not confirm this because there is no lower OPEX and most asset managers are not eligible for subsidies.

## 4.5 Conclusion

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This chapter described the empirical research wherein the applicability of the theoretical framework was studied. Three case study reports presented a project analysis, reconstruction of the certification process and interests and impact of stakeholders. The findings were compared through a cross case analysis wherein similarities and differences were explored. The comparison of interests and applicability per stakeholder resulted in an comprehensive analysis. To conclude this chapter, the findings are combined into one table that is presented in figure 4.5.1.

## Case study findings - Interests and applicability per stakeholder

Interests	App.	Findings
Achieving sustainability ambitions or CSR (Eichholtz, Kok & Quigley, 2016)	I ✓ A ✓ T ✓	<b>Asset managers, tenants and investors can use BREEAM as a tool to set and achieve sustainability targets</b> <ul style="list-style-type: none"> <li>▪Asset managers use BREEAM as a common (international) sustainability definition between stakeholders and as a tool to measure and improve asset sustainability. For which specific certification and performance targets can be set.</li> <li>▪Tenants can use BREEAM as tool to measure, set requirements and targets for their offices.</li> </ul>
Decreased risks (Fuerst & McAllister, 2011a)	I - A ✓ T X	<b>Asset managers can use BREEAM as a tool to indicate risks</b> <ul style="list-style-type: none"> <li>▪Asset managers can use BREEAM as standard for future proof assets indicated with a low risk profile (low regulatory and environmental risks).</li> <li>▪Tenants do not have major risks related to tenancy and do not use BREEAM to indicate decreased risks.</li> </ul>
SRI (Eichholtz, Kok & Yonder, 2015)	I ✓ A ✓ T -	<b>Asset managers and investors can use BREEAM as a tool to indicate and stimulate Social Responsible Investments</b> <ul style="list-style-type: none"> <li>▪Asset managers integrated certificates as part of sustainability analysis of their real estate funds.</li> <li>▪Investors integrate ESG-criteria in the service level agreement with the asset manager. Certificates can be included as a criteria.</li> </ul>
GRESB rating	I - A ✓ T -	<b>Asset managers that use GRESB can receive points for BREEAM certified assets</b> <ul style="list-style-type: none"> <li>▪Asset managers use GRESB to determine and enhance sustainability on fund level, certificates are part of this rating. GRESB ratings are used to communicate sustainability of funds towards investors.</li> </ul>
Reputational benefits (Van der Voordt & Koppels, 2013)	I ✓ A ✓ T ✓	<b>Asset managers, investors and tenants can use BREEAM to communicate sustainability as a brand value</b> <ul style="list-style-type: none"> <li>▪Asset managers could use sustainability as a competitive advantage. BREEAM could be used to communicate sustainability on building level but depends per fund or asset manager.</li> <li>▪Tenants communicate sustainability as a brand value, the role of BREEAM depends per organisation.</li> </ul>
Increased asset value (Fuerst & McAllister, 2011a; Wiley, Benefield & Johnsen, 2010)	I - A ✓ T -	<b>Asset managers could possibly benefit from certification because of an increased asset value</b> <ul style="list-style-type: none"> <li>▪Asset managers use certificates to improve their assets. An increased asset value could be the result of higher marketing value, less consumption and better tenant satisfaction. but this is hard to quantify and depends on many factors.</li> </ul>
Lower CAPEX (Fuerst & McAllister, 2011a)	I - A X T -	<b>Asset manager do not use certificates to reduce CAPEX</b> <ul style="list-style-type: none"> <li>▪Asset managers do not pay taxes and do not receive subsidies for sustainability measures.</li> </ul>
Increased rental income (Devine & Kok, 2015; Fuerst & McAllister, 2011a)	I - A X T -	<b>Asset managers do not increase the rent price after certification</b> <ul style="list-style-type: none"> <li>▪Tenants do not experience an increased rent price after certification. Asset managers could benefit from energy efficient measures that lower service costs and increase net rental income.</li> </ul>
Reduced OPEX (Devine & Kok, 2015)	I - A X T X	<b>Asset managers and tenants do not experience lower OPEX after certification</b> <ul style="list-style-type: none"> <li>▪Energy and water consumption does not decrease without measures or upgrades.</li> </ul>
Increased occupancy rate (Devine & Kok, 2015)	I - A X T -	<b>Asset managers could possibly benefit from certification because of an increased occupancy rate</b> <ul style="list-style-type: none"> <li>▪Asset managers are not able to determine an increased occupancy rate because of certification. This depends on too many other factors.</li> </ul>
Insight in sustainability performance	I ✓ A ✓ T ✓	<b>Asset managers, investors and tenants use BREEAM as a tool to provide insight and improve sustainability performance</b> <ul style="list-style-type: none"> <li>▪It is not used for insight in consumption and related emissions.</li> </ul>

Table 4.5.1: Case study findings - Interests and applicability per stakeholder (own illustration)



# 5. Conclusion

The conclusion describes how each research objective was carried out and the outcomes that were found in this research. The results are combined in order to answer the main research question. The discussion evaluates the validity of the research design. It is discussed how the results should be interpreted and limitations are explained. Recommendations are formulated for academics and professionals.

## 5.1 Conclusion

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The aim of this research was to provide insight in the interests and impact regarding green building certificates for stakeholders of existing office buildings that are in use. It was aimed to understand why existing office buildings are being certified and how stakeholders are involved in the certification process. The main research question was formulated as follows:

*How do green building certificates affect the building and organisation of investors, asset managers and tenants of in use office buildings?*

The research problem, aim of research and research question were translated into three research objectives. The research objectives were:

- *Analysis of the interests of stakeholders regarding green building certificates*
- *Providing insight in the certification process of BREEAM-NL In Use and determine the involvement of each stakeholder*
- *Determine the applicability of the interests and impact regarding BREEAM-NL In Use certifications for asset managers, investors and tenants*

The three research objectives have been used in order to structure the research and answer the main question. This was done through the design of the theoretical framework and a case study research with three multi-tenant office buildings in The Netherlands certified with BREEAM-NL In Use.

### Analysis of interests

The first objective was to analyze the interests of stakeholders regarding green building certificates. This was done in the second chapter with the design of the theoretical framework.

The literature review has shown that comparative research is an important branch within academic research on the topic of green building certificates. Research papers indicated multiple benefits of certified green buildings compared to non-certified buildings:

- Asset value and rent price (Fuerst & McAllister, 2011a; Devine & Kok, 2015)
- Occupancy rate, tenant satisfaction and retention (Devine & Kok, 2015)
- CSR, SRI, GRESB (Eichholtz, Kok & Yonder, 2013; Eichholtz, Kok & Quigley, 2016) and reputational benefits (Van der Voordt & Koppels, 2013)
- OPEX (Devine & Kok, 2015) and CAPEX (Fuerst & McAllister, 2011a)
- Decreased risks (Fuerst & McAllister, 2011a)

The conceptual model described asset managers, investors and tenants and illustrated their context. The benefits related to certified green buildings were translated into potential interests for these stakeholders. The potential interests were combined with the stakeholders in the theoretical

framework. The conceptual model and theoretical framework were used to test the findings in the empirical research.

## **Certification process and stakeholder involvement**

The second objective was to provide insight in the certification process of BREEAM-NL In Use and to determine the involvement of each stakeholder. This was done in the third chapter in the first part of the empirical research.

A case study research was designed to analyse three projects and the related certification processes. The Haagsche Zwaan, WTC The Hague and Hojel City Center were studies as case study projects. All buildings satisfied the selection criteria: multi-tenant office buildings in The Netherlands, certified with BREEAM-NL In Use and stakeholders corresponding with the conceptual model. Interviews were held with three tenants, two asset managers, one investor and three property managers.

The analysis consisted of a project analysis and a reconstruction of the certification process. The project analysis presented building, certificate and stakeholder information. The certification processes were reconstructed based on interviews with the stakeholders and property manager. The results of the interviews were combined in narrative reports and timelines that described the steps of the certification process and the involvement each stakeholder. The analysis of the certification processes revealed that:

- Asset managers initiated the certification process in two out of three cases, in one case the initiative was taken by the tenant
- Tenants are not involved during the certification process, unless they take their own initiative
- Investors are never involved, this does not fall within their governance
- BREEAM-NL In Use offers three separate assessments
  - All buildings were assessed for 'Asset' and 'Management'
  - One building was assessed for 'Use', this was initiated by the tenant
  - One tenant assessed the entire office portfolio with 'Use'
- During the certification process the sustainability performance is rather measured than improved. In all three cases, no (physical) measures were taken that had an impact on the sustainability performance

## **Applicability of interests and impact**

The third objective was to determine the applicability of the interests and impact regarding BREEAM-NL In Use certifications for asset managers, investors and tenants. This was done in the third chapter in the second part of the empirical research.

The applicability of the theoretical framework was studied through interviews with three tenants, two asset managers and one investor. Two tenants were large accountancy and consulting firms, one tenant was a financial institution. The asset managers were real estate investment managers, of which one was domestic and one international. The investor was a pension fund. The stakeholders were questioned about the applicability of the interests and the impact. The results were reported per interest and the referenced documents in their answers were used to supplement their arguments (annual reports, policies and other documents).

As a result of the study about the applicability of the theoretical framework the following interests were confirmed by the stakeholders and contribute to:

- Asset value, decreased risks and insight in sustainability performance
- CSR, SRI, GRESB and reputational benefits

Other interests were not confirmed and do not contribute to:

- Rent price and occupancy rate
- OPEX and CAPEX

A more detailed overview of the findings was presented at the end of chapter 4 and in table 4.5.1.

## Conclusion

Many research papers have studied the benefits of certified green buildings compared to non-certified green buildings. The introduction of BREEAM-NL In Use and similar green building certificates enable non-certified buildings to become certified green buildings. In the literature review it was discovered that previous research do not make a distinction between certifications for newly constructed buildings and existing buildings.

There are several differences between green building certificates for New Construction and In Use. Existing office buildings certified with BREEAM-NL In Use are not designed according to the design guidelines of BREEAM. The case studies of the Haagsche Zwaan, WTC The Hague and Hojel City Centre showed that certificates can be obtained without improving the building sustainability during the certification process. Compared to newly constructed buildings, existing buildings do not start with a clean slate. The case studies showed that there is an existing context of stakeholders consisting of agreements and contracts between the asset manager, investors and tenants.

Based on the differences between green building certificates for New Construction and In Use, this research studied the applicability of the benefits of certified green buildings for existing office buildings certified with BREEAM-NL In Use.

- The case study findings did not confirm a rent premium that was indicated by Fuerst and McAllister (2011a) and Devine and Kok (2013). Asset managers and tenants replied that the rent price is not increased after certification.
- The case study findings did not confirm a higher occupancy rate and lower operating expenditures that was indicated by Devine and Kok (2013). Asset managers replied that there is no clear relation between occupancy rate and certification, this depends on too many external factors. The tenants and asset managers replied operating expenditures did not decrease after certification because no measures were needed to be taken.
- The asset managers did confirm an increased asset value that was found by Fuerst and McAllister (2011a), Miller, Spivey and Florance (2008) and Wiley, Benefield and Johnsen (2010). The origin of the increased asset value cannot easily be identified. Since it is not the result of changes in rent price or occupancy rate, there is evidence related to lower risk profiles used by asset managers and investors and integration of sustainability in real estate appraisals.

This research showed that asset managers, investors and tenants integrated green building certificates in their organizational policies as part of their CSR and use sustainability as a brand value.

The stakeholder that benefits most of green building certificates is the asset manager. Green building certificates verify the status and performance of a sustainable building. The case study findings showed that asset managers can use green building certificates as: as a common sustainability definition towards investors and tenants, indicate low risk profiles and SRI, as part of GRESB-ratings, an international standard in policies strategies, building marketing and for insight in sustainability on building level. The interest of asset managers is confirmed by their initiative in the certification processes. The assessments emphasize the different responsibilities of the asset manager and tenants. An asset manager performs the 'Asset' and 'Management' assessment. The 'Use' assessment is the responsibility of the tenants, but is almost never performed for existing multi tenant office buildings. Tenants benefit less from certification of an existing office building, unless they take their own initiative because of achieving sustainability strategies.

### Vicious Circle of Blame

Finally, this research concludes with a reference to the 'Vicious Circle of Blame'. From 2023, all office buildings in The Netherlands will be required to have a minimum of energy label C (RVO, 2017). This measure that affects 52% of all office buildings in The Netherlands that currently perform lower than energy label C (EIB, 2016). Less than 6% of the office stock is certified with BREEAM-NL.

The 'Vicious Circle of Blame' was used by David Cadman (2000) to illustrate why there is a lacking initiative for improving the sustainability of existing buildings. Based on this research a similar illustration is designed to explain why existing office buildings are being certified without sustainable measures and why the 'Use' assessment is not performed. This is presented in figure 5.1.1.

The 'Vicious Circles of Blame' are illustrated with two circles of blame with the asset manager in the middle. The asset manager provides real estate investment funds for investors. The sustainability of these funds on the interests of investors. Some investors 'stimulate sustainability, as long it does not negatively influence profit and risks', other investors are only interested in economic performance. The asset manager also provides office space for tenants. The asset manager is able to provide sustainable office space, but it is the responsibility of the tenant to 'operate it in a proper way'. This is not always done, because 'the influence of one tenant in a multi tenant building is very small'.

The 'Use' assessment could help solving the circle of blame between the asset manager and tenants. Therefore, tenants must be made aware of their responsibilities as a tenant. Tenants should collaborate with each other and with the asset manager in order to make a sustainable impact.

## Vicious Circles of Blame

### Stakeholders regarding In Use certifications

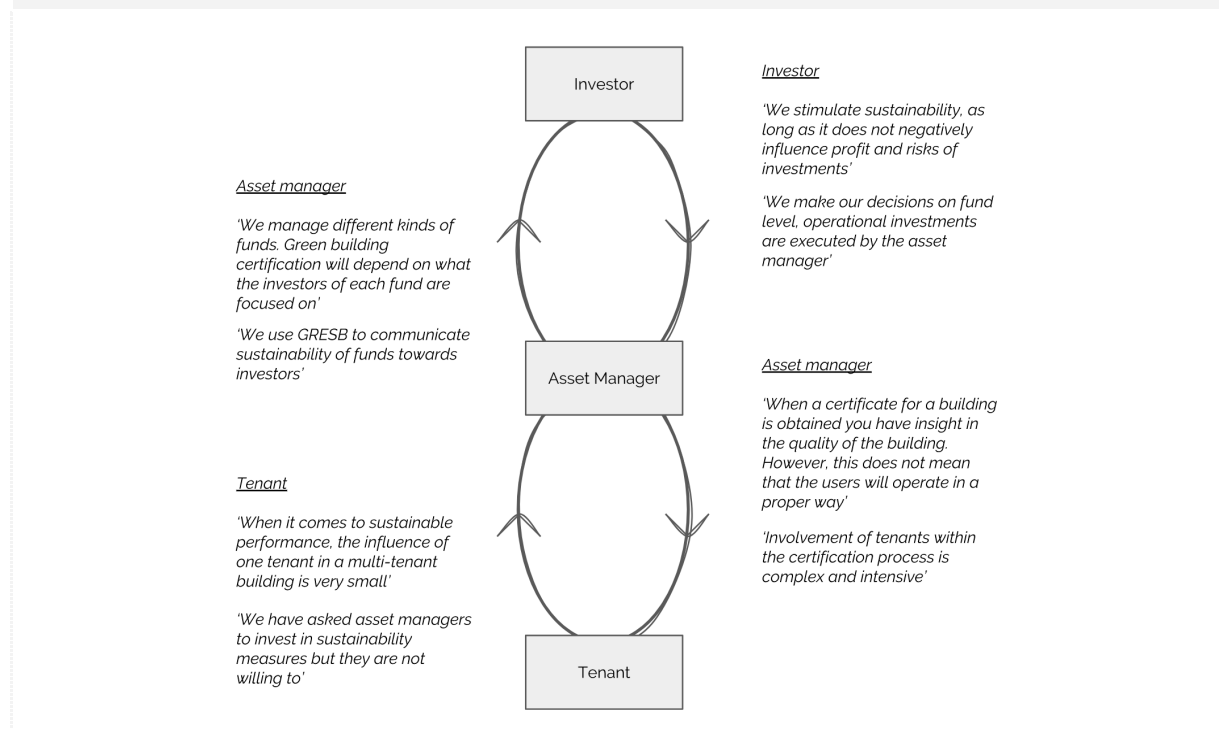


Figure 5.1.1: Vicious Circles of Blame - Stakeholders regarding In Use certifications (own illustration)

### **Validity of research design**

The research design was introduced in paragraph 2.5 and described the approach consisting of the design of the theoretical framework and empirical research.

#### *Theoretical framework*

The theoretical framework was designed based on the outcomes of the literature review and conceptual model. The literature study was strongly demarcated with the focus on comparative studies for certified green buildings and non-certified buildings. The advantage of this demarcation was that the benefits of certified green buildings that were found came from a similar branch within academic research on this topic. This formed a strong basis support by previous research from North America and Europe.

The conceptual model described the context of tenants, asset managers and investors was a clear representation of the reality. Initially, the property manager was not included in the stakeholder analysis. During the first case study it was found that the property manager has an important role in the certification process being the contact person between the asset manager and tenant.

#### *Empirical research*

The case study research method of Yin (2014) was a strong basis for performing the empirical research. The three case studies that were selected fulfilled the selection criteria. The case studies are a good representation of multi-tenant office buildings certified with BREEAM-NL In Use.

The interview formats were evaluated as highly effective for a structured data collection. Asset managers, tenants and investors have different backgrounds and highlight different aspects of certification and use different definitions for similar terms. The interview format defined each term and made it possible for interviewees to prepare for the interview. A disadvantage of having too much structure is a lack of flexibility for interviewees to highlight other important aspects. Therefore, an extra row with 'other comments' was added to tables in the case study reports.

The cross case analysis was a comprehensive comparison of results. The challenge was to analyse and present an extensive amount of data without losing the attention of the reader. After having designed several alternative tables, the cross case analysis fulfilled the objective of substantiating similarities and differences. Again the theoretical framework proved its value with an revised version that summarized and presented the research findings.

An expert panel was organised to discuss the research findings and discuss the applicability of the findings for other multi-tenant office buildings certified with BREEAM-NL In Use.

### **Limitations**

The research design that was used for this research is evaluated as an effective approach for conducting this type of research. However, there are some limitations. In comparison with quantitative research, findings of qualitative research cannot be easily generalized. The case study findings are based on interviews held with 3 tenants, 2 asset managers and 1 investor. The tenants represent large corporate organizations in the financial and consultancy sector. The asset manager represent large real estate investment managers. Unfortunately, only one investor was interviewed while other investors were confidential and could not be interviewed.

The research findings are therefore, initially, only applicable for the cases that were studied. The findings could be generalized for a larger target group. For example, by performing a questionnaire using the DGBC client database.



## 5.3 Recommendations

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The findings of this research can be important for policy makers, users, researchers and developers of green building certificates. The first recommendation for further research is confirming the findings of this research for a larger target group by performing a questionnaire using the client database of DGBC. The findings could also be studied for other green building certificates. Additional research on recertification is needed to study the increase in sustainability performance over time. Other recommendations are elaborated for the DGBC, Dutch government and academics.

### **Dutch Green Building Council: Change the 'Use' assessment**

BREEAM-NL In Use certified buildings are usually not assessed with the 'Use' assessment. Several asset managers replied that tenant behaviour is an important factor for sustainable building operation.

During the case study interviews several barriers that prevent the 'Use' assessment were discovered. The first barrier is an absence of clarity amongst stakeholders regarding each other's responsibility of initiating this assessment. Asset managers initiate the certification process for 'Asset' and 'Management' assessments. Tenants of multi-tenant office buildings are not always aware of their responsibility for the 'Use' assessment, or its existence. The second barrier is the rating of the 'Use' assessment, which is dependent on the least performing tenant. The feasibility of the 'Use' assessment decreases with an increasing number of tenants that are involved. The third barrier is related to the intensive documentation process. Asset managers comment that the documentation is too complex for the average tenant. The time needed for gathering the required documents can make the process costly.

The Dutch Green Building Council must review and change the 'Use' assessment and make it more attractive and feasible for tenants. The case studies provide inspirational examples of PwC and de Volksbank that are early adopters by taking their own initiative. Their experiences of the certification process and advantages for the sustainability of their organisation are a starting point for other tenants.

### **Dutch government: Raise the bar**

The Dutch government will require a minimum of energy label C for all office buildings in The Netherlands from 2023. The target group that was studied in this research will probably not be affected by this regulation.

The new regulation of the Dutch government seems to lack ambition for the transition towards a sustainable built environment. Certainly compared to the city of Vancouver that has set LEED Gold as a minimum requirement for planning permits. The national building code has been overtaken by initiatives of local planning authorities. In 2016, the Amsterdam Zuidas has implemented BREEAM-NL Excellent as a minimum requirement for new developments. The Zuidas became one of the most sustainable office locations in The Netherlands and has the ambitions to become the most sustainable office location of Europe by 2020.

The Dutch government should explore the potential of green building certificates as a means instead of energy labels. The analysis of the BREEAM-NL project database showed that most certificates are issued in the business districts of the top four cities in The Netherlands. The Zuidas initiative should be a leading example for business districts of The Hague, Utrecht and Rotterdam.

### **Academics: Leave the 'what', explore the 'how' and 'why'**

The academic research on the topic green building certificates has given a lot of insight in what the benefits are of certified green buildings. This research used these benefits to explore the next questions related to how and why.

The literature study in the second chapter of this thesis reviews research papers that described the benefits of certified green buildings. Several comparative studies use quantitative research to indicate benefits related asset values, rent prices and other benefits. Different research papers confirm the findings for certified green buildings in North-America and Europe. While there is many evidence about 'what' the benefits are, there is relatively little insight in 'how' certification processes are organized and 'why' organisations use green building certificates.

The recommendation for researchers of the topic of green building certificates is to leave the 'what' and explore the 'how' and 'why'. The case study research approach that was used in this research could be an example for further research.

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