THE IMPACT OF SUSTAINABILITY IN DEVELOPERS' DECISION-MAKING PROCESS

A comparative study of urban sustainability assessment systems

P5 Report

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Gian Carlo Carini · 5352118
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Personal Details
Gian Carlo Carini
Student Number: 5352118

Institution
Delft University of Technology
Faculty of Architecture and the Built Environment
MSc. Architecture Urbanism and Building Sciences.
Track: Management in the Built Environment.
Graduation Lab UDM – Urban Development Management and REM – Real Estate Management

Graduation Supervisors
Dr.ir. Erwin Heurkens
Dr. Hilde Remoy

Delegate of the board of examiners
Dr. Olindo Caso

Graduation Laboratory · AR3MBE100

20 June, 2022

Abstract

In a time of increasing awareness regarding environmental and social concerns, urban area developments have been framed within ambitious goals which require the collaboration of developers and other parties. The complexity behind pursuing sustainable goals brings several challenges to the feasibility and financing of projects since private actors are mostly profit-driven and therefore, their business rationale tends to collide when taking decisions that link private profit and public values. The existing criteria to assess sustainability, mostly at an urban level, and the difficult quantification of these criteria into potential benefits for developers have been traditionally determined as seeming incompatible. Therefore, a deeper understanding of how sustainability is impacting the decision-making of area developers is required to achieve the right balance between long-term sustainability and short-term profitability.

In that sense, there is an existing gap between sustainability assessment methods and decision-making processes that needs to be filled to ease the transition towards a broader definition of value into the business rationale of developers. In that line of reasoning, market-driven rating tools for sustainability assessment represent an opportunity to analyse how their use is impacting the urban redevelopment management, providing empirical examples of how the gap with decision-making processes can be minimized. These findings, aims to evaluate the implementation of BREEAM-NL Area in The Netherlands and add knowledge on how the use of it as a methodological framework can have an impact in the decision-making process. That could potentially stimulate developers to take a more holistic approach, enhance innovation within their decision logic and embed sustainability within their corporate strategies.

Personal Motivation

There is no bigger witness of humankind's existence in this world than our cities. As an active part of our memory and history, the built environment has been shaping the way we live while enabling human activity to evolve (Squires & Heurkens, 2015). In that sense, the city is the arena for life to unfold towards a sustainable and resilient future. A call for action has been done to professionals in the built environment due to the increasing awareness regarding environmental concerns (Kauko, 2017). People need better cities; the world is moving towards new best practice frameworks, and it is our ethical duty as future professionals to use our knowledge and integrity to make sustainability a reality.

Sustainable area redevelopment might look like a difficult financial exercise, but from our field, we are able to strive for a change through scientific argumentation and methodological understanding of the market dynamics. Therefore, it is my personal aim to contribute through this research to the rationalization of a convincing framework for improvement in decision-making towards sustainability.

Preface

This master's thesis was conducted as a part of the Urban Development Management Graduation Lab of the MSc Program at Delft University of Technology, track management in the Built Environment. This thesis intends to provide knowledge about the impact that Urban Sustainability Assessment Systems have in urban redevelopment practices, and focuses on the implementation process as means to influence developers' decisions towards a more sustainable future.

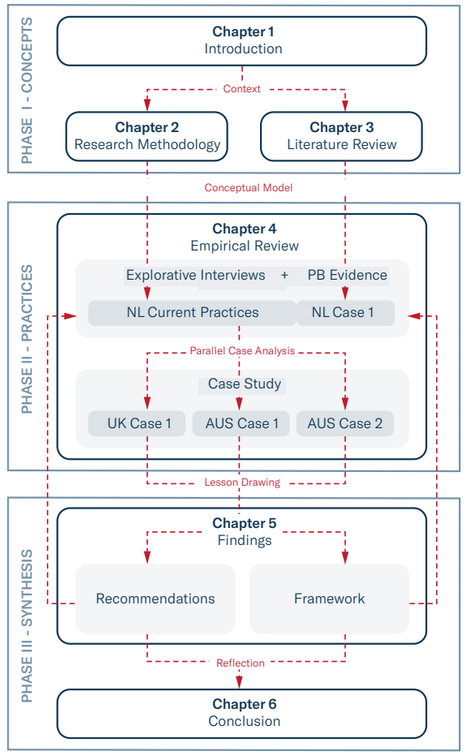
Throughout the process many people have contributed to this research. I would especially like to thank my supervisors, Erwin Heurkens & Hilde Remoy for their guidance and support. They made from this journey a challenging and rewarding experience.

I would like to extend my gratitude to all the interviewees who collaborated with their valuable insights to make this research possible. Their trust and willingness to share enriched a learning process that does not end here. I also want to thank my family for their unconditional support, my mother for inspiring me everyday, my father for being him, my friends for always being there, and Camila for her patience and love. Lastly, thanks to Colfuturo for believing in my talent.

Gian Carlo,
Delft, June 2022

Reading Guide

The following diagram can be used as a reading guide for this thesis report



Executive Summary

Introduction

As a result of the climate crisis and the scarcity of resources, all industries have been forced to adapt to new standards for sustainability and environmental responsibility. The adaptation process implies reducing detrimental impacts and maximizing opportunities within the available financial sources (Cradock-Henry et al., 2019). Urban sustainability, however, stretches beyond environmental and ecological dimensions since a future-proof city requires more than "green building" standards (Kauko, 2017). Accordingly, the built environment is not an exception, and therefore, the urban development process is constantly changing to cope with societal needs and governmental ambitions (Senge, 2008; Van der Heijden, 2017). From a private sector perspective, that represents challenges in investment, development, O&M, and financing of future brownfield developments (Chegut et al., 2014; UN Global Compact & RICS, 2018), especially when it involves sustainability assessment, valuation methods, and decision-making processes related to capital investment (Kauko, 2019; Warren-Myers, 2012).

Thus, the introductory chapter of this thesis aims to contextualize the research by outlining the transition phase that urban development management is facing towards more sustainable practices. To do that, the introduction examines four elements.

- The need to bring the private sector perspective on board to effectively address the transition and implementation of sustainable urban policies (Heurkens et al., 2020; Kauko, 2017).
- The need to evaluate how sustainability can be valued from a private perspective to enhance the changing role of the private sector rationale (Heurkens, 2019; Kauko, 2019; Senge, 2008)
- The potential for urban sustainability assessment systems to become a reference framework to assess developers' decision-making in relation to sustainability metrics and their perceived value (Warren-Myers, 2012) (Callway et al., 2019; Vieira De Castro et al., 2020; Warren-Myers, 2012)
- The voluntary and market-based use of urban sustainability assessment systems as means to bring the private sector perspective into the urban sustainability policy sphere (Callway et al., 2019; Chegut et al., 2014; Kauko, 2019)

Problem Statement

As an object of study, urban redevelopment projects have been one of the main targets of policy and finance in the last couple years. Thus, their role in society highlights the challenge of integrating and balancing sustainability targets alongside financial viability (Heurkens et al., 2020). Now, within the urban redevelopment management field, fail to qualitatively recognize the use of market-driven rating tools as a sustainability assessment methods capable of assisting the decision-making process of developers at an urban level (Callway et al., 2019; Dobrovolskienė et al., 2019; Kauko, 2017), as most of the literature studies tend to not address the integral dimension of sustainability, remain at a building scale, and show a deficit of empirical qualitative investigation (Jackson & Orr, 2021).

Moreover, in the Dutch context, the current implementation and added value associated to the use of such methods requires further research to evaluate the impact of implementing BREEAM-NL Area (Regales, 2017). This becomes relevant since it can illustrate a potential influece on the managerial process and the outcome of sustainable urban redevelopments (Kauko, 2017; Sharifi & Murayama, 2014; Vieira De Castro et al., 2020). Such ambition fulfils the scope of enhancing a more efficient use of resources, maximizing long-term value, and potentially accomplishing better cities (Jankalová & Kurotová, 2020; Urban Land Institute, 2018)

Research Objectives

This research proposal has two main goals.

- To provide learnings based on the motivations, implementation and added value behind the use of USASs, for a potential improvement of BREEAM-NL Area and the practices related to it in the Dutch context. Those findings are structured in two sets of recommendations, one which addresses the DGBC and aims to improve the broader market adoption of BREEAM-NL Area and the implementation practices in the Dutch context, and another one which addresses Dutch developers and aims to give a better understanding of how the implementation of USASs can support developers with their decision making-process, thus representing a source of value towards more sustainable development practices.

- To provide an overview of how market-driven assessment systems for urban sustainability can influence the decision-making process of developers. Those findings are structured as a framework which exposes the findings from the parallel case study analysis as a means to demonstrate, from an analytical perspective, how the assessed variables interact. Although this framework has mostly an academic application due to its limitations as a communication tool, it can be seen as an early step in theory development.

Research Questions

The main research question (MRQ) answered in this research is: **“How can sustainability be enhanced from a private sector perspective in urban redevelopment projects when implementing USASs?”** The research question at the same time is divided into three different sub-questions (RsQ) that look to clarify the expectations and phasing of the research (RsQ1-RsQ2-RsQ3). Those are:

- **RsQ1: Why do developers decide to implement USASs?**
- **RsQ2: How developers' decision-making can be influenced by the implementation of USASs?**
- **RsQ3: To what extent does the developers’ implementation of USASs lead to a more sustainable urban redevelopment project?**

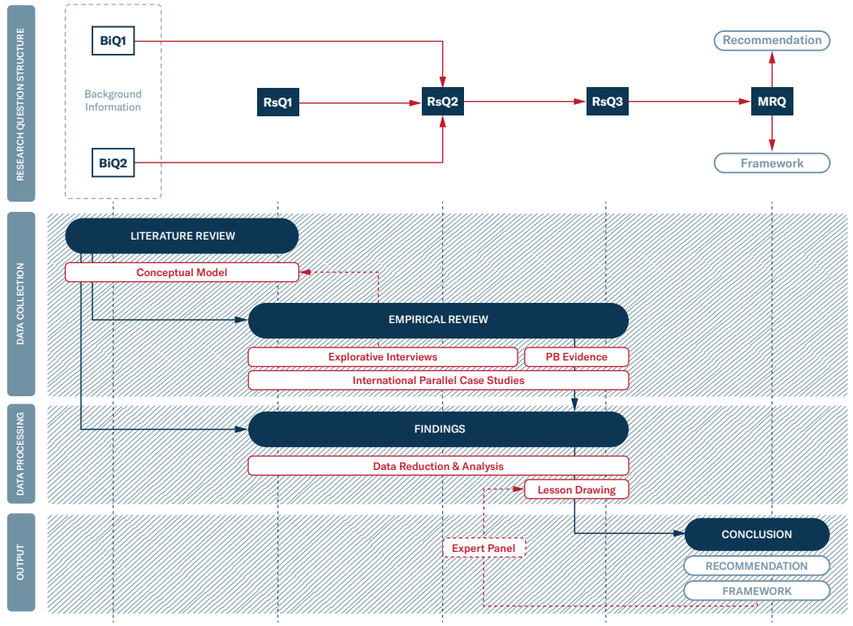
However, before answering the sub-questions it is necessary to collect relevant background information which is synthesized through two background information questions (BiQs). Those are:

- **BiQ1: How do developers assess sustainability through USASs?**
- **BiQ2: How are developers’ sustainable ambitions embedded in their decision-making?**

Methodology

The research presents two main elements: a literature review and an empirical review. The literature review is structured by the BiQs as shown in figure 1, and provides the theoretical knowledge necessary to define the three main concepts of the research: Sustainability Assessment System Implementation, Decision-aking, and Sustainable Urban Redevelopment Project. The theoretical knowledge is complemented by the outputs from RsQ1 through an iterative process where explorative interviews with Dutch field experts lead to a conceptual model, or Analytical Case Study Model. The model gathers the main concepts evidenced in the literature review and the key aspects highlighted by the explorative interviews, thus providing the analytical basis for the variables addressed in the study cases. Following this logic, it functions as a structuring device for the study cases and further information processing.

The case studies are divided into two main components; The first component is the Dutch Base Case, from which Dutch Current Practices (explorative interviews) and project-based knowledge (NL Case 1) are part of. These two complementary elements set up the ground for lesson drawing. The second component is the International Parallel Case-Study (UK Case 1, AUS Case 1, AUS Case 2), where individual cases are first individually assessed, and then compared to identify common patterns for lesson drawing. The case selection is done following ten criteria previously defined by the literature review and the analysis of the Dutch context. Each case is structured based on a document review of publicly available information and a set of in-depth interviews with experts associated to the analysed project. The Dutch Case and the International Case are finally confronted to consolidate the lesson drawing prosses. The research findings give an answer to RsQ1, RsQ2, RsQ3 towards a final answer of the MRQ, and lead to the outputs of the research, being the recommendations and the framework result from analysing and processing the collected data. The research conclusions align with both the pragmatic nature of urban development practices, and the need to develop conceptual (management) knowledge for academics.



Phase One: Concepts

During the first phase of the research, academic literature and documents from experts were used to gain a better understanding of the relevant topics of this research. The main concepts of the research, Urban Sustainability Assessment Systems, Decision-making and Sustainable Urban Redevelopment where operationalized using as guidelines the two BiQs and RsQ1. The objective of BiQ1 was to understand how USASs work in the Dutch context, the objective of BiQ2 was to understand the decision process of developers within urban redevelopment management, and the objective of RsQ1 was to understand the relationship between Dutch developers and the BREEAM-NL Area certification scheme. In other words, why and how this tool is being used. The outputs of the literature review are synthetized in the list below:

Urban Sustainability Assessment Systems

· Get an overview of the existing USASs and evaluate the comparability of the different USASs (Pedro et al., 2019)
· Understand the BREEAM-NL Area framework and identify possible pitfalls in current Dutch practices (BREEAM, 2012)
· Understand the scope of the assessment and the actors involved (Callway et al., 2019; DGBC, 2016)
· Identify the drivers for implementing evaluative practices (Abdelnour et al., 2017; Callway et al., 2019; Regales, 2017)
Identify the barriers for implementing USASs (Lambert, 2021; Regales, 2017; Simhachalam, 2008; Williams & Dair, 2007; Xiaoling, 2011)

Decision-Making

· Understand the developers' drivers (Geltner et al., 2020; Regales, 2017; Warren-Myers, 2012)
· Understand the organisational alignment in decision making (Cappai et al., 2018; Reed, 2021)
· Understand the role of USASs from a management perspective (Morris & Jamieson, 2005b; Vieira De Castro et al., 2020)
· Understand the decision process of developers associated to sustainability features (de Magalhães et al., 2019; Willows & Connell, 2003)
· Understand the impact of evaluative transitions and the critics towards evaluative practices (BRE Group, 2015; Callway et al., 2019; Coppens et al., 2021)

Sustainable Urban Redevelopment

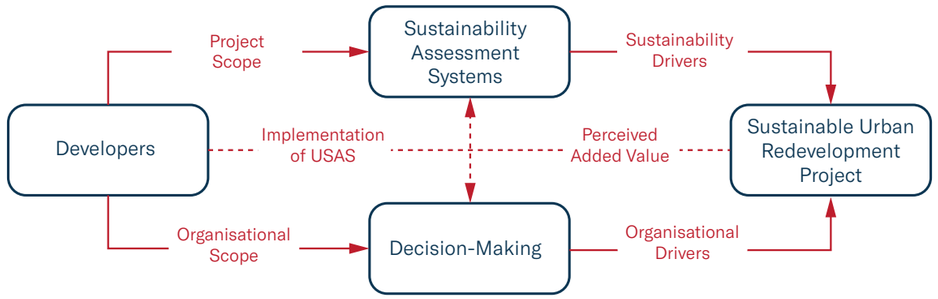
· Identify the characteristics of the BREEAM-NL Area assessed project (Callway et al., 2019; Gluch & Bosch-Sijtsema, 2016; Regales, 2017; Yu & Kwon, 2011)
· Understand the operational implications of the assessment process (Group, 2021; Schweber, 2013)
· Identify the advantages and perceived added value of implementing USASs from a private sector perspective (Fredriksen, 2015; Regales, 2017)

The information gathered was contrasted and complemented with semi-structured explorative interviews with experts as the first step for the empirical review. This iterative process made it possible to frame the empirical research by means of a conceptual model, which becomes the framework to structure, analyse and process the case studies towards our findings.

Phase Two: Practices

The second phase starts with the Dutch Base Case. The conclusions of the Dutch Base Case are the results of the empirical review of the Dutch context. It provides a weighted perspective of both the explorative interviews with three field experts (Dutch Current Practices) and the project-based in-depth interviews with the developers of Wisselspoor Redevelopment Project (NL Case 1), thus presenting a set of elements for the potential lesson drawing process. These two complementary perspectives allow us to provide a weighted analysis of the Dutch context related to the implementation of BREEAM-NL Area. The conclusions highlight the background information that justifies the existing pitfalls in the local practices. Some of this pitfalls identified from the developers perspective were: 1) low awareness of the USAS scope and its utility in terms of urban features, 2) perceived low alignment between assessment drivers and intrinsic motivation which leads to a low voluntary implementation, 3) perception of the assessment as an end on itself, thus as a post-evaluative check-list, 4) relative low active demand by external parties, 5) challenges in terms of implementation (costs - coordination - work scope - market knowledge), 6) low emphasis on the assessment's guiding role, 7) potential obstacle for planning process, 8) positive perception of the assessment's reflective and evaluative role, with a limited influence on organisational scope (developers ambitions) and a positive influence on the project scope although limited by the organisational scope, 9) relative low utility as sustainability enabler, mostly associated to low experience and enforced implementation and 10) hesitance of potential that the implementation can have as means to get external incentives, thus showing a partial alignment of the implementation as means to stimulate organisational drivers for sustainable urban development. These ten elements articulate previous research with current practices identified through the empirical review, thus legitimizing the analysis of international case-studies to strive for inspiration and learnings applicable to the Dutch Base Case.

Having defined the Dutch Base Case through the variables highlighted in the conceptual model, it was possible to move forward into the parallel international case study analysis. The three international comparative case studies were chosen based on ten selection criteria. The selected cases were Aylesbury Estate Redevelopment (UK Case 1), Brisbane Showgrounds Redevelopment (AUS Case 1) and Waterloo Metro Quarter Redevelopment (AUS Case 2). The analysis of each case study comprehends an initial project description with information retrieved from a document review, and a second part with the empirical review, which is the product of implementing the conceptual model as a base to setup the interviews with professionals involved, or with high knowledge, about the project.



Phase Three: Synthesis

After having individually analysed the proposed case studies, the third phase starts by analysing the conclusions from the cases as a whole, aiming to identify common patterns throughout the international practices. The scope of it was to strive to triangulate the research analysis and reach conceptual equivalences that can lead to the lesson drawing phase. As a starting point for the parallel case-study analysis the results from the different cases where mapped following the same conceptual framework used to structure the individual case analysis. Then each concept was assessed based on the information retrieved from the three different cases. By having an overview of all the results, it was possible to identify common patters in the implementation of USASs. The findings from the parallel case-study analysis were the triangulated information that was ultimately used to draw lessons and inspirational practices in relation to the elements identified during the conclusions of the Dutch Base Case.

Findings Implementation of Urban Sustainability Assessment System

Assessment Scope

International case-studies show a high emphasis on the frameworks' utility in relation to urban scale sustainability features, which is relevant since it evidences the developers' awareness of the actual difference between USASs and the building scale certifications. In general terms, that scope aligns with the assessment scope defined by Callway et, al. (2019) and the DGBC (2021). In second place, the decision to implement the assessment follows in all cases an objective that aligns with the corporate strategy of the developers, thus accentuating the main scope of the organisations. Moreover, the implementation of the assessment followed a voluntary logic that is tightly connected to the perception of the assessment as a means to achieve their organisational goals, in these cases being good reputation, long term vision and high competitiveness. Such alignment corresponds with the idea of organisational alignment exposed by Vieira De Castro et al., (2020)

Assessment Drivers

When we analyse the assessment drivers it is possible to identify a pattern of implementation driven by a growing tendency to involve USASs as sustainable development criteria, whether by local authorities, clients, or social actors, thus recalling to external drivers as suggested by Callway et, al. (2019). The aforementioned pattern aligns with the fact the implementation is mostly driven by active demand, thus emphasizing the role that clients, both public and private, as well as institutional investors play in the market uptake of these assessments. In addition to that, it is possible to pinpoint that the implementation was highly driven by the corporate ambitions of the developers and their organisational scope, as illustrated by Vieira De Castro et al., (2020). Therefore, there is also a common willingness to attract investors for potential funding due to the project scale, which is complemented by the intention of attracting tenants willing to pay higher premiums on the developed assets as stated by Fredriksen (2015).

Assessment Barriers

In terms of assessment barriers, there is general agreement about the main challenges in relation to the implementation. The developers' perception about a resource-intensive assessment process aligns with a notion of the moderate implementation costs as a cost uplift within the projects' budgets.

In addition to that, as frontrunner projects there is a tendency to point out the limited internal knowledge of organisations, which is associated to the little expertise in relation to the implementation of USASs, as stressed by Regales (2017). Moreover, the different challenges in coordination underline a general lack of market knowledge and the complexity that the potential misalignments in terms of work scope can create during the assessment process as expressed by Simhachalam (2008). In relation to these barriers, different potential solutions were suggested by the experts, and although there is not patter as a one-fits-all specific solution, there is a tendency to emphasize on certain principles like on the importance of an early implementation, on the benefits of an integral team training, on the relevance of deploying project-management based assessment enablers and the urgency to establish more efficient information management practices.

Findings Influence of USASs on developers' decision-making

Organisational Scope

Following the scope definition principle illustrated by Willows & Connell (2003) and the progressive reflection led by evaluative practices Callway et al., (2019), the possible influence that the implementation of USASs can have on developers' organisational scope was assessed. All three cases forecast a limited though positive perception of the assessment's reflective role. Based on the parallel analysis of the case studies it is possible to state that the implementation of USASs involves the incorporation of new practices and those practices, in addition to the acquired knowledge, can potentially lead to an open mindset for discussion. That mindset potentially translates into higher awareness and thus, into inspiration for developers willing to outstand in the market. Hence, awareness and inspiration become drivers for reflecting and setting up higher sustainability ambitions. That reflective role of the USAS translates into a positive influence in the organisational scope and a potential feedback for the corporate strategy.

However, it is also relevant to stress two elements. In first place, the potential influence of the assessment is perceived to be dependent on the repetition and the necessary feedback loops associated to the implementation. In second place, the USAS is not primarily implemented with the purpose to trigger reflection at a corporate policy level, but as suggested before, during its operationalisation it does have the potential to introduce new practices on daily basis that prompt an open mindset for corporations, thus enhancing possible streams of innovation. In that sense, the risen awareness and acquired knowledge from the implementation can help shaping the way corporations behave, both at a business level and in everyday practices, thus enhancing the industry maturity towards more sustainable practices.

Development Process

Based on Morris & Jamieson (2005), the influence of USAS as a strategic planning practice lands within the guiding role of the assessment. Based on that definition, the results of the three case studies reiterate a high emphasis on the assessment's guiding role, especially in relation to the utility that it can bring in terms of assessing and defining strategic planning goals, which is a commonly seen a priority in a long-term urban development approach by developers whose business plan or development strategy foresees an active involvement in the area after the execution phase. The implementation's utility as a guiding tool is also complemented by a high influence in terms of process which is supported by the advantages that USASs brings in terms of communication management, team coordination and advice in terms of design and technical expertise.

Project Scope

The analysis and trade-off of the project scope, which corresponds with the project stage presented by Roberts & Henneberry (2007), lands within the decision making model proposed by Willows & Connell (2003). Based on the influence that the assessment can have at that level, we looked at the existing patterns in relation to decisions taken towards the accomplishment of the project as a product, and the three cases acknowledge a positive influence of the USAS as an evaluative practice. In that sense, developing parties have experienced, not only the possibility to evaluate different solutions based on multidisciplinary teams, but also the potential adaptation of their design and delivery methods to achieve the project scope. That means, on one hand a partial steering of the decisions towards highly sustainable solutions, as long as the decision scope and the weighing-criteria process lands within the developers' ambitions. On the other hand, it represents a potentially more efficient decision-making process in relation to technical specifications, mostly as a result of the knowledge acquisition process and the professional advice received throughout the assessment implementation.

Findings Impact of USASs on sustainable urban redevelopment project

Perceived Added Value

International case study findings position USASs as means to achieve organisational drivers. When assessing the results of the three case studies, it is possible to identify some tendencies in relation to the experienced benefits. From the developers' perspective, the perceived added value of implementing the assessments can be divided into three components. The first one corresponds to reputational benefits and mostly addresses the suitability of the USAS to justifying decisions to external parties, thus also positioning the developer as an organisation with high standards of CSR that differentiates from other market players. This component is interconnected to the competitiveness that the assessment provides to the company. In fact, there is a high emphasis on the implementation of USASs as part of an effective marketing strategy, both for product positioning and brand positioning. Thus, competitiveness does not only strengthen the position of market players in terms of tenant attraction and sales, but also poses advantages in tendering processes and bidding proposals where ESD criteria can be distinctive factors.

The second one corresponds to financial benefits experienced by developer, although they widely vary as specific project characteristics and external factor enter to play an important role. That makes it not possible to define constant patterns associated to the developers' perception. Thus, based on the information collected through the case studies, individual aspects of potential financial gain are more likely to be associated to projects specific characteristics and not to a clear common pattern. Lastly, a third component positions the implementation of USASs as means for accessing potential external incentives. Although this is still part of a bigger picture which positions policy formulation at the centre of urban development, case studies highlight a trend from regulatory parties to involve more and more sustainability assessments as material for the application of planning incentives like speedier planning permits or special permit agreements, or as GFA concessions which although they currently apply to building scale ratings, could become in the future a part of a compensation system to stimulate more sustainable projects at urban level.

Organisational Drivers

International case study findings position USASs as means to raise intrinsic motivation, thus influencing the organisational drivers. That relies on the

added value of internal learnings that the implementation of the assessment generates for the company. The knowhow acquired through the process allows to internalize the experience, thus leading to a lesson learning curve that can be socialized around the company. This is valuable since it allows developers to integrate USASs as part of their toolbox of services under scenarios of active client demand, or in case they voluntarily suggest its implementation for competitive purposes, thus improving their internal capabilities to achieve an efficient implementation of the assessment.

Moreover, those internal learnings tend to act as a positive incentive for developers to be more sustainable, thus rising internal organisational awareness in relation to sustainable practices. From the developers' perspective, that is remarkable in relation to the implementation of USASs, since the case studies displayed that the awareness acquired by organisations can lead to strive for more sustainable urban outcomes as part of the value creation strategy, thus having a positive impact on the organisational drivers. This is the case for criteria like resilience, climate adaptation, deployment of community facilities or even community involvement, all characteristic elements of sustainable redevelopment projects, and from which developers can indirectly benefit as part of the implementation of USASs.

Sustainability Drivers

International case study findings position USASs as a sustainability enabler. As part of the perceived added value, the parallel case analysis showed that by using USASs developers where able to overcome some existing barriers in the implementation of more sustainable solutions, thus acting as a mean to low down barriers. Although the scope is limited, it does represent a positive impact of the assessment on the project outcome. The barriers overcame, as stated before, mostly relate to knowledge acquisition, awareness and acquired expertise, which beyond translating into intrinsic value for the company, enhance the use of better solutions for the project. Moreover, as a communication platform, its early implementation helped setting direction and guidelines for the accomplishment of the project sustainable goals.

Lastly, based on the added value that the assessment represents for developers, it is possible to identify a tendency throughout the case studies that highlights the positive impact of implementing USASs as a means to achieve more sustainable urban redevelopments. The logic underlined across the case studies shows that, although explicit causal effects of the assessment are hard to quantify in complex urban regeneration projects, USASs are perceived as means to reach, according to developers, higher standards of sustainability in all three pillars of sustainability. Moreover, the positive impact of the assessment as sustainability driver mostly enhances process-oriented results and innovation within the industry, which is coherent with the experienced partial alignment between the benefits of implementing USASs and developers' drivers for sustainable urban development, thus positioning the assessment as means to stimulate them.

The findings from the parallel case-study analysis where finally confronted with the conclusions from the Dutch Base Case to set up the recommendations for the Dutch context. Both sets of recommendations, to DGBC and to Dutch Developers, are complementary and are meant to be read together to get a better overview of the research findings.

Empirical Lessons as Recommendations to DGBC

This sub-chapter aims to materialize the research done through the case-study analysis into a set of practical recommendations that can operate as advice for the Dutch Green Building Council. It is structured as follows:

Sustainability Assessment System Implementation

- **Communicate about the differences:** it is important to communicate with developers about the differences between BREEAM-NL Area and other building-scale quality marks. It is not only a difference in scale, it is also a difference in scope, whereby requesting evidence and enhancing long-term strategic planning about elements like process management, urban scale services (water usage, land usage, biodiversity, ecology, and waste management), and community involvement, developers in other countries have experienced a positive impact on their long-term goals.

- **Encourage external demand:** International cases have shown that other markets have been able to incorporate other parties as external drivers for the implementation. It is in first place local authorities, but then also institutional investors, private clients, financers, and end-users.

- **Enhance intrinsic motivation:** International practices stress on the importance of perceiving the assessment as means to achieve something else, something that is valuable for them and thus, something that aligns with their organisational drivers.

- **Ease implementation:** International practices emphasize on the importance of an early implementation, promoting an integral team training, enhancing assessment enablers and enhancing more efficient information management practices.

- **Maximise the potential benefit:** To do that, the DGBC should strive for the best knowledge acquisition process, aim for a high suitability of the assessment in relation to the developer's perspective, keep the assessment up to date, evaluate which components within BREEAM-NL Area can be strengthened to increase their influence on developers' mindsets, and strive to increase market dependent benefits (e.g. competitiveness based on external recognition, potential financial incentives in collaboration with institutional investors or public parties, reputational gain)

Decision-Making

- **Be optimistic about the influence of the reflective role:** As the findings of this research highlight how, from a developer's perspective, the implementation of USAS can play a positive influence on their mindset, mostly by participating in conversations and discussions that act as means to raise awareness.

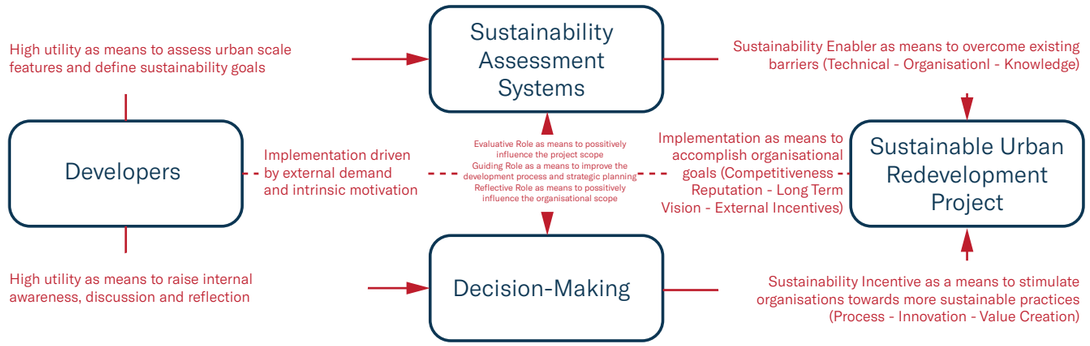
- **Dare to reflect on the perception of the guiding role:** international practices have emphasized the utility that USASs can bring in terms of assessing and defining strategic planning goals, which is a commonly seen a priority in a long-term urban redevelopment. Therefore, it is worth reflecting about what could be the reason for a lower awareness of such benefit in the Dutch context

- **Acknowledge the limitations of the evaluative role:** Thus prioritize the potential influence on developers' mindsets, since rising organisational ambitions is the main path towards achieving more sustainable outcomes and realize that optimizing the knowledge acquisition process throughout the assessment is the best way to steer developers' decisions, since the implementation mostly helps to overcome barriers associated with knowledge, organisational-internal and technical aspects.

Sustainable Urban Redevelopment

The chicken-egg paradox; strive for both: based on the partial alignment illustrated between developers' drivers and implementation benefits, it is possible to position USASs as a means to stimulate higher sustainability standards, under the logic that the more beneficial it is for developers to enforce sustainable practices, the more sustainable they will behave, and thus, the higher the impact of the assessment will be as means to achieve more sustainable urban redevelopments. Following that reasoning, it is necessary to ask: Should we align the benefits of the assessment to the developers' drivers to enhance higher sustainability? or do we aim to steer the developers' drivers so that they better align with the benefits that higher sustainability ambitions bring to the table? In practice, that is a bidirectional relationship, and to guarantee a more advantageous implementation of BREEAM-NL Area both are necessary. That synergy between the alignment of incentives and the change in mindset is what ultimately will lead to a more sustainable urban redevelopment.

Operationalisation of the conceptual model based on findings



Empirical Lessons Recommendations to Dutch Developers

This sub-chapter aims to materialize the research findings into a set of recommendations that illustrate the potential impact that USASs can have on developers' decision-making process based on their perceived added value. By addressing the variables analysed throughout this research, we aim to highlight this research's findings as means to communicate developers about the positive impact that implementing USASs can have on their practices. It is structured as follows:

- **Recognize the scope out of the box:** The scope of the assessment lies outside of the box. International practices have emphasized the utility that USASs can bring in terms of assessing and defining strategic planning goals, which is commonly seen as a priority in a long-term urban redevelopment. The definition of such strategic goals also represents a positive guidance towards risk mitigation strategies for criteria like climate adaptation, energy sources, heating island effects, traffic requirements or even community involvement, all risk factors to be considered when striving for an efficient development process. If we add to those findings the benefits that the assessment can bring in terms of team coordination, it is possible to highlight how beneficial it can be for developers to implement USASs, as they can play a guiding role towards a more efficient development process. Hence, such implementation represents an advantage for developers whose business plan or development strategy foresees an active involvement in the area after the execution phase.

- **Seize the moment:** International frontrunners exemplify an implementation driven by a growing tendency to involve USASs as sustainable development criteria. That trend aligns with an active external demand, either by local authorities, private clients, or end-users, each of them through their own means. Although that demand requires market adaptation, it might lead to the provision of USAS as an attractive way to demonstrate urban sustainability for external parties and thus, increase the local demand. Therefore, Dutch pacemakers should seize the moment and assume the commitment that a voluntary implementation requires to be able to benefit from the competitiveness that it will generate.

- **Reflect is pertinent:** Top-tier developers strive for innovation and foresee within their organisational scope high standards of sustainability, as that purpose aligns with broader societal goals. Based on this research, the implementation of USASs can have a positive impact on developers' ambitions in terms of sustainability. The reason for that relies on the reflective role that the assessment can play, since by enhancing conversations and discussions, and as a result of feedback loops deriving from repetition, the assessment can act as means to raise awareness, thus potentially influencing developers' mindset. In that sense, implementing USASs allows them to benefit from the reputation that highly sustainable brands experience from market recognition, while internally enhancing higher sustainability standards.

- **Evaluate is necessary**: The most ambitious redevelopment projects require commitment and a critical evaluation of the proposed outcomes at an early project stage. As part of the knowledge acquisition process that characterizes the Evaluative Role, USASs can help overcome certain barriers that would otherwise withhold the implementation of more sustainable practices – mostly in the fields of organisational internal and technical knowledge. That means, being able to find better solutions based on multidisciplinary expertise, team coordination, prescription of suitable solutions

and strategic definition of goals. All these elements embody the intrinsic value of the USAS, and position it as a sustainability enabler since it can have a positive influence on the project scope by lowering existing barriers. At a decision-making level, that represents an opportunity for developers to benefit from a cost-efficient process, as the assessment can assist and potentially steer certain decisions, which translates into know-how and the possibility to accomplish their sustainability goals.

- **Implement is beneficial:** International practices illustrate the importance of developers acknowledging the implementation of USASs as means to achieve benefits that represent added value for them. The cases analysed during this research emphasize the role that the implementation of USASs can have as means to accomplish corporate drivers, in particular, competitiveness based on external recognition, reputation and long-term company vision. In addition to that, developers highlighted the value of the implementation as part of their marketing strategy and product positioning, from which highly sustainable urban features could unlock the highest market premiums as a result of high-profile tenant attraction. Moreover, the implementation can act as an intrinsic incentive to be more sustainable by highlighting, within the developers' value creation strategy, the integration of urban features that positively influence the project scope, like resilience, climate adaptation, deployment of community facilities, or even community involvement, as they can represent a source of value from which developers can indirectly benefit as part of the implementation of USASs.

Furthermore, the implementation of USASs can act as means to get external incentives. For example, leading to potential access to special financing programs which require high standards of sustainability, as it currently happens with infrastructure projects. Thus, developers can attract investors and capital markets willing to get involved in sustainable projects. In that sense, the certification can be the means to improve the funding of the project and potentially become part of their financing strategy. Other markets have also suggested spatial planning incentives, which depend on the incorporation of ESD criteria into the sustainable urban policy sphere, and from which benefits can be shaped into compensation systems or advantages in special planning procedures.

To recap, by implementing USASs it is possible to position those benefits as a means to incentivize developers to reach more sustainable outcomes, while at the same time, making it more beneficial for private actors to accomplish higher standards for urban sustainability. Thus, this sub-section positions the assessment: 1) As a means to accomplish organisational drivers, which makes sustainability more beneficial, 2) As a sustainability enabler by lowering down barriers and enhancing a more efficient decision-making process, 3) As a means to improve the development process in terms of strategic decision-making, 4) As a means to raise internal awareness and enhance more sustainable decisions, 5) As a means to achieve external incentives in a transition towards sustainable urban policies

Conclusions

As evidenced throughout this research, both theoretical and empirical studies propose the implementation of USASs in urban redevelopment projects as a means to analyse how to enhance more sustainable practices, with the final objective of stimulating the private sector to deliver greater public value to society. That exercise requires the alignment of incentives, the coordination between private actors, and the facilitating role of the public sector. Therefore, this research aims to conclude by giving a recap on how the insights from the study align with the bigger picture. This research aimed to provide an answer to the main research question: How can sustainability be enhanced from a private sector perspective in urban redevelopment projects when implementing USASs?

To provide an answer that question this research analysed the developer's rationale behind the implementation of USASs, identifying external drivers and intrinsic motivation within cost-benefit and supply-demand principles defined by the implementation curve of the assessment in the Dutch market. Based on the current practices, this research analysed how developers' decision-making can be influenced by the implementation of USASs, leading to the definition of three main roles that exemplify this influence: A Reflective, a Guiding and an Evaluative Role. Those three levels of influence, defined by their reach within the Organisational Scope, the Development Process, and the Project Scope respectively, led to categorize and differentiate the added value that the implementation can have from a developer's perspective. Lastly, that added value was assessed to identify the potential impact of USASs in Sustainable Urban Redevelopment Projects. Based on those three steps, this research positions USAS as a means to enhance can sustainability from a private sector perspective in urban redevelopment projects (RsQ1) as it mostly relies on the commitment and synergy of private actors to deliver higher public value, (RsQ2) as it can positively influence the developers decision making process of developers (in different levels) and (RsQ3) as it can act as incentive in relation to organisational drivers and as enabler in relation to sustainability drivers.

Framework for Analysis

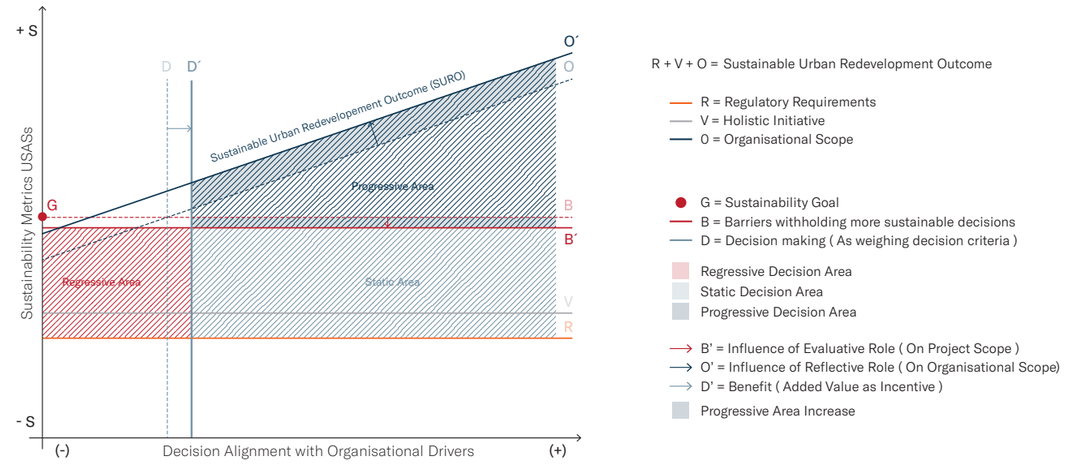
As a final step in this research, the evaluation of our findings led to a model that, by illustrating the relationship between the different variables addressed through the conceptual model, exemplifies the potential impact that USASs can have on developers' decision-making process. This framework takes as a starting point the definition of concepts retrieved from both literature and empirical review, and exposes the findings from the parallel case study analysis as a means to demonstrate, from an analytical perspective, how the assessed variables interact. Although this framework has mostly an academic application due to its limitations as a communication tool, it could be seen as an early step in theory development.

Based on this research, a positive influence of USASs was evidenced in relation to the decision-making process of the developers. Following that line of reasoning, this framework exemplifies those findings by analysing the impact that the assessment can have on the same decision (D). As show in figure 74., as part of the knowledge acquisition process that characterizes the Evaluative Role, USASs were able to help overcome certain barriers that would otherwise withhold the implementation of more sustainable practices (B) – mostly in the fields of organisational internal and technical knowledge – thus, having a positive influence on the project scope by lowering down existing barriers (B'). At a decision making level that represents an opportunity for developers to more easily accomplish their sustainability goals in relation to the project.

On the other hand, the implementation of USASs highlighted a potential influence on the develoeper's mindset, thus positively influencing their organisational scope and, by extensions, their sustainability ambitions (O). Hence, the Reflective Role can rise awareness and therefore, unlock more sustainable outcomes though reflection and inspiration (O'). At a decision-making level that translates into potentially higher aspirations in terms sustainability. Those two complementary ways of influencing decision-making represent an opportunity to increase the progressive area. In practice, that means increasing the possibility of the assessment clearly informing and thus steering the decision towards more sustainable outcomes in urban redevelopment projects.

Lastly, USASs can act as means to align organisational drivers and sustainability drivers though the perceived added value that developers have identified on the implementation. Hence, the assessment as a means to accomplish organisational drivers can lead to benefits that partially align with their drivers and thus, leads them to achieve their goals. That means, on one hand, reaching a higher alignment of the decision with their organisational drivers, and thus to a higher benefit from taking the same decision (D'), and on the other hand, acknowledging those benefits as a mean to incentivize developers to reach more sustainable outcomes.

The synergy behind this model allows to evidence in a more comprehensive way that by implementing USASs, developers can reach more sustainable decisions, make earlier decisions, and get more benefit from those decisions. Thus, the positive impact of USASs in developers decision making represents an opportunity in terms of incentive alignment, by potentially leading to both more sustainable outcomes and more beneficial outcomes for developers as shown in the figure. Finally, it is worth to highlight that there is still a high potential for further alignment, for which the recommendation of this thesis aims to provide some insight on possible solutions.



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Acronyms

BA = BREEAM-NL Area
BC = BREEAM-CM = BREEAM Communities
O&M = Operation and Management

USAS = Urban Sustainability Assessment System
USA Method = Urban Sustainability Assessment Method
NAS System = Neighbourhood Sustainability Assessment System

CHAPTER 1
Introduction

As a result of the climate crisis and the scarcity of resources, all industries have been forced to adapt to new standards for sustainability and environmental responsibility. The adaptation process implies reducing detrimental impacts and maximizing opportunities within the available financial sources (Cradock-Henry et al., 2019). Urban sustainability, however, stretches beyond environmental and ecological dimensions since a future-proof city requires more than "green building" standards (Kauko, 2017). Accordingly, the built environment is not an exception, and therefore, the urban development process is constantly changing to cope with societal needs and governmental ambitions (Senge, 2008; Van der Heijden, 2017). From a private sector perspective, that represents challenges in investment, development, O&M, and financing of future brownfield developments (Chegut et al., 2014; UN Global Compact & RICS, 2018), especially when it involves sustainability assessment, valuation methods, and decision-making processes related to capital investment (Kauko, 2019; Warren-Myers, 2012).

Thus, the introductory chapter of this thesis aims to contextualize the research by outlining the transition phase that urban development management is facing towards more sustainable practices. To do that, the introduction briefly examines four elements.

- The relationship between public and private sectors in the implementation of sustainable urban policies.
- The changing role of the private sector in urban redevelopment.
- The value of sustainability in urban redevelopment.
- The implementation of market-based assessments in urban redevelopment.

The discussion of each one of these elements provides the insights needed to structure the line of reasoning behind the realization of this research and its relevance from both a societal and academic perspective.

1.1 Towards Sustainable Urban Policies

From a regulatory perspective, urban developments are challenged by growing economic competition and stricter environmental requirements (Heurkens, 2019). These evolving standards are framed within new sustainability policies that aim for CO2-neutrality, energy-neutrality, and off-gassing as drivers of more sustainable, high-quality liveable area developments (NEPROM, 2018). On top of that, integral urban transformations go beyond environmental sustainability and foresee a triple bottom line approach (i.e., economic equity, environmental preservation, and social justice) (Brundtland & UN, 1987), which demands a long-term commitment while ensuring continuous improvement in all three areas. Following these principles, governments have set up integral plans that align with the change in policies (Van der Heijden, 2017), and thus, new frameworks for sustainable urban development aim to guarantee climate and functional adaptivity, resilience, and CO2-energy neutrality from an environmental perspective while striving for socio-economic longevity and viability. In that sense, they envisage social ambitions which address affordability, inclusion, and diversity as drivers for social cohesion and liveability (Heurkens et al., 2020; Kauko, 2017).

Now, the complexity behind pursuing sustainable goals brings several challenges to the feasibility and financing of projects since private actors are mostly profit-driven and therefore, their business rationale tends to collide when linking private profit and public values (Heurkens, 2019; Warren-Myers, 2012). Furthermore, financial sustainability and economic growth are of prime importance for area redevelopment as they are necessary to deliver other "softer" amenities (Kauko, 2017). Therefore, the relationship between market drivers and regulation remains fragile.

In that sense, complying with legislation is mandatory, but an accumulation of sustainability ambitions by governments can also become a barrier as it puts pressure on the financial feasibility of business cases (Verheul et al., 2019). For that reason, finding the right balance between long-term sustainability and short-term profitability remains a challenge for market parties (Hawkins, 2006). In fact, the government preference for regulating instruments and the avoidance of stimulating instruments represent a misalignment with the private sector decision-making perspective on sustainable urban development (Adams & Tiesdell, 2012; Heurkens et al., 2015). In that sense, from a public action point of view, this can be a reason to look for a better understanding of the private perspective based on market-based regulation like urban sustainability assessments systems as means to involve the private perspective. Following this line of reasoning, **becomes necessary to bring the private sector perspective on board to effectively address the transition and implementation of sustainable urban policies.**

1.2 Changing Role of Private Actors

The private sector plays a key role within the urban development process, as governments are highly dependent on market parties to implement their visions (Heurkens, 2019). An interdependency like this creates specific dynamics that can't deny solid profit, financial return, and risk aversion as main drivers for real estate investors (Geltner et al., 2020; Warren-Myers, 2012). On the other hand, there is also a clear structural trend at the organisation level which supports corporate sustainability (Dyllick & Hockerts, 2002) and corporate social responsibility (CSR) (Tsutsui, 2015). However, that trend does not guarantee the will to invest in sustainability beyond compliance. This is the case for the Dutch market, where only 13% of the developers position themselves beyond compliance (Lambert, 2021).

Moreover, literature has broadly identified the benefits of investing in sustainability at a corporate level and even at a project level, as will be further discussed in the literature review. As a result, private actors involved in area development are progressively recognizing the importance of connecting private return and public value as part of their adaptation towards a changing market behaviour (Heurkens et al., 2020). Consequently, this connection requires an evolution on their role perception, their working methods, and their strategic decision-making process when evaluating investments on sustainability beyond compliance (Kauko, 2019). Furthermore, such transformation involves addressing sustainability as an integral component of personnel policy, private corporate culture, business operations, and investment strategy (Senge, 2008) while pursuing a broader business case within their value creation rationale (Heurkens, 2019; Kauko, 2019). In that sense, since current regulating practices seem to limit the viability of private redevelopment plans, there is a need to explore how sustainability can be valued from a private perspective to enhance the changing role of the private sector.

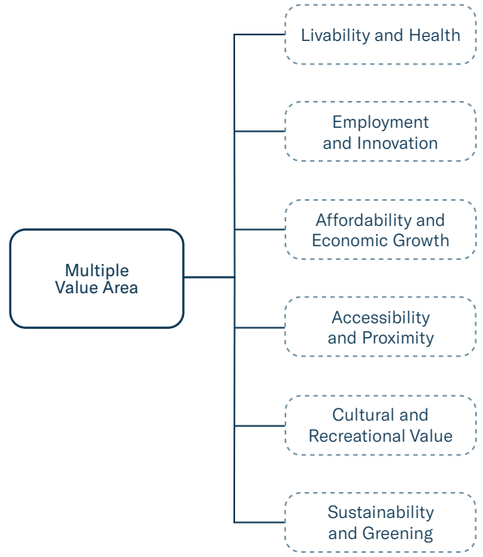


Fig. 1
Multiple value creation sources at an urban level (Heurkens et al., 2020)

1.3 Value of Sustainability

As a result of the evolving policy framework and the changing market behaviour, developers and investors have the option to structure broader business cases around urban area development (Heurkens et al., 2020), but this represents a challenge as projects need to fulfil their individual goals and ambitions as well (Warren-Myers, 2012). From an urban perspective, several frameworks and tools have been developed to assess sustainability and thus a new scenario for multiple-value area investment has been defined. As shown in figure 1, the paper "Financiering van gebiedstransformatie" (2020) proposes six different categories of multiple value creation sources at an area level that could be taken into consideration when structuring and evaluating potential projects.

However, these principles do not always fit within a "narrow" business case for area transformation (Warren-Myers, 2012). A sustainable development process requires an open mindset and a holistic understanding of urban development as a shared interest capable of generating socio-economic impact for residents, companies, and governments (Heurkens et al., 2020). From the developer's point of view, the main challenge becomes how to identify and estimate resulting premiums from strategic investment in sustainability beyond compliance (Dobrovolskienė et al., 2019; Kauko, 2019), as it inevitably affects their investment decision. Now, the sustainable principles behind these six categories are becoming increasingly important for the strategic planning of urban redevelopment projects,

and following that line of reasoning **urban sustainability assessment systems are becoming a reference framework to assess decisions in relation to sustainability metrics and their perceived value.**

1.4 Existing Assessment Tools

The real estate industry currently uses several techniques to cope with this decision-making issue. It is relevant to highlight two different categories of assessment tools: Financial assessment tools and Sustainability assessment tools. The first category comprises economic models of valuation and investment appraisal. They rely on different valuation technics, which are based on cost-benefit analysis, simulations on payback ratios, life-cycle costs, and net-present-value calculations (Kauko, 2019). These tools, however, are mostly used at the building scale and act as performance evaluation tools for developers-investors instead of specifically assessing the impact of the investments on sustainability beyond compliance (Dobrovolskienė et al., 2019).

Other sophisticated modelling tools like hedonic pricing models do aim to identify the internal-external impact on the market value of specific variables within a potential project. Nonetheless, they add other difficulties to the decision-making logic. On one hand, they are time-consuming and require deep mathematical understanding, which makes it a tool for a small segment of professionals with the knowledge necessary to correctly interpret them (Dobrovolskienė et al., 2019). On the other hand, they can create a bias in the assessments and assumptions within the modelling process, depending on the mindset of the practitioner, whose perspective can define either a negative relationship (cost concerned) or a positive relationship (value creation) between sustainability and investment (Warren-Myers, 2012).

The second category incorporates tools that specifically aim to assess sustainability at different scales. At an organisational level, different sustainability reporting methods set benchmark activities and sector-specific metrics for the built industry (Reed, 2021). That is the case for Global Reporting Initiative (GRI), which proposes guidelines for sustainability reporting within the business environment (Capald et al., 2019). Furthermore, the close relationship between CSR and GRI provides a framework of control for an Environmental Management System (EMS) referred to as ISO 14001, which provides a system of record-keeping, auditing, managing, and reporting a business while identifying environmental impact and future targets for reduction (da Fonseca, 2015).

Now, at a project level, sustainability rating tools have become more and more popular since the 1990s as a common approach towards the valuation of land and buildings (Reed, 2021). As a market-driven practice, the use of rating tools, which started with BREEAM, has expanded across the globe and involved diverse actors in the development of several tools like LEED, CASBEE, and Green Star (Chegut et al., 2014). When addressing sustainability assessment tools, a significant increase in the importance of the sustainability rating in property acquisition, shifting from 7th to 3rd in almost ten years, has been identified. Thus, aligning with the 10 principles of RICS and the UN Global Compact (UN Global Compact & RICS, 2018), the sustainability agenda exposed in section 1.1 (Heurkens et al., 2020; Tsutsui, 2015; Van der Heijden, 2017) and the incrementing use of sustainability rating tools associated to their market value premia in Anglo-Saxon countries like the UK and Australia (Chegut et al., 2011, 2014; Newell et al., 2014). However, as a result of their contextual nature, they do not exhibit the same level of comparability due to their different specific focus and unique characteristics (Reed, 2021), as will be discussed in the literature review.

At an urban level, new implementations of these tools, like BREEAM Communities, are being optimized to assess the multiple-value creation process of area development processes (Callway et al., 2019). Nonetheless, the main difficulties regarding sustainability pricing and assessment at an urban level remain a field for current research due to the qualitative nature of the elements identified in Figure 1 and their indirect impact on developers' business cases. Although quantification exists as a financial engineering issue, a managerial approach towards information suggests that the main objective of models is to provide strategic-based knowledge (Kauko, 2019) which could be translatable into heuristic and problem-solving decision-making methods (Warren-Myers, 2012).

Consequently, existing market-based assessments could potentially provide a solution for realizing sustainable urban areas, as they are voluntary market-based, but increasingly adaptive to changing needs in society. Moreover, **as a methodological framework, they can provide strategic-based knowledge useful for the decision-making process of developers while acting as means to bring the private sector perspective to the urban sustainability policy sphere** (Callway et al., 2019; Vieira De Castro et al., 2020). Lastly, they can enhance a competitive, transparent market for comparing projects as a benchmark for quality and added value by both the market and the regulatory institutions (BREEAM-NL, 2021a). Nonetheless, in the Netherlands, the full certification of BREEAM-NL Area projects has been underused in the last 10 years, with a total of 17 projects throughout the two different versions of the certificate (2012 & 2018) (BREEAM-NL, 2021b). This number is considerably lower than the existing ones of other countries and certification schemes like EEUU (145 with LEED-ND), UK (65 with BREEAM-CM), and Australia (40 with GREEN STAR-CM) (BREEAM, 2021; Pedro et al., 2019). Although comparing the market uptake of those USASs based solely in the absolute number of certified projects seems arbitrary because of the differences in market sizes and the context dependent characteristics, it does provide a threshold for research and potential lesson drawing.

The four elements discussed above can be summarized as:

- The need to bring the private sector perspective on board to effectively address the transition and implementation of sustainable urban policies.
- The need to evaluate how sustainability can be valued from a private perspective to enhance the changing role of the private sector
- The potential for urban sustainability assessment systems to become a reference framework to assess developers' decision-making in relation to sustainability metrics and their perceived value
- The voluntary and market-based use of urban sustainability assessment systems as means to bring the private sector perspective into the urban sustainability policy sphere

All these elements become relevant reasons **to investigate if and to what extent market-based assessment systems could assist developers in their decision-making process and how the methodological implementation of such assessment systems could potentially enhance developers to move beyond compliance in terms of sustainable urban redevelopment.** Moreover, a deeper understanding of the decision logic behind the use of urban sustainability assessment systems could enforce a more effective public policy making through the alignment between public ambitions (e.g. tender criteria, sustainability standards, norms, stimulating instruments) and the privately driven sustainability assessment metrics (BREEAM-NL Area).

Lastly, based on the introduction chapter, it is possible to map the research context and outline the focus of it as seen in figure 2. The context diagram is the outcome of the introductory contextualization, and the aim is to use it as a guideline to narrow the research frame.

1.5 Relevance

The relevance of this research can be divided into two components. From a societal perspective, an integral approach towards urban sustainability goes beyond environmental sustainability and strives for socio-economic sustainability. These ambitions require investment from the private sector and therefore becomes critical to identify how developers are carrying their decision-making process since an effective deployment of means can lead to clearer organisational strategies and potentially, better cities. From a research perspective, **it is relevant to evaluate how existing sustainability assessment tools are being used in practice in the Dutch context, and how can they become means to assist the decision-making process of developers at an urban level. By doing so, the research can provide valuable insights in relation to the implementation of sustainability assessment systems and their potential influence in the decision-making processes of developers.** Furthermore, as market-driven tools, they can stimulate developers to take more holistic decisions and enhance innovation within their value creation rational. ●

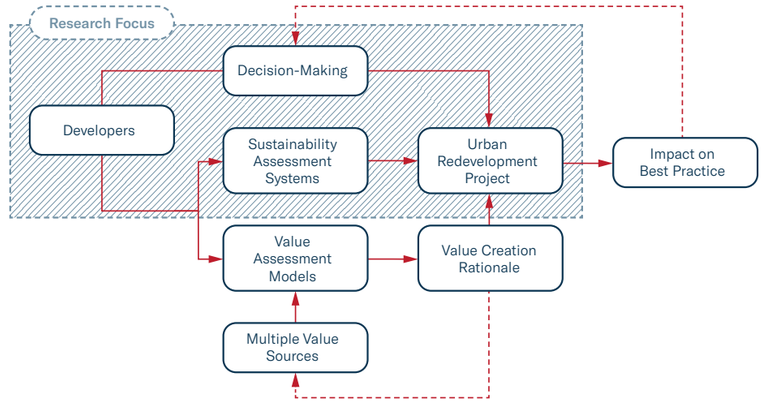
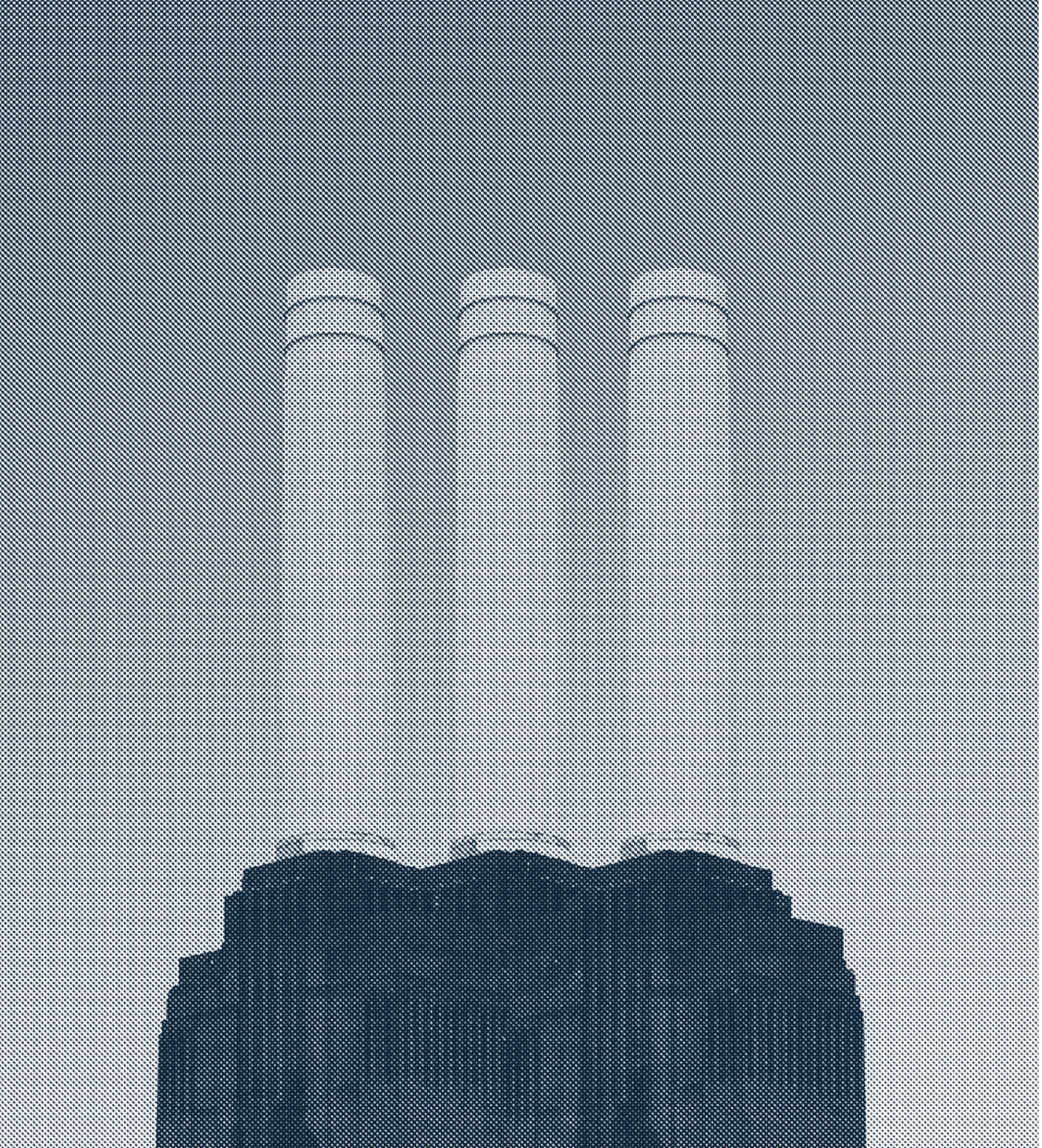


Fig. 2
Context diagram



CHAPTER 2
Research Methodology

This chapter starts by doing an explicit recap on the problem statement. After that, the research questions are formulated and then, in order to successfully execute the research, the chapter gives an overview of the methodological structure and research design.

2.1 Problem Statement

Standard methods for assessing sustainability have been implemented by market parties to benchmark their performance (Pedro et al., 2019; Reed, 2021; Sharifi & Murayama, 2014). However, estimating the impact of implementing these sustainability assessment methods on decision-making processes still foresees different challenges. First of all, the implementation of sustainable practices and new value sources (Heurkens et al., 2020) within a user-preference changing behaviour is still being analysed to understand how they affect sustainable urban development processes (Kauko, 2017). Second, there is an existing gap between sustainability assessment methods and decision-making processes that needs to be filled to ease the transition towards a broader definition of value into the business rationale of developers (Jackson & Orr, 2021). Moreover, most of the literature studies tend to not address the integral dimension of sustainability, remain at a building scale, and fail to recognize the use of market-driven rating tools as a sustainability assessment methods capable of assisting the decision-making logic of developers at an urban level (Dobrovolskienė et al., 2019; Kauko, 2017).

Therefore, the introductory outline of this thesis leads to a problem statement; Within the urban redevelopment management field, little is known about how current market-driven sustainability assessment systems influence developers' decision-making at the urban scale (Callway et al., 2019). In the Dutch context, the current decision logic and added value behind the use of such methods requires further research to evaluate the use and implementation of BREEAM-NL Area. This becomes relevant since it can have a potential impact on the managerial process and the outcome of sustainable urban redevelopments (Kauko, 2017; Sharifi & Murayama, 2014; Vieira De Castro et al., 2020). Moreover, studies regarding how sustainability assessment systems are incorporated into the analysis and trade-off stage of urban redevelopment projects still show a deficit of empirical investigation. This applies also to the managerial and evaluative practices in which such methods are implemented within the decision-making process (Jackson & Orr, 2021). The reason for that relies on the fact that most of the studies and literature take a quantitative approach instead of addressing processes and empirically based findings.

In fact, a better understanding of the current decision logic behind the use of sustainability assessment tools could provide hints on how the existing methods could assist the decision-making process.

As an object of study, urban redevelopment projects have been one of the main targets of policy and finance in the last couple years. Their role in society highlights the challenge of integrating and balancing sustainability targets alongside financial viability . Thus, the focus of this research will be the impact of applying sustainability assessment methods on developers' decision-making at an urban level. (Dobrovolskienė et al., 2019). At last, a methodological evaluation of these tools can become a strategic insight for potential improvement of the tools which at the same time could stimulate impactful and sustainable investments at the urban level. Such ambition fulfils the scope of enhancing a more efficient use of resources, maximizing long-term value, and potentially accomplishing better cities (Jankalová & Kurotová, 2020; Urban Land Institute, 2018).

"Most of the literature studies fail to recognize the use of market-driven rating tools as a sustainability assessment methods capable of assisting the decision-making logic of developers at an urban level"

(Dobrovolskienė et al., 2019; Kauko, 2017).

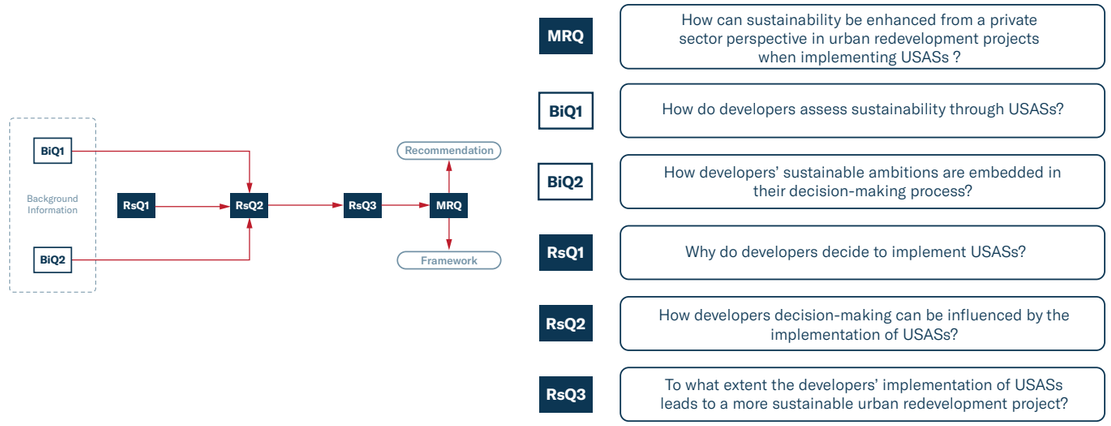


Fig. 3
Research Questions Diagram

2.2 Research Question

Based on the problem statement, this investigation aims to explore the relationship between current practices related to the use of market-driven rating tools, decision-making logic, and the strategic decision-making process associated to sustainable urban redevelopment projects. Having an overview of these aspects allows to formulate the **main research question** (MRQ) of this thesis:

- **MRQ**
  How can sustainability be enhanced from a private sector perspective in urban redevelopment projects when implementing USASs ?

The research question at the same time needs to be divided into three different **sub-questions** (RsQ) that look to clarify the expectations and phasing of the research (RsQ1-RsQ2-RsQ3). However, before answering those sub-questions it is necessary to collect relevant background information which is synthesized through two background information questions (BiQs). These are:

- **BiQ1**
  How do developers assess sustainability through USASs?

Objective The objective of BiQ1 is to understand how USASs work in the Dutch context and for that it is necessary to:

- Get an overview of the existing USASs
- Understand the BREEAM-NL Area framework
- Understand the scope of the assessment
- Understand the actors involved
- Understand the operational implications of the assessment process
- Identify the characteristics of the BREEAM-NL Area assessed project
- Evaluate the comparability of the different USASs
- Identify assessment critics in relation to the reuse of elements

- **BiQ2**
  How are developers' sustainable ambitions embedded in their decision-making?

Objective The objective of BiQ2 is to understand what the decision logic behind the developers' behaviour is within urban redevelopment management. To do that it is necessary to:

- Understand the developers' drivers
- Understand the organisational alignment in decision making
- Understand the role of USASs from a management perspective
- Understand the impact of evaluative transitions in evaluative practices

- Understand the critics to the use of USASs as evaluative practices
- Understand the decision logic behind the reuse of elements
- Identify the potential influence of the methodology in the management process

Methodology Both BiQ1 and BiQ2 belong to the first stage of the research and the method used to collect this background information is literature review and document review of both national and international academics.

Having obtained this information, it becomes clear to formulate a path towards **RsQ1-RsQ2-RsQ3** to efficiently answer the **MRQ.**

- **RsQ1**
  Why do developers decide to implement USASs?

Objective The objective of sub-question RsQ1 is to understand the relationship between Dutch developers and the BREEAM-NL Area certification scheme. In other words, why and how is this tool being used. To do that, it is necessary to:

- Identify the drivers for implementing evaluative practices
- Identify the barriers for implementing USASs
- Identify the advantages or implementing USASs
- Identify possible pitfalls in current Dutch practices
- Define the perceived added value behind the use of BREEAM-NL Area from a private sector perspective

Methodology The methods used to answer this question are both literature review and explorative interviews with Dutch professionals in the urban redevelopment field.

- **RsQ2**
  How developers' decision-making can be influenced by the implementation of USASs?

Objective The objective of sub-question RsQ2 is to provide evidence on how the implementation of sustainability assessment systems can act as means to steer the decision logic of developers in urban redevelopment projects.

- Evaluate the relationship between the organisational scope and the added value resulting from the implementation of USASs
- Evaluate the relationship between perceived added value and the decision-making criteria
- Evaluate if the implementation of USASs can act as a potential incentive for developers to achieve a more sustainable outcome

Methodology The methods used to answer this question is multiple empirical case studies, in which interviews are held with practitioners and case documents are analysed. The parallel case analysis is used to draw lessons.

- **RsQ3**
  To what extent does the developers' implementation of USASs lead to a more sustainable urban redevelopment project?

Objective The objective of sub-question RsQ3 is to provide evidence on how the implementation of sustainability assessment systems can lead to a more sustainable urban outcome. To achieve this, it is important to:

- Identify if the added value resulting from the implementation of USASs leads in practice to a more sustainable outcome

The research sub-questions aim to build on why USASs are being used and how are they being used. This represents an opportunity to analyse how their use is impacting the management of urban redevelopment projects, providing empirical examples of how the gap with decision-making processes can be minimized and how the implementation of USASs can potentially lead to more sustainable urban redevelopments.

2.3 Research Design Overview

The next section aims to elaborate on the methodological framework, the research structure, and the interrelationship between the different research components.

Methodological Framework

From a methodological perspective, the investigation will From a methodological perspective, the investigation will be handled as a qualitative study because of the field of research. The methodological framework is necessary to delineate the methodological dimensions of the research. which follow a hierarchical structure and represent the required operationalization of the research. The first dimension addresses the Research Methods, from which Case Studies and Lesson Drawing are part of. The first one aims to collect data which can be close coded following an inductive logic of inquiry to be further analysed through a parallel comparative case-study approach. By following an inductive practice-based approach (Bryman, 2015) the research aligns with both the pragmatic nature of urban development practices and projects, and the need to develop conceptual (management) knowledge for academics (Heurkens, 2012). The second one, Lesson Drawing, aims to provide empirical lessons and inspirations applicable to the Dutch context (Rose, 1991).

The second dimension addresses the techniques implemented, which are Literature Review, Empirical Review, and Data Analysis & Processing. These aim to gather documented information, assemble practical experiences and produce a comprehensive overview respectively (Blaikie & Priest, 2019). The Conceptual Model, is the outcome from both literature review and explorative intervews, and acts as input for the empirical review. Thus, it is applied to the various case studies as a structuring device to understand different relationships between the aspects analysed in the research.

This methodological framework allows to structure, interpret, and process the gathered theoretical and empirical material. Following this logic, the main research question is answered by using a research design or structure.

Research Structure

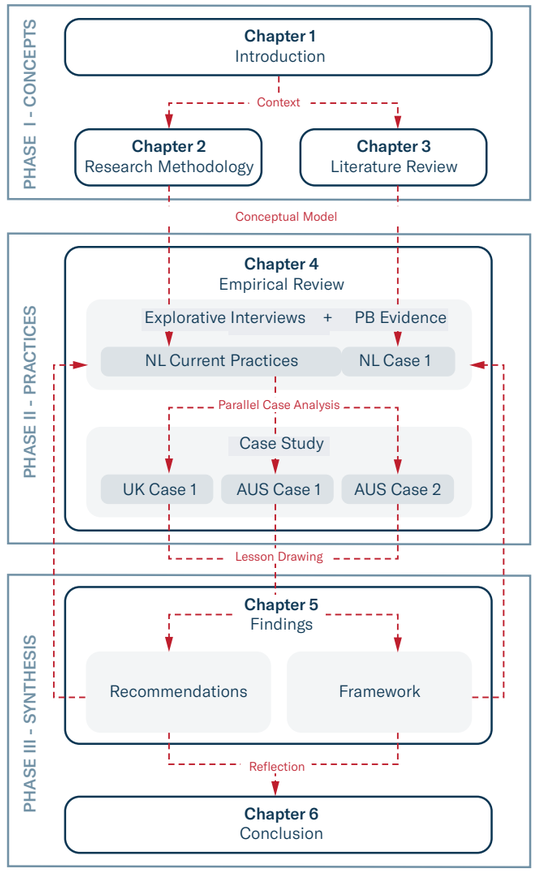
As seen in figure 5., the research is structured in three phases, which match with the three thesis presentations (P2-P3-P4). Based on their nature, the three research phases are divided into Concepts, Practices and Synthesis. The Concepts phase aims to frame the research (Introduction), identify relevant theories and concepts (Literature Review), and structure the research methodology. The Practices phase aims to collect the empirical information from both the Dutch Base Case (Explorative Interviews + Project-Based Evidence) and the international parallel case studies to set up the lesson drawing stage. The patterns identified through the parallel case study analysis are then compared with the conclusions from the Dutch Base Case. Following that logic, the synthesis phase focuses on applying the literature findings and the case-study findings to draw lessons for the base case. This data analysis and processing lead to the development of a comprehensive overview framed into a recommendation and a framework. Depending on time availability, an expert panel would be added as a last research component to test the findings with Dutch field experts. This, however, was not achieved for P4. Finally, the research concludes by answering the RsQs and MRQ, and providing a critical reflection of the research components highlighted before.

Methods

As shown in figure 5., the explained research methodology foresees two methods. They are Case Studies and Lesson Drawing. The first method, case studies, is a form of qualitative research to understand complex issues related to the research field of study. The purpose of this method is to provide a detailed analysis of the limited variables analysed through the different cases (Yin, 2018) and comprehend the ¨ meaning of action¨ (Miles & Huberman, 1994), in this case the implementation and impact of USASs in urban redevelopment projects. In fields of urban planning and management this methodology is often used to examine contemporary real-life situations. The case study setup follows the steps suggested in the framework for multiple case study design from Yin (2018), being:

1. Definition of variables during the Concepts Phase through the analytical case study model, which reflects the literature review and the main ingredients from the conceptual models
2. Definition of the current Dutch practices and current pitfalls as base study by means of literature review and explorative interviews with experts (BREEAM-NL, 2021a; Dutch Green Building Council, 2018; Pedro et al., 2019; Vieira De Castro et al., 2020) & (See Appendix, Interview 1,2,3)
3. Case selection based on the main urban redevelopment characteristics identified by in Section 3.4 (Adams & Tiesdell, 2012; Callway et al., 2019; Yu & Kwon, 2011)
4. Parallel Conduction of the three selected international comparative case studies
5. Report and Analysis

Fig. 5
Research Design



“The assessment methodology can be improved by using the findings related to the methodological deficiencies of the selected USASs.”

Sharifi & Murayama (2014) have discussed the scope of these kind of comparative studies in the field of urban redevelopment. Such approach can provide suggestions for future improvement and allow to extract inspiring lessons to enhance better urban development practices (Squires & Heurkens, 2016). Furthermore, this method can also be applied to other fields of research where multiple assessment schemes are available for assessment. By doing so, **the assessment methodology can be improved by using the findings related to the methodological deficiencies of the selected USASs (Sharifi & Murayama, 2014), which matches the aim of this thesis.**

Some reflections might be needed in relation to the use of case studies as a qualitative research method. In first place, it can enhance a bias toward verification in which the researcher tends to confirm her preconceived notion and force the output of the research. However, according to Flyvbjerg (2006), this is a misunderstanding since it actually generates critical reflections based on the empirical object of study (Flyvbjerg, 2006). Moreover, the method is reliant as any other qualitative method on data triangulation, most likely through additional data sources, which is highly recommended to increase the validity of the findings (Bryman, 2015).

The second method is lessons drawing, by which the findings from the parallel case study are processed as inspirational lessons for the Dutch practices. In relation to this, there are also some comparison limitations of cross-country lesson-drawing which precludes copying rigorously from one context to the other (Planbureau voor de Leefomgeving PBL, 2012). In that line of reasoning, the aim of this research is not to replicate but to provide inspirational learnings under the acknowledgment of context dependent conditions and context independent mechanisms in urban redevelopment projects (Squires & Heurkens, 2015). Moreover, the transferability of the findings will focus on the inspirational dimension following the Lesson-drawing and transferability framework adapted by Heurkens (2012). In terms of comparability, the study looks for identifying conceptual equivalence since, according to Pickvance (2001) comparative analysis does not require things to be necessarily identical, they should though be commensurable (Pickvance, 2001) to lead to transferable inspirations and learning. Following this logic, these limitations need to be critically considered when translating findings between comparative case studies to achieve trustworthy analytical generalizations. Analytical generalizations, which are mostly reached after evaluating exceptional case studies (Sharifi & Murayama, 2014), are expected to provide conceptual equivalences from which wider lessons about real estate development scenarios can be drawn (Squires & Heurkens, 2016).

Lastly, in terms of the case study setup, the research design foresees three international study cases, located in UK, US and Australia respectively since practices related to different Anglo-Saxon Countries vary because of the diversity of methods used but cope with similar goals. Each case has two or three in-depth semi-structured interviews with experts. Based on the actors’ analysis done in Section 3.1, each case should have at least one interview with the private party initiator and an interview with the independent consultant who had the role of assessor. The third interviewee will remain flexible for now. In addition to the interviews, it is aimed to do a document review about the project before contacting the experts. These criteria are better discussed in 4.3 to illustrate how adapting this research to the availability of data required a certain margin of flexibility to be able to accomplish the final result.

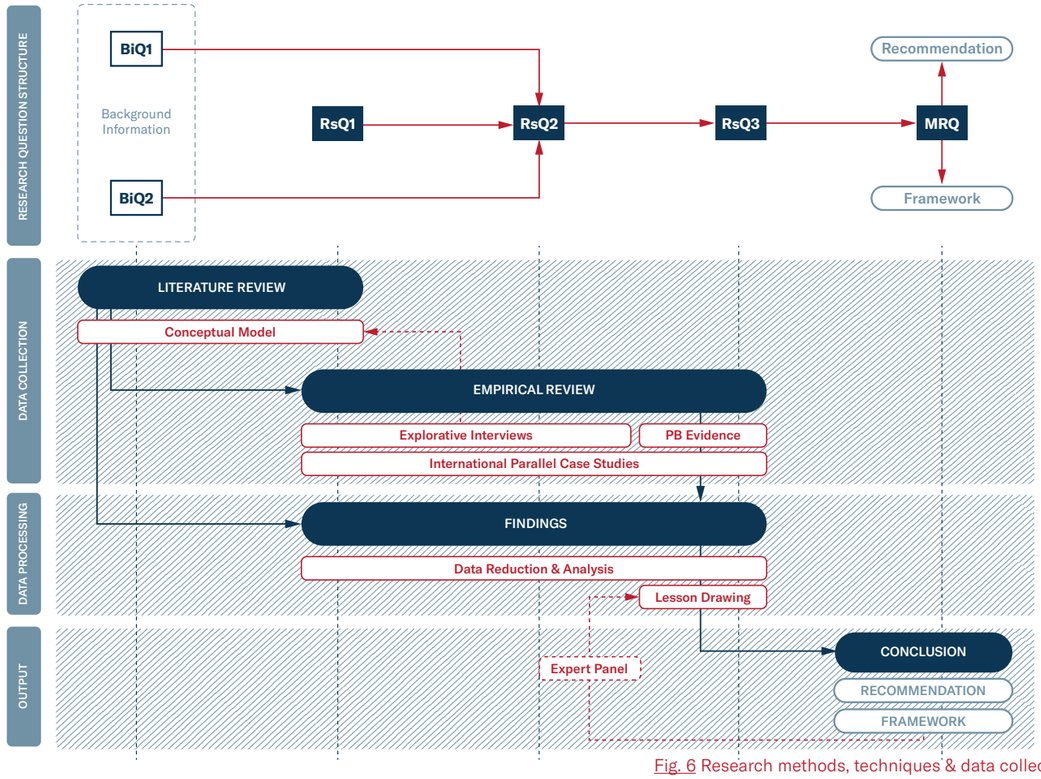


Fig. 6 Research methods, techniques & data collection

Techniques

As shown in figure 6., during the first two phases of the research there are two technques used for data collection, Literature Review and Empirical Review. The first one is based on the examination of professional and academic literature in addition to documents related to the case studies and the USASs. On the other hand, the empirical review is done through two phases, a first set of explorative interviews with experts in the Dutch field which aim to provide a better understanding of the current practices, and a second set of in-depth interviews which constitute the case studies. The interviews are semi-structured and based on an inductivists close coding approach (Gherardi, 2019), primarily structured through the analytical case study model, which enhances the effective processing of data. The interview protocol for the interviews (See Appendix) shows the general considerations in terms of structure, methodology, amount of control, probing, and flexibility. Following the golden standards for qualitative research by Guba and Lincoln (1985), further reflections on trustworthiness imply triangulation to enhance credibility, referential adequacy of the selected cases, and member checking (Lincoln & Guba, 1985; Shenton, 2004).

Analytical Case Study Model

The analytical case study model, or the conceptual model, gathers the main concepts evidenced in the literature review and key aspects highlighted by the explorative interviews. The analytical case study model correlates one to one with the conceptual model and is the result of an iterative process which aims to refine the main concepts and their interrelations in a comprehensive way. The purpose is to accomplish a clear model which claims to exemplify the relevant variables of the study and provide the analytical basis for the variables analysed in the study cases. Following this logic, it functions as a structuring device for the study cases and further information processing.

The model proposes the Sustainable Urban Redevelopment Project as the object of study. It is also the end product and therefore general scope for the research (MRQ). The left to right flow of the model establishes the developer perspective as the focal point for all research questions. Following this logic, the MRQ is more generic but responds to the broad scope of the research, thus positioning the three main concepts as follows,

- Actor = Private Sector (Developer)
- Means = Enhance Sustainability (USAS)
- Object = Urban Redevelopment Project

Decision-making is left as an overarching concept as it involves decision-making process (general), decision logic and strategic planning. The case study model correlates one to one to the conceptual model and it can be read by quadrants:

Up: Project Sustainability. The implementation could then, as means to lower down existing barriers, act as a sustainability enabler to reach more sustainable urban development projects.

Middle: Developer Decision to be sustainable led by the implementation of USASs

Down: Organisational decision making. The implementation could then, as means to reach the organisational drivers, act as a private sector incentive to reach more sustainable urban development projects.

Left: Alignment between Scopes (project and organisation) before implementation of the assessment, which when in alignment leads to the implementation of USASs.

Centre: Trade-off between sustainability (project) and decision-making (organisation)
Right: Alignment between drivers after implementation leads to a perceived added value from the developer's perspective

Data Analysis

The last phase of the research aims to analyse the collected data. To organize and reduce the information, the three 'flows of activity' of qualitative research analysis used by Miles & Hubermann (1994) will be used as guidelines. These are data reduction, data display and conclusion drawing. This is done by transforming the raw data through categorization and coding processes into sorted data with patterns (Blaikie & Priest, 2019). For that, Atlas TI is used to code the interviews following the concepts and sub-concepts identified in the conceptual model. Additionally, they are categorized and finally confronted with literature to conceptualize the findings. The scope of the data processing is to provide a comprehensive overview of the research in a visually-oriented comparative manner (Miles & Huberman, 1994), which endly translates into the research output.

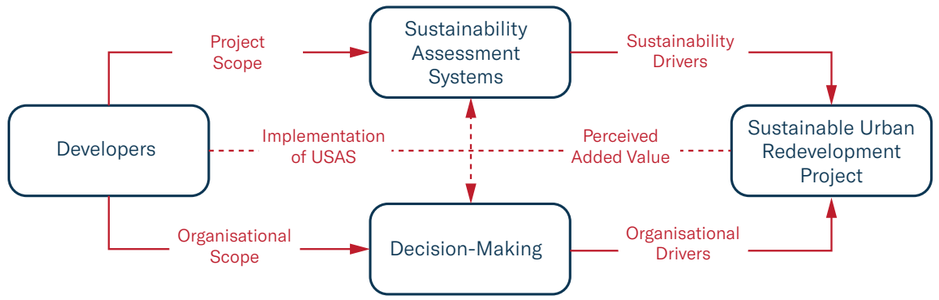


Fig. 7.
Analytical case study model
(Conceptual Model)

2.4 Research Output

Based on the research design, the successful accomplishment of this theses foresees a two-fold conclusion.

- **Recommendation** based on the evidenced value that the implementation of USASs can generate for developers. This can potentially improve the broader market adoption of BREEAM-NL Area and the current practices in the Dutch context. The proposed set of recommendations addresses the DGBC.
- **Framework** for understanding the potential impact that USASs can have in developers' decision-making process. By addressing the variables analysed throughout this research, this framework illustrates this research's findings as means to communicate to developers the positive impact that implementing USASs can have on their practices.

Goals & Objectives

This research proposal has two main goals. The first one is to provide learnings based on the current practices and motivations behind the use of USASs, which can be structured as a recommendation for a potential improvement of BREEAM-NL Area and the practices related to it in the Dutch context. The second one is to provide an overview of how market-driven rating tools for urban sustainability assessment can steer the decision-making process of developers in sustainable urban redevelopment projects, both from theory and practice. The understanding of these two variables leads to a better understanding of how the implementation of USASs can support developers with their decision logic.

Deliverables, dissemination, and audience

The research output will correspond with the two-fold conclusion exposed before. Based on them, the two deliverables will be a framework whose audience is the Dutch urban development industry, and a recommendation whose audience is the DGBC as the private organisation behind the implementation of sustainability assessment tools. The research conclusions could be spread through the production of papers, posters, or presentations since dissemination is crucial for the uptake of practice-based research. That would guarantee the knowledge-sharing process with interested stakeholders, in this case, the audience and potentially the wider academic sector.

Ethical Considerations

The ethical considerations for the research are taken based on the six ethical issues identified by Bhandari (2021). As shown in figure 8., following those principles requires to guarantee voluntary participation of the people involved in the research, including interviewees and supervisors. Moreover, participants must have an informed consent about the implications of the research and their participation. Also, anonymity and confidentiality are important to safeguard the wellbeing and good name of the volunteers. Lastly, the commitment towards the communication of the results to the participants is enhanced to avoid plagiarism and research misconduct.

Ethical issue	Definition
Voluntary participation	Your participants are free to opt in or out of the study at any point in time.
Informed consent	Participants know the purpose, benefits, risks, and funding behind the study before they agree or decline to join.
Anonymity	You don't know the identities of the participants. Personally identifiable data is not collected.
Confidentiality	You know who the participants are but you keep that information hidden from everyone else. You anonymize personally identifiable data so that it can't be linked to other data by anyone else.
Potential for harm	Physical, social, psychological and all other types of harm are kept to an absolute minimum.
Results communication	You ensure your work is free of plagiarism or research misconduct, and you accurately represent your results.

Fig. 8
Ethical considerations (Bhandari, 2021)

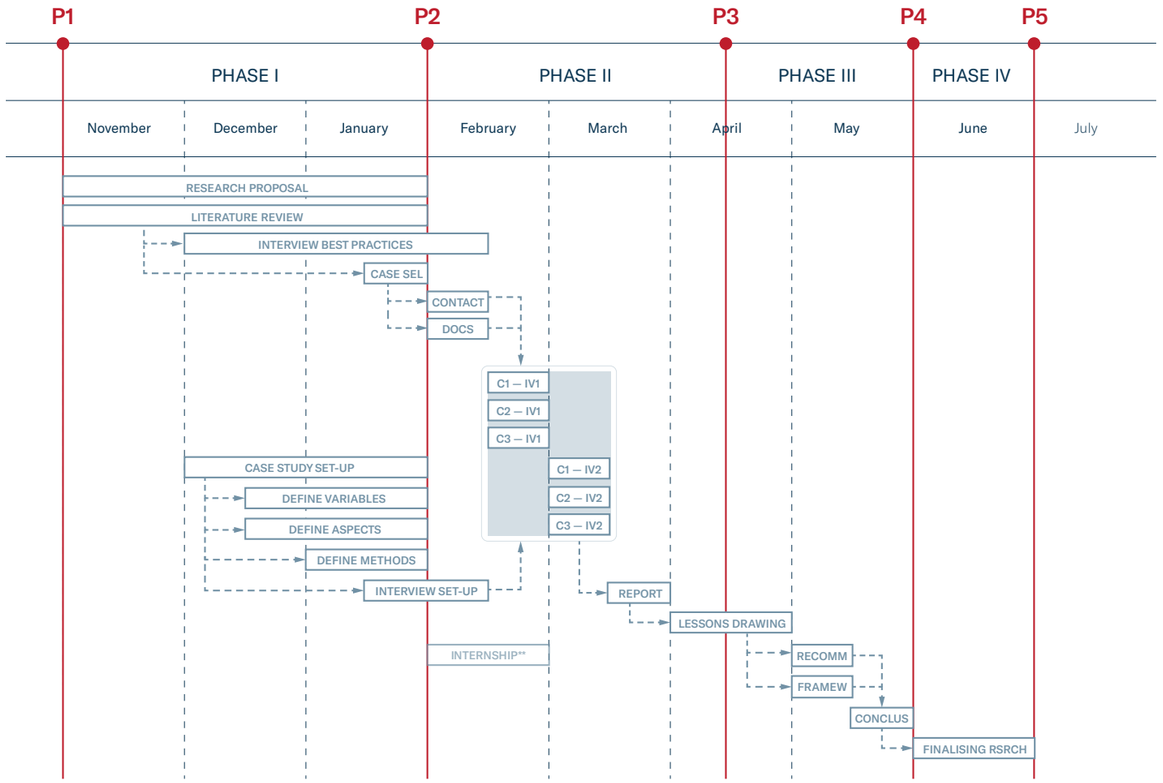


Fig. 9
Research plan proposal

2.5 Research Plan

For the research plan, figure 9 highligts the main tasks and milestones necessary to undertake the proposed research, as well as their interdependency. The figure shows the expected research plan and not the executed plan, as limitations required adaptation and flexibility. Nonetheless, the end goals of the research were achieved within schedule. ●

CHAPTER 3
Literature Review

Fig. 10
BREEAM-CM and Area sustainability assessments in Europe. (BREEAM-NL, 2021b)

The introductory part gave a general overview of the sustainable urban redevelopment context (1.1. Sustainable Urban Policy, 1.2. Role of Private Actors, 1.3. Value of Sustainability, 1.4. Existing Assessment Methods). Now, the literature review will provide a deeper understanding of relevant concepts needed to further structure research. Having defined a context of action and a problem, the literature review aims to collect the necessary information to answer Bi1 & Bi2.

- **BiQ1** How do developers assess sustainability through USASs?
- **BiQ2** How are developers' sustainable ambitions embedded in their decision-making?

By answering these questions, it is possible to frame the empirical research by means of the conceptual model, which becomes the framework to structure the case studies. In addition to Bi1 & Bi2, the literature review also operates as insight to answer RsQ1.

- **RsQ1**
  Why do developers decide to implement USASs?

The information gathered is contrasted and complemented with semi-structured interviews with experts as the first step for the empirical review.

"The scope of the update was to create a version that better aligned with the market trends in terms of circularity and adaptive reuse in brownfield developments."

3.1 Urban Sustainability Assessment Methods

The first addressed concept is Urban Sustainability Assessment Methods. To understand how sustainability is being assessed by sustainability assessment methods at an urban level, the literature review starts by framing the research within the current Dutch practices related to the use of BREEAM-NL Area (BA). To provide a trustworthy understanding of such practices, it is necessary to elaborate on:

- The **existing USASs**
- The **BREEAM-NL Area** framework
- The **scope** of the assessment
- The **actors** involved
- The assessment **process**

There are two main reasons why the study of local practices focuses on the BREEAM-NL Area (BA) Certificate; in the first place, the BREEAM certification scheme provides a representative sample of the green certificates' practices in the Dutch built environment. BREEAM-CM (BC) is the most used urban sustainability assessment system (USAS) in Europe (Pedro et al., 2019) and as shown in figure XX, seventeen projects have officially been involved in the BREEAM-NL Area certification process, based on the project database from BREEAM-NL, (BREEAM-NL, 2021b).

In second place, urban sustainability assessment certifications provide a performance-oriented assessment method that focuses on the area scale, and not on the building scale, therefore, providing a holistic approach to sustainable area development (BREEAM-NL, 2021a; BREEAM, 2012). It also allows studying the relationship between sustainability assessment methods and the decision-making of private actors in urban regeneration projects (Callway et al., 2019).

Existing Urban Sustainability Assessment Systems

Before addressing the specifics of BREEAM-NL Area, it is relevant to give an overview of the existing Urban Sustainability Assessment Systems (USASs), also called Urban Sustainability Assessment Methods (USAMs), or Neighbourhood Sustainability Assessments Systems (NSASs). For comparative purposes, a systematic review of the international assessment systems for urban sustainability was performed by Pedro et al. (2019). As shown in figure X, the use of USASs is spread across the globe and each region has different key players in terms of project certification. BREEAM-CM is the most used urban sustainability assessment system in Europe, mostly due to its impact on the UK market and its 73

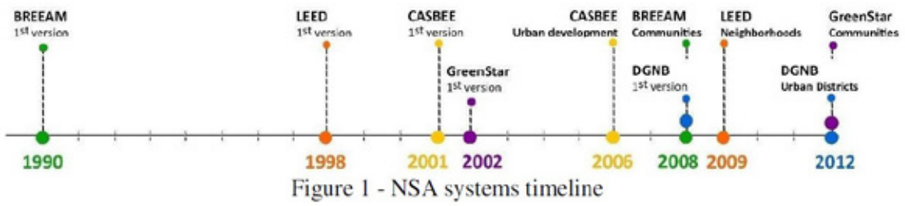


Figure 1 - NSA systems timeline

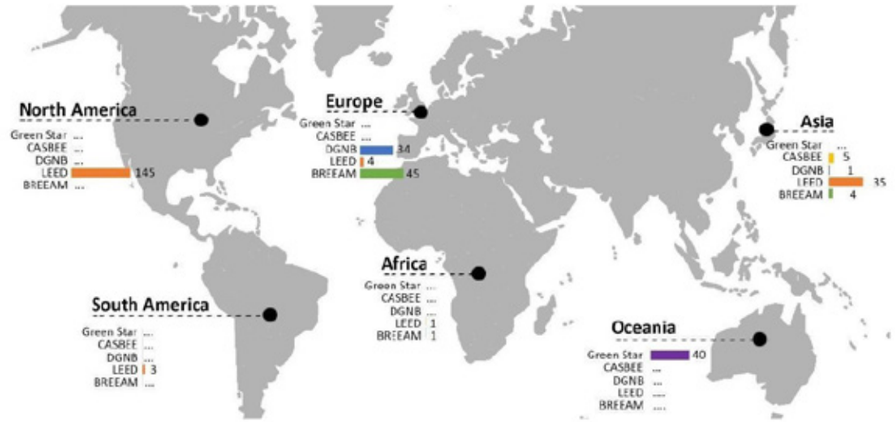


Fig. 11
NSA systems around the world (number of certified projects by the system in 2018) taken from (Pedro et al., 2019)

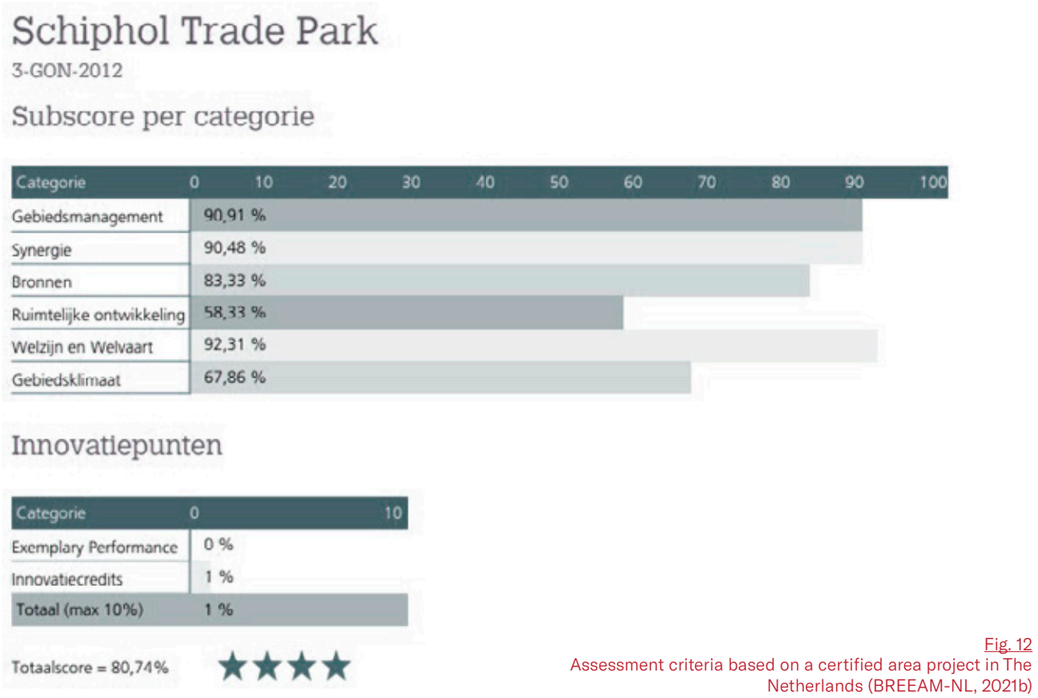


Fig. 12
Assessment criteria based on a certified area project in The Netherlands (BREEAM-NL, 2021b)

Fig. 13
Role of BREEAM-CM in project lifecycle stage (BREEAM-NL, 2021b)

certified projects. In the Dutch context, 17 projects have been certified with BREEAM-NL Area in the last 10 years. Other regions like Oceania are strongly influenced by Green Star (GS) while North America and Asia are mostly driven by LEED certifications. The second generation of certificates (USAS) has been in the market since 2006 and the five main systems identified based on the number of certified projects are: BREEAM Communities, LEED Neighbourhoods, CASBEE Urban Development, Green Star Communities, and DGNB Urban Districts. However, the market implementation of area certificates has been much slower than the building certificates as discussed in section 3.4. Implementation Barrier. BREEAM for example has passed already the 400.000 building certificates, but only summed 50 neighbourhood projects by 2018 (Pedro et al., 2019).

BREEAM-NL Area Framework

The acronym BREEAM "stands for Building Research Establishment Environmental Assessment Method and is a certification method for a sustainable built environment" (BREEAM-NL, 2021a). BREEAM certification is one of the sustainability assessment systems available in the market and the most common one used in practice in The Netherlands. As described in the introduction, these green labels are market-driven. That means they are developed and implemented voluntarily by private actors, as no regulation dictates the compulsory use of this tool in urban area development. Because of their local nature, each market has specific actors involved in the certification and monitoring of projects, which translates into a multiplicity of context-dependent actors. For the Dutch context, BREEAM-NL offers four different quality marks: 1) New Construction and Renovation, 2) In-Use, 3) Demolition and Disassembly, and 4) Area/Communities. Each quality mark has its own steering and advisory group within the DGBC and a board of experts who assess the quality of the certificate. (BREEAM, 2021) Depending on the qualities of the project, a different assessment would be applied to get the aimed certification.

In Dutch practices, the BREEAM-NL Area assessment method was developed by the Building Research Establishment (BRE) and since 2009 has been managed under license within the Dutch regulation and legislation by the DGBC (BREEAM-NL, 2021a). For clarity of the research, it is relevant to highlight a confusion that might emerge regarding the use of two concepts; BREEAM-NL Area Certificate (BA) and BREEAM-CM Communities Certificate (BC). According to the DGBC (See Appendix, Interview 1), the DGBC is the National Scheme Operator in the Netherlands, which means that they have the faculty to adjust the international BREEAM schemes to the Dutch market and legislations. Taking BREEAM-CM Communities scheme (International) as a starting point, they have adjusted the assessment so that it better fits and suits the Dutch Planning situation, and therefore, they have partially altered the credits, causing a change in the name of the scheme to BREEAM-NL Area (in Dutch Gebied). The wording issue described above does not alter the framing or comparability of the scheme with other neighbourhood sustainability assessments (NSA).

In addition to the mentioned adaptation from BREEAM-CM to BREEAM-NL Area, the Dutch scheme has had two versions. The initial version, which relates to 2012, was updated in 2018 to improve the market uptake of the certification. The scope of the update was to create a version that better aligned with the market trends in terms of circularity and adaptive reuse in brownfield developments. Therefore, the scheme is specifically oriented towards urban redevelopment projects in The Netherlands. In addition, BREEAM-NL Area differs from the BREEAM-CM version in other aspects. In first place, BA is meant to have an evidence-based and practical approach towards the potential achievements of the certified project which contrasts with the international scheme since it has a more descriptive approach meant to fulfill research expectations in terms of analysing the best possible way of addressing urban development. In that sense, BA focuses on proving how a specific performance will be achieved instead of only examining and describing the project ambition (See Appendix, Interview 1),

In terms of framework criteria, BREEAM-NL Area has a particular way to assess urban sustainability and represents a fair example of how the multiple value area concept described during the introduction can be evaluated and quantified following a methodological approach (Dutch Green Building Council, 2018). The certificate has a validity of seven years and a maximum score of five stars. When it comes to the assessment itself, the metrics used are divided into six main sustainability categories: 1) Management. 2) Synergy, 3) Resources, 4) Spatial Development, 5) Wellbeing and Prosperity, and 6) Area Climate. An example of these results can be seen in Fugure XX, which shows an example of a certified area project in The Netherlands.

Now, looking at the time framework of the assessed projects and the role of the assessment within the project life-cycle stage, results of crucial importance to understand the scope of BREEAM-NL Area and its possible pitfalls. According to BRE Group, each BREEAM scheme is oriented towards specific project characteristics, and therefore, each assessment focuses on a specific project life-cycle stage (Group, 2021). For BREEAM-CM, the assessment is expected to be performed during the first two phases, being Outline/Strategic Planning and Design as shown in figure XX. This aligns with the vision of practitioners in the Dutch context, who identify the use of BREEAM-NL Area as a methodologic guideline

used for the successful assessment and permit approval of sustainable area developments. In that sense, urban sustainability assessment tools are perceived as a means to achieve sustainable and visionary projects (See Appendix, Interview 2). However, the impact of this methodology also represents limitations due to its evaluative and static nature, in contraposition to the dynamic and long-term process which characterizes urban redevelopment projects, as it will be further discussed in section 3.3 Critics.

Scope of the Assessment

The scope of BREEAM-NL Area is to "offer a holistic framework with key target benchmarks that assists decision-makers to better understand and improve upon the impact their decisions will have in the longer-term environmental, social and economic aspects of the development" (BREEAM, 2012). The assessment aims to provide demonstrable evidence of the sustainability performance of an existing area and according to DGBC, the success of the system relies on supplying a framework for concrete and measurable sustainability in the area (DGBC, 2021). According to Callway (2019), the use of NSA allows to evaluate at an early design stage, and therefore, the practice of evaluation can result in the rational reflection and incorporation of those intentions in posterior masterplan decision-making and material outcomes (Callway et al., 2019). Following that logic, the use and implementation of urban sustainability assessment systems can have a significant impact on the decision-making process of area development initiators.

Actors Involved

The actor-based analysis of the BREEAM-NL Area certification process can be roughly summarized as shown in figure XX. There is a multiplicity of actors involved in the urban sustainability assessment process of BREEAM-NL Area. The first key stakeholder identified is the initiator of the project, who can diverge between the private and the public sector depending on the governance scheme of the project. Additionally, depending on the urban development scheme, the role of the initiator can overlap with the investor role or cooperate with an external institutional investor. Within this component can be found real estate developers and municipalities. Moreover, the initiator, who is usually the one deciding to certify an area development project, is seen by the DGBC (BREEAM National Scheme Operator) as the client (See Appendix, Interview 2). To support the initiator in the certification process, the BREEAM expert who is usually inside the design team, and the BREEAM assessor, who is usually an external consultant within a consultancy firm, take guiding roles. The assessors help the initiator to define an achievable scope based on the initial information and the organisational vision. Furthermore, they advise the client regarding the tasks and decisions that need to be taken in the early stages to increase the chance of successfully getting the desired certification score. At the end of the so-called pre-assessment process, the assessors send the formal application to the DGBC, together with all the required information, to get the official assessment and the potential certification. The results, if successfully accomplished, provide the certification and the evaluation of the current status of the project.

Assessment Process

The assessment process requires the involvement of the actors described before. The project initiator starts with a vision to define the project. Based on the project vision, the initiator voluntarily decides to certify the project and starts the registration process which is supervised by the DGBC. Once the registration is done, the initiator starts the information gathering in collaboration with the BREEAM expert and the independent assessor (DGBC, 2016). As part of the collaboration process, assessors perform a pre-assessment to evaluate and identify the probability of accomplishing expected results based on the available information. Such pre-assessment takes place in a reflection phase and aims to reach a clear agreement of the project scope, which can afterward lead to the trade-off or negotiation phase. During the negotiation phase, the design team cooperates with the BREEAM expert based on the pre-assessment results. Such trade-off aims lo led to the project modifications needed to reach the initiators' vision. When all the required evidence is gathered by the BREEAM expert and the design team, the information is controlled by the external assessor and if satisfactory, the report goes to the certification. In the certification phase, the DGBC performs the quality control and the assessment. If approved, this process leads to the issue of the certification (Dutch Green Building Council, 2018). As shown in figure XX, the assessment process is practically linear, but the decision-making process related to the evaluative practice performed with the BREEAM assessor can enhance nonlinear dynamics within the reflection and negotiation phase (Callway et al., 2019; Coppens et al., 2021).

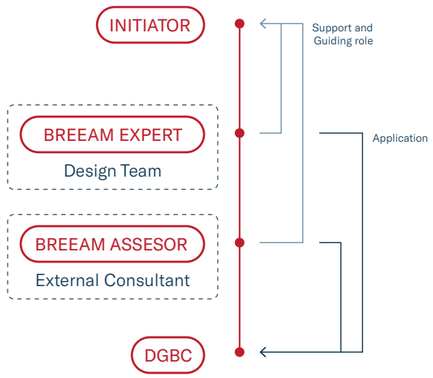


Fig. 14
Simplified mapping of actors involved in the certification process (Own figure)

3.2 Decision Logic

The second concept analyzed is Decision Logic. To understand how the decision-making process of developers in sustainable urban redevelopment projects is, it is necessary to research what is the logic behind the decision-making of developers. To do that, the literature review focuses on:

- The **developers' drivers**
- The **organisational alignment** in decision making
- The role of USASs from a **management perspective**
- The use **BREEAM-NL Area as strategic planning**

Developers' Drivers

The first step to understand the logic behind the decision-making process of developers is to highlight the intrinsic drivers of developers in sustainable urban redevelopment projects. When dealing with decisions, developers refer to their drivers to justify their selections. As a private sector stakeholder, solid profit, financial return, and risk aversion are the main drivers for real estate developers (Geltner et al., 2020; Warren-Myers, 2012).

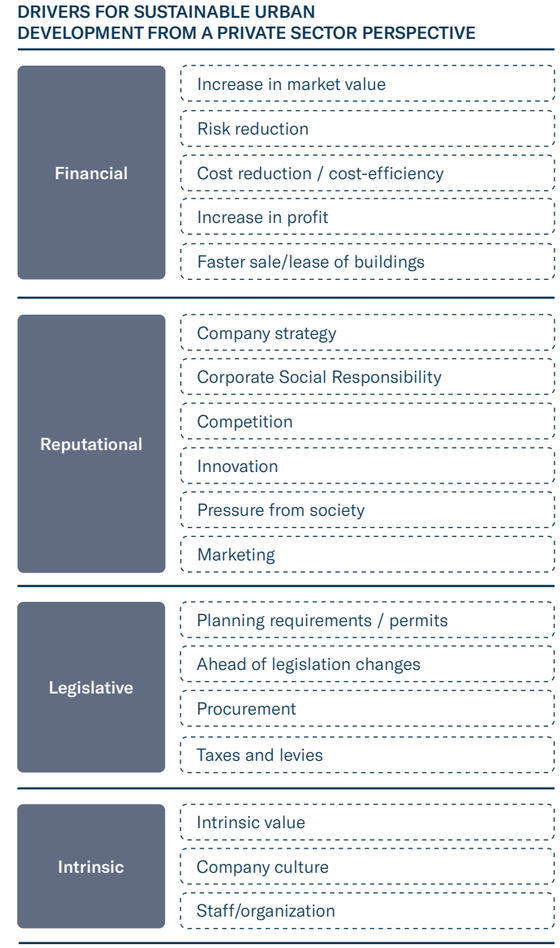


Fig. 16
Types of drivers for sustainable urban development from a private sector perspective (Regales, 2017)

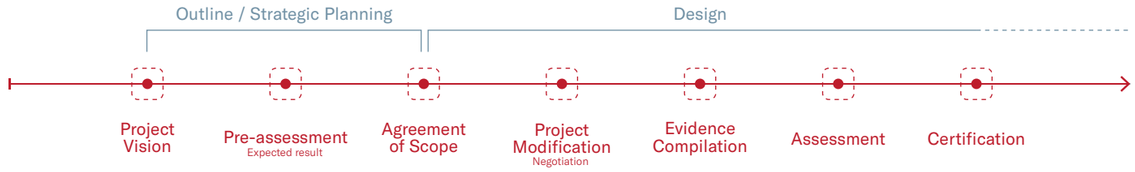


Fig. 15
Process diagram of the certification process. (DGBC, 2016)

However, those are not the only drivers that lead their decision process. As shown in figure XX, Regales (2017) identifies four categories of key drivers for developers in sustainable urban development: Financial, Reputational, Legislative, and Intrinsic.

Furthermore, based on how keen developers are to implement sustainable policies within their organisational framework, they can be classified into different categories. Warren-Myers (2012) for example defines four different positions towards the implementation of sustainable corporate strategies. These four categories correspond to different potential reasons for such decision. The first one is Regulatory Greening and refers to environmental and social improvements by mandatory requirement and compliance, which aligns with the external driver proposed by Callway (2019). The second one is Ceremonial Greening and corresponds to the willingness of getting misleading advantage of sustainable implementations, in other words, “green washing”. The third one is Competitive Greening and relates to a way of organisational greening or social responsibility associated which aims to provide a short-term edge competitive advantage (Lambert, 2021). The fourth one is Holistic Greening, which is when an organisation has a deep commitment to environmental and social improvements (Warren-Myers, 2012)

Organisational Alignment in Decision-Making

The use of sustainability certifications is not accidental. The decision of using BREEAM-NL Area as an evaluative practice is embedded in the managerial framework of organisations and aligns with their visions in relation to urban redevelopment projects. Therefore, this section of the literature review aims to take a broader perspective and elaborate on the role of USASs within the organisational framework of private actors. Literature has provided key information to help professionals get a thorough understanding of the specific transformations caused by the implementation of sustainability principles within the corporate process, strategies, investment decisions, and daily business operations (Vieira De Castro et al., 2020). In fact, the paper from Vieira de Castro et al. (2020) provides an overview which links sustainability, real estate environmental, social, and governance (ESG) and sustainable building. Understanding the relationship between these components becomes necessary to analyse the alignment between the practices related to BREEAM-NL Area and the managerial framework of initiators. In that sense, the study guides organisations to internalise sustainability in all areas of their operations aligning it with their strategic planning.

From a managerial perspective, the paper defines two different dimensions: the business dimension and the project dimension of companies. For the sake of this research, the building dimension is extrapolated to the project dimension since, as described before, the aim of the research is to address the scale of the urban redevelopment project and not the single building level. As seen in figure XX la de abajo, parallel to those two dimensions, Vieira de Castro et al. (2020) classify guidelines and certifications according to their scope of applicability and object of analysis. The documents corresponding to the business dimension include guidelines that help companies to implement CSR processes, enhance more sustainable operations, measure their performance, and report the impacts to their stakeholders (Capald et al., 2019; da Fonseca, 2015). These are usually used to define business management and corporate strategies (Reed, 2021). On the other hand, those corresponding to the project dimension include rating bodies and international standards, which focus on establishing a set of references and indicators for assessing the projects’ life cycle sustainability performance throughout the different life-cycle phases (Cappai et al., 2018; Vieira De Castro et al., 2020). Based on this categorisation, the implementation of BRREAM-NL Area would be part of the second dimension.

If we go back to the definition of sustainable area development addressed at the beginning of this research and we cross-reference it with the analysis from Vieira de Castro (2020), becomes clear that the quality of the built environment achieved in an urban regeneration project reflects the sustainability strategies of the involved corporations. Following this logic, sustainability is reflected in the different administrative levels of organisations that decide to use BA. The sustainable goals developed in the corporate strategic planning (company vision and core values) not only determine the guidelines of the real estate business strategy, but also determine the guidelines for the tactical and operational process at the project administrative level. This alignment defines the potential implementation of BA in area development practices (Dyllick & Hockerts, 2002; Vieira De Castro et al., 2020). Such organisational framework is reflected in the decision-making process of developers. For example, descriptive models like the one developed by Roberts and Henneberry (2007) provide an overview of the six stages which compose the process at a building scale. Those are; set general investment strategy; define detailed strategy; property search; analysis and trade-off; consult clients and/or management; and investment selection (Roberts & Henneberry, 2007).

Role of USASs from a management perspective

From a strategic perspective, the use of BREEAM-NL Area occurs when there is an alignment between the business dimension and the project dimension. As shown in figure XX, the alignment between existing corporate sustainability guidelines and the implementation of green certification schemes takes place at the property development strategic planning level. Based on Morris &

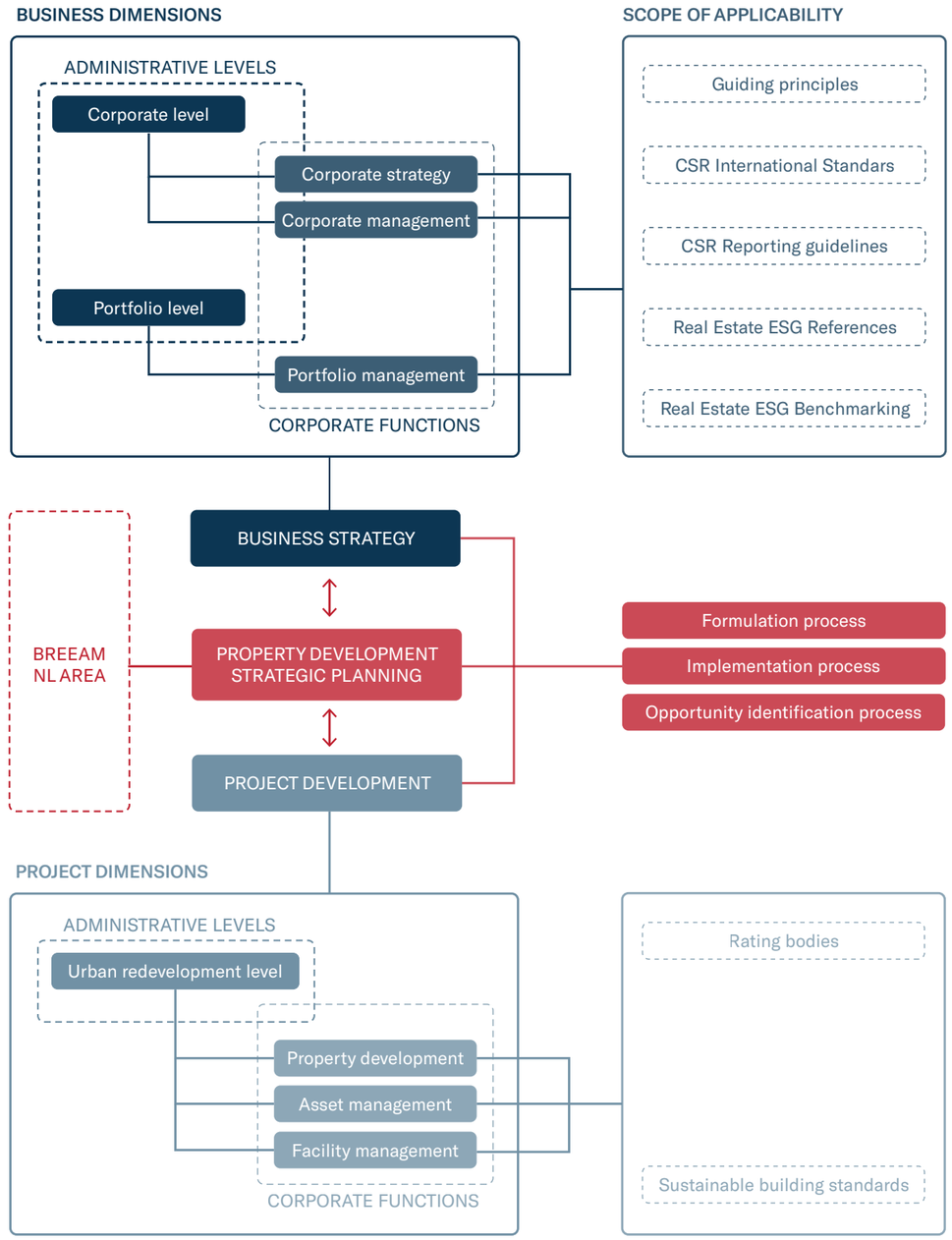


Fig. 17
Property development strategic planning and the role of urban sustainability assessment practices as a decision-making framework. Adapted from (Vieira De Castro et al., 2020).

Jamieson (2005), property development strategic planning is the component that gives directives to team members within an organisation, in order to achieve the sustainable objectives at a project level. Moreover, it translates the dynamic of the corporate values and business strategies into the operational practices of project management. Thus, it provides the drivers for the decision-making process at the various stages of the urban redevelopment process (Morris & Jamieson, 2005). This definition frames the role of BREEAM-NL Area as a strategic practice within the development process. Additionally, it highlights its evaluative nature and its potential to assess the decision-making process of developers at early stages of the project by dividing the process into three main segments: formulation, implementation, and identification of opportunities (Vieira De Castro et al., 2020).

BREEAM-NL Area as Strategic Planning Practice

The discussion above highlights the potential of BREEAM-NL Area as a means to steer the decision-making process and achieve more sustainable urban developments. In that sense, it has the potential to consolidate a strategic framework to assist the decision-making of particular aspects of an urban regeneration project. Scientific research has identified key topics associated with drivers and barriers for the adoption and implementation of sustainable strategies and correlates them to their position in the decision-making process (Jackson & Orr, 2021; Lambert, 2021; Regales, 2017; Xiaoling, 2011) as further discussed in the sections Drivers and Barriers. However, most of the conclusions stress the importance of sustainable corporate strategies, corporate social responsibility (CSR), responsible property investment (RPI), and ESG in alignment with the operational framework for strategic planning as it can "not only deliver social, environmental and ethical value but also is essential for long-term financial success" (UN Global Compact & RICS, 2018).

Now, to better understand how the implementation of BREEAM-NL Area can impact the decision-making of developers, similar studies have used different analytical frameworks. As shown in figure XX, Strategy as Practice (SaP) for example, provides a visual way of mapping actors (practitioners), practices (in our case evaluative urban redevelopment practices), and praxes (tasks), which are the real-time enactment of a practice by practitioners. This allows to analyse, how practitioners interact in practice within a limited timeframe and can be implemented in a pre-determined case study. Furthermore, it makes it possible to track and evaluate how the interaction associated with specific praxes impacts the decision-making related to precise criteria within a strategic process (Whittington, 2006).

Now, Callway et al. (2019) establish that the degree to which evaluative practices impact other practices and therefore, the decision-making process is not reflected in a linear relationship between evaluative practice and response. Instead, evaluations are transactional and shaped by a mix of external drivers and internal evaluative responsibility, negotiation, and reflexivity. These factors enable and constrain how initiators set up, apply, and react to evaluative information at different points in time (Coppens et al., 2021). Analysing the current practices related to the use of BREEAM-NL Area as a strategic framework under these logics could provide a deeper understanding of who takes decisions based on

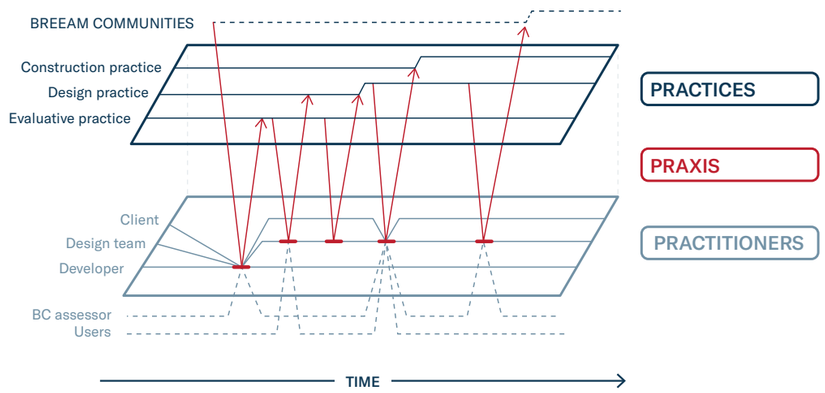


Fig. 18
SaP framework applied to BREEAM-CM as evaluative practice (Callway et al., 2019)

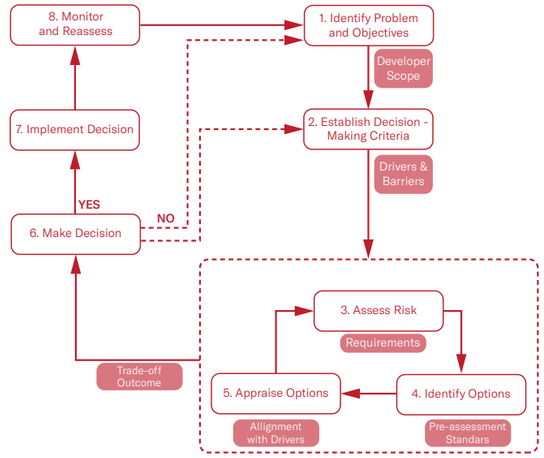


Fig. 19
Decision-making process model, based on (Willows & Connell, 2003).

the evaluation, when is the decision taken and how does it impact best-practice or decisions for specific assessment component e.g., reuse of buildings and infrastructure in urban regeneration projects as it will be further discussed in section 3.4 Adaptive Reuse.

Decision-Making

The inclusion of sustainability in decision making is a complex subject of analysis. According to Magalhães et al. (2019) the key aspect is complex scenarios of decision making is the trade-off within the decision process. The trade-off referes to the balancing act bewteen drivers and barriers. These weighted critera become the basis for the decision logic (de Magalhães et al., 2019). A simplifies version for the decision process is exemplifies by Willows & Connell, (2003), showing the diffferent stages of the process. As shown in figure XX, the first step is the identification of the project and objective, which is followed by establishing the decision-making criteria. The thirt step is a loop where risk assessment, identification of options an appraisal of the options take case to lead to make a decision. The last to steps of the cyclycal process are Implementing the decision and monitoring and reassessing the decion (Willows & Connell, 2003). The model can be adapted for the scope of this research. Following the logic exposed by Willows & Connell (2003), step one can be defined as the developer' scope or ambition for sustainability. Step two can be the drivers and barriers which are the weighted criteria required for the trade-off (de Magalhães et al., 2019). Step three, the risk assessment, can correspond with the metrics and requirements foreseen in the evaluative practices connected to the implementation of BREEAM-NL (Callway et al., 2019). The identification of options defined in step four coincides with the reflective process within standards of the pre-assessment and the option appraisal is the output from the negotiation between the weighted criteria. If the criteria have been met, this leads to the taken decision. Now, the perceived added value from the implementation of the USAS can add to the appraise option based on its alignment with the developers' drivers, therefore potentially influencing the decision logic of developers.

3.3 Evaluative Practices

To understand the relationship between USASs and the decision logic of developers, it is necessary to research the role of BREEAM-NL Area as an evaluative practice. By understanding the logic within this practice, it is possible to evaluate its impact on decision-making. To do that, this section of the literature review focuses on:

- The role of **evaluative transitions** in evaluative practices
- The **critics** to the use of USASs as evaluative practices

The evaluative character of BREEAM-NL follows the logic of the assessment process explained in 3.1 and the strategic planning approach adressed in section 3.2. Following that line of reasoning, literature has identified that the implementation of BREEAM-NL Area as an evaluative practice can have an impact on the decision-making process of initiators during early stages of the project. According to Callway et al. (2019), when using BREEAM-CM, specific sustainability intentions are evaluated at an early design stage, and therefore, it can be assumed that "the practice of evaluation will result in the rational reflection and incorporation of those intentions in later masterplan decision-making and material outcomes" (BRE Group, 2015; Callway et al., 2019) Based on it, the evaluation performed through Neighbourhood Sustainability Assessments (NSAs) can unleash three possible responses at a decision-making level. These three possible responses align with three types of 'evaluative transition', regressive, static, and progressive transitions. Those three statuses describe how evaluative practices affect the decision-making and therefore the outcome of a specific assessment component during evaluative practices.

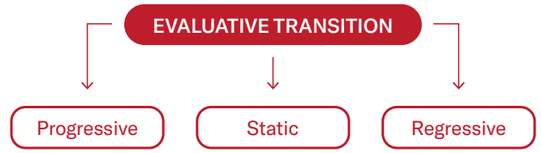


Fig. 20
Evaluative transition as responses from evaluative practices (Callway et al., 2019)

The first status is progressive transitions, where evaluations clearly inform and change decisions during the urban redevelopment process. In this case, the evaluation effectively impacts the decision-making process of initiators and, by following the methodology of BA, a more sustainable outcome is achieved. The second status is regressive transition, where early evaluative recommendations are later deprioritised in favour of more dominant intentions. This is the case for trade-offs that are initially agreed by the developer in favour of a more sustainable development, but that do not reach the execution phase, mostly because of a cost-benefit analysis. The third status is static transitions, where the evaluation does not affect the area development process, mostly because it would require unassimilable costs or technical challenges (Callway et al., 2019).

Critics to the use of USASs as an Evaluative Practice

Implementing BREEAM-NL Area as an evaluative practice also foresees some critics. According to the literature, USASs have weaknesses concerning their capacity to follow up on monitoring and evaluating the project delivery after the certification has been achieved (Callway et al., 2019). This limitation is connected to the dynamic nature of urban regeneration (Dutch Green Building Council, 2018), the required flexibility to achieve an optimal outcome (Coppens et al., 2021), and the necessary long-term commitment towards the projects' ambitions (Regales, 2017).

In Dutch practice, this means that once planning permission or tendering has been achieved, there is little to no reference to the BA standard in later documentation. Thus, initiators tend to deprioritize the assessment and the sustainable scope agreed at early stages (Callway et al., 2019). Moreover, the assessment gives a static evaluation of the project, kind of "like a picture at a specific moment in time" (See Appendix, Interview 2), which opposes the complex and changing process of sustainable area development. Other critics establish that BC currently ignores other dominant evaluative practices (e.g. cost control and value engineer) which can potentially take over decisions that were previously agreed based on the methodologic use of urban sustainability assessment systems (Coppens et al., 2021; Pedro et al., 2019).

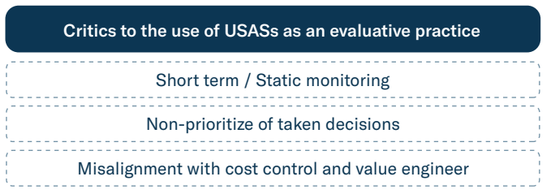


Fig. 21
Critics to the Use of USAs as an evaluative practice (Callway et al., 2019)

3.4 Urban Redevelopment Projects

As stressed before, the research aims to fill the existing gap between sustainability assessment systems and decision-making processes in urban redevelopment projects. This choice follows the scope of the 2018 BREEAM-NL Area update, which is to create a better-aligned version capable of enforcing market trends in terms of circularity and adaptive reuse within brownfield developments. For that reason, the literature review of this section aims to:

- Identify the **characteristics** of the BREEAM-NL Area assessed project
- Evaluate the **comparability** of the different USASs
- Identify **assessment critics** in relation to the reuse of elements

Assessed Projects Characteristics

Following the frame of sustainable urban policies, urban redevelopment projects, also called urban regeneration projects, aim to go beyond the physical improvement of facilities and enhance the redevelopment of a specific region in a city through physical, environmental, cultural, industrial, and economic regeneration (Yu & Kwon, 2011). The characteristics of urban redevelopment projects can be summarized in terms of process and product as seen in figure XX.

Based on these characteristics, it is possible to categorize the projects assessed by BREEAM-NL Area. As seen in figure XX, the range of projects assessed by BA is wide and their differences can be broadly summarized in five main categories: Scale, Type, Use, Governance, and Timeframe. The first component is related to an intrinsic quality of urban area development projects, the scale. The size of the intervention required to accomplish an integral modification of the built environment overcomes the building scale, but beyond that, there is no specific limitation for the size of the project. Therefore, depending on the scope, masterplans assessed with BA can vary between a group of buildings (1 hectare) and complete regions (75 hectares) (Callway et al., 2019). The next category is type, which reflects on the existing constraints for the project prior to the execution of it (in terms of land use and existing facilities) and focuses on the current status of the land in relation to the urban landscape. It can be subdivided into brownfield developments, which typically addresses inner-city projects with a regenerative scope, and greenfield developments, which tend to be rural urban-extensions.

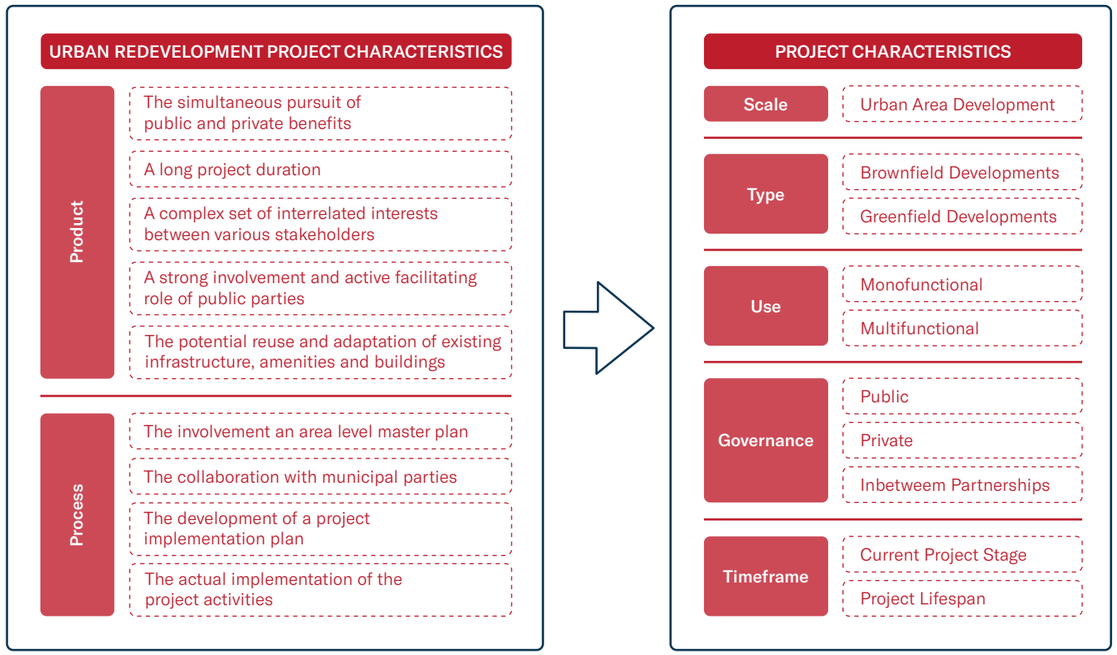


Fig. 22
Urban redevelopment project characteristics and categorization (Regales, 2017; Yu & Kwon, 2011)

The third category is the expected variety of uses within the project, which at the same time tends to be connected to the project governance and the characteristics of the project initiator. Projects with private initiators and smaller scales tend to have one main use and a lower distribution of mixed uses in comparison to big scale projects initiated by public parties. Examples of monofunctional masterplans can be business park developments, resorts, malls, or greenfield housing projects developed by private developers. On the other hand, multifunctional masterplans are usually enhanced by municipal parties willing to renovate or foster mixed-use brownfield projects (BREEAM-NL, 2021b). The category is its governance, which can differ in the range between completely public and completely private, allowing all kinds of partnerships and agreements to take place in between these two worlds (Adams & Tiesdell, 2012). Lastly, the project timeframe addresses the duration of the project and the current project stage of the analysed development. These five categories indirectly define the methodological criteria taken into account for the definition of case studies in existing research, like the one performed by Callway (2014), which main goal is to analyse the evaluative role of urban sustainability assessment systems and examine whether the use of BREEAM Communities (BC), impacted the masterplan decisions and the implementation of green infrastructure during the evaluation process. (Callway et al., 2019) (Gluch & Bosch-Sijtsema, 2016; Schweber, 2013).

Comparability

To evaluate how different urban sustainability assessment systems address the topic of adaptive reuse, it is necessary to refer to their different metrics and their comparability. Since the research aims to use a comparative approach to draw lessons from the international experience, having a prior understanding of them is relevant to setup cases that can be used as sources of inspiration. Moreover, those sources can provide evidence regarding the impact of the USASs implementation in urban redevelopment projects in terms of reuse. Thus, this section aims to build on the existing knowledge about urban sustainability assessment systems, their comparability, and the main shortcomings identified in literature.
According to the literature, relatively few studies have focused on urban scale certifications (Zheng et al., 2017). Based on the comparative studies from Pedro et al. (2019) and Vieira de Castro et al. (2020), all systems

		BREEAM-CM	LEED-ND	DGNB-UD	CASBEE-UD	G.STAR-CM
Environmental criteria	Energy	energy strategy*; transport carbon emissions (Wst: 7%)	minimum building energy performance*; solar orientation; optimize building energy; renewable energy; district heating and cooling; infrastructure energy efficiency (Wst: 9%)	energy infrastructure; LCA -emissions (Wst: 9%)	possibility demand/supply …; adaptability and expandability (Wst: 6%)	greenhouse gas strategy; peak electricity demand (Wst: 8%)
	Water	water strategy*; water pollution; rainwater harvesting (Wst: 5%)	indoor water use reduction*; outdoor water use reduction; wastewater management (Wst: 5%)	water cycle (Wst: 3%)	water resource – waterworks; sewerage (Wst: 6%)	integrated water cycle (Wst: 7%)
	Waste	low impact materials; resource efficiency; existing buildings*; sustainable buildings (Wst: 12%)	construction activity pollution prev.*; solid waste management; building reuse; certified green building*; recycled and reused infrastructure (Wst: 8%)	lca-resource cons; resilience and adaptability; resource management (Wst: 10%)	resources recycling-construction; operation; environmentally considerate buildings (Wst: 17%)	materials; waste management; sustainable buildings (Wst: 11%)
	Land use	ecology strategy*; enhancement of ecological value; green infrastructure; land use*; landscape (Wst: 12%)	smart location*; imperiled species*; wetland & water body conservation*; agricultural land conservation*; site design for habitat or wetland*; restoration of habitat or wetlands; long-term conservation management; minimized site disturbance (Wst: 4%)	biodiversity; land use; smart infrastructure; land use efficiency (Wst: 15%)	greenery - ground greening; building top greening; biodiversity – preservation; regeneration & creation; consistency with upper level; planning; land use (Wst: 17%)	sustainable sites*; ecological value (Wst: 4%)
	Well-being	noise pollution*; light pollution (Wst: 3%)	light pollution reduction (Wst: 1%)	thermal comfort open spaces; open space; noise, exhaust and light emissions (Wst: 10%)	View; inhabitant population; staying population (Wst: 8%)	healthy and active living*; light pollution (Wst: 6%)
	Climate adapt	adapting to climate change; flood risk assessment*; flood risk management; microclimate (Wst: 8%)	rainwater management; floodplain avoidance*; steep slope protection; brownfield remediation; heat island red (Wst: 8%)	urban climate; environmental risks; groundwater and soil protection (Wst: 7%)	basic disaster prevention; disaster response ability; traffic safety; crime prevent (Wst: 11%)	adaptation and resilience; safe places*; heat island effect (Wst: 7%)
Social criteria	Access to services	access to public transport; public transport facilities; transport assessment*; cycling network; cycling facilities; local parking; demographic needs*; delivery of services, facilities; public realm; utilities; inclusive design; safe and appealing streets (Wst: 26%)	preferred locations; access to quality transit; transit facilities; transportation demand management; bicycle facilities; reduced parking footprint; compact development*; connected and open community*; mixed-use neighbor.; access to civic & public space; access to recreation facilities; neighbor. schools; walkable streets; local food production; visibility and universal design; tree-lined & shaded streets (Wst: 51%)	motorized transportation; pedestrian and cyclists; robust social and functional mix; social & commercial industry; barrier-free design (Wst: 21%)	convenience; health and welfare, education; development of traffic facilities; traffic - logistics management (Wst: 11%)	sustainable transport & movement; walkable access to amenities; access to fresh food; digital infrastructure (Wst: 9%)
	Heritage	local vernacular (Wst: 1%)	historic resource preservation (Wst: 2%)	urban design (Wst: 3%)	history and culture (Wst: 3%)	culture, heritage and identity (Wst: 3%)
	Participation	consultation plan*; consul. & engagement*; design review; training and skills; community management of facilities (Wst: 15%)	community outreach and involvement (Wst: 2%)	integrated design; consultation; project management); governance; monitoring (Wst: 10%)	compliance; area management; information service performance; information system - block management (Wst: 17%)	green star accredited professional; design review; engagement; corporate responsibility; sustainability awareness; community participation & governance; environmental management; community development* (Wst: 28%)
Economic	Economic prosperity	Economic impact*; Housing provision (Wst: 12%)	Housing and jobs proximity; Housing types and affordability (Wst: 10%)	Local economic impact; Value stability (Wst: 6%)	Economic development - revitalization activity (Wst: 6%)	Community investment; Affordability; Employment& economic resilience; Education & skills (Wst: 13%)
	Life cycle	Not found any exclusively dedicated criteria, although costs calculation is included in the energy-related criteria (Wst: 0%)	Not found any exclusively dedicated criteria, although costs calculation is included in building reuse and energy criteria (Wst: 0%)	Life cycle cost; partially included in resilience and adaptability (Wst: 6%)	(Wst: 0%)	Return on investment; Incentive programs (Wst: 4%)

* = includes mandatory requirements, wst = weight subtotal

Fig. 23
NSA criteria and weight comparison (Pedro et al., 2019)

base their assessment on the triple-bottom line principles (Brundtland & UN, 1987). However, the number of indicators, metrics and score-weights differ between schemes. From the comparison of the different criteria and their weight, several conclusions in terms of characteristics and comparability can be drawn as shown in figure 23. According to the analysis from Pedro et al. (2019) BREEAM-CM, LEED-ND, and DGNB-UD present a higher number of criteria and weight related to access to services which creates a focus on location and available infrastructure. In addition to that, BREEAM-CM and LEED-ND systems only indirectly address life cycle costs by incorporating it in the energy evaluation measures and reuse of materials. Furthermore, in CASBEE-UD there is no specific category for life cycle costs but the other weights are more evenly distributed, attributing slyly higher importance to participation, land use, waste, and governance, (Pedro et al., 2019). In the case of GREEN STAR-CM, it attributes less importance to heritage but gives a higher relevance to participation and governance. All and all, the USASs tools have more criteria and attribute more weight to the environmental dimension of the evaluation, rather than the social and economic factors (Kauko, 2017).

Moreover, the systematic review from Pedro et al. (2019) provides valuable insight in terms of how different schemes address adaptive reuse. In first place, the reuse of existing buildings and infrastructure is mostly seen as a matter of resource efficiency and waste management, with an average weight of 10% (excluding Casbee-UD). In second place, the involvement of existing heritage in terms of local vernacular identity, history and culture is barely addressed, with an average weight of 2% (Pedro et al., 2019; Vieira De Castro et al., 2020). In third place, BREEAM-CM does not have exclusively dedicated criteria for life-cycle costs analysis related to the increased life-cycle of the reused components. This is addressed as an economic criterion only through the cost calculation related to energy criteria. From this can be concluded that a low number of criteria and weights are attributed to life cycle costs as financial drivers and little attention is paid to heritage, which are critical components to enhance adaptive reuse (Vieira De Castro et al., 2020).

In relation to this conclusion, Appendino (2018) stresses the need to develop a set of indicators to assess the role that heritage could play in urban sustainable development since the lifespan of the buildings is not directly addressed. As shown in figure 24, her study identifies in BREEAM-CM five indicators to assess the presence of heritage and reuse in the scheme (Appendino, 2018).

Critics to USASs in Relation to Urban Redevelopment

Through a systematic review, literature has identified the main shortcoming of the existing systems for assessing urban areas. The main gaps discussed for

INDICATORS FOR ADAPTIVE REUSE AND HERITAGE MANAGEMENT IN BREEAM-CM

1	A review of the area surrounding the proposed development is undertaken to establish the key aspects of the local character
2	The designer/developer has demonstrated that the key elements identified in the review and consultation will be implemented in the design of the site
3	Members of the local community and appropriate stakeholders have been identified for consultation
4	An assessment of any existing buildings and infrastructure (including their materials) is carried out to determine what can be refurbished, re-used, recycled or maintained
5	The developer commits to recycling building and/or infrastructure materials and (where possible) using the materials on the development site
6	Need for widening the scale of assessment
7	Integration of the NSA with computer-based models

Fig. 24
Indicators for adaptive reuse and heritage management in BREEAM-CM identified by (Appendino, 2018)

possible pathways of improvement have been categorized into eight groups as shown in figure 25.

Based on the gaps identified by Pedro et al. (2019) the current research aims to frame its findings in the gaps G3 and G5. The first one, Gap 3, highlights the need for widening the scope by including evaluation criteria on socioeconomic conditions, climate and disaster resilience, and heritage factors (Pedro et al., 2019). In fact, other authors such as Wu (2018) and Kauko (2017) have also argued that these systems emphases on the ecological and environmental aspects, ignoring the economic and social aspects of sustainability, which hinders the integral sustainability of urban regeneration projects. In that sense, evaluative practices often attribute more importance to aspects like infrastructure and resource management rather than heritage and innovation, from which adaptive reuse can be one of the pillars.

The second one is Gap 5, which highlights the need to adapt assessment systems for urban regeneration projects. In this regard, Zheng et al. (2017) propose a framework of sustainability assessment for urban renewal decision-making as shown in figure XX. This framework has two main components. The first component is the sustainability values and the building conditions of different neighbourhoods (urban scale). The four indicators foreseen in this component, being social aspect, economic and work, resources and environment and land use form, are possible metrics to steer adaptive reuse at an urban level, as long as they align with the drivers of the private actor implementing BREEAM-NL Area. The second component is a decision-making matrix for potential strategies, which mostly addresses the single building conditions (Zheng et al., 2017). Through this study, they highlight the need to adapt and use these systems to the context of previously built urban environments. Although this aim has also been expressed by the DGBC through the update of the BREEAM-NL Area quality mark (change between 2012 and 2018 version) (BREEAM, 2012; DGBC, 2021), the scale and scope of the area assessment enters in conflict with the required assessment at the building level (See Appendix, Interview 1, 2). Therefore, current studies have rarely touched on the neighbourhood scale of urban renewal assessment (Zheng et al., 2017).

NSA SYSTEMS: RESULTS FROM THE GAP ANALYSIS

#	Gaps identified	% of Papers
G1	Lack of consensus on sustainability definition and concepts	10%
G2	Overlapping and incoherent distribution of criteria and weighting	18%
G3	Need for widening the scope by including evaluation criteria on socioeconomic conditions, mobility and walkability, disaster resilience and climate change, cultural factors	26%
G4	Little flexibility for local adaptation, particularly for developing countries	28%
G5	Need to adapt the assessment systems for urban regeneration projects	11%
G6	Regulatory bodies involvement and participation	18%
G7	Need for widening the scale of assessment	9%
G8	Integration of the NSA with computer-based models	6%

*total number of papers analyzed: 124

Fig. 25
Main limitations and critics to NSA systems (Pedro et al., 2019)

3.5 BREEAM-NL Area Implementation

To deeply understand the current Dutch practices, it is necessary to elaborate on the logic behind the use of sustainability assessment tools. In order to understand why BREEAM-NL Area is being used by the market, the first step is to get a theoretical overview of:

- The **drivers** for implementing evaluative practices
- The **barriers** for implementing USASs
- The **advantages** for implementing USASs

Implementation Drivers

According to literature, the drivers for the implementation of evaluative practices like BREEA-NL Area can be divided in four categories: External Drivers, Responsibility, Negotiation and Reflexivity (Callway et al., 2019). These four categories evaluate the nature of drivers for implementing USASs. Moreover, they define the embeddedness of evaluative practices in the area development industry. Each category includes several sub-themes

Fig. 27
Framework adaptive reuse decision-making (Bullen & Love, 2011)

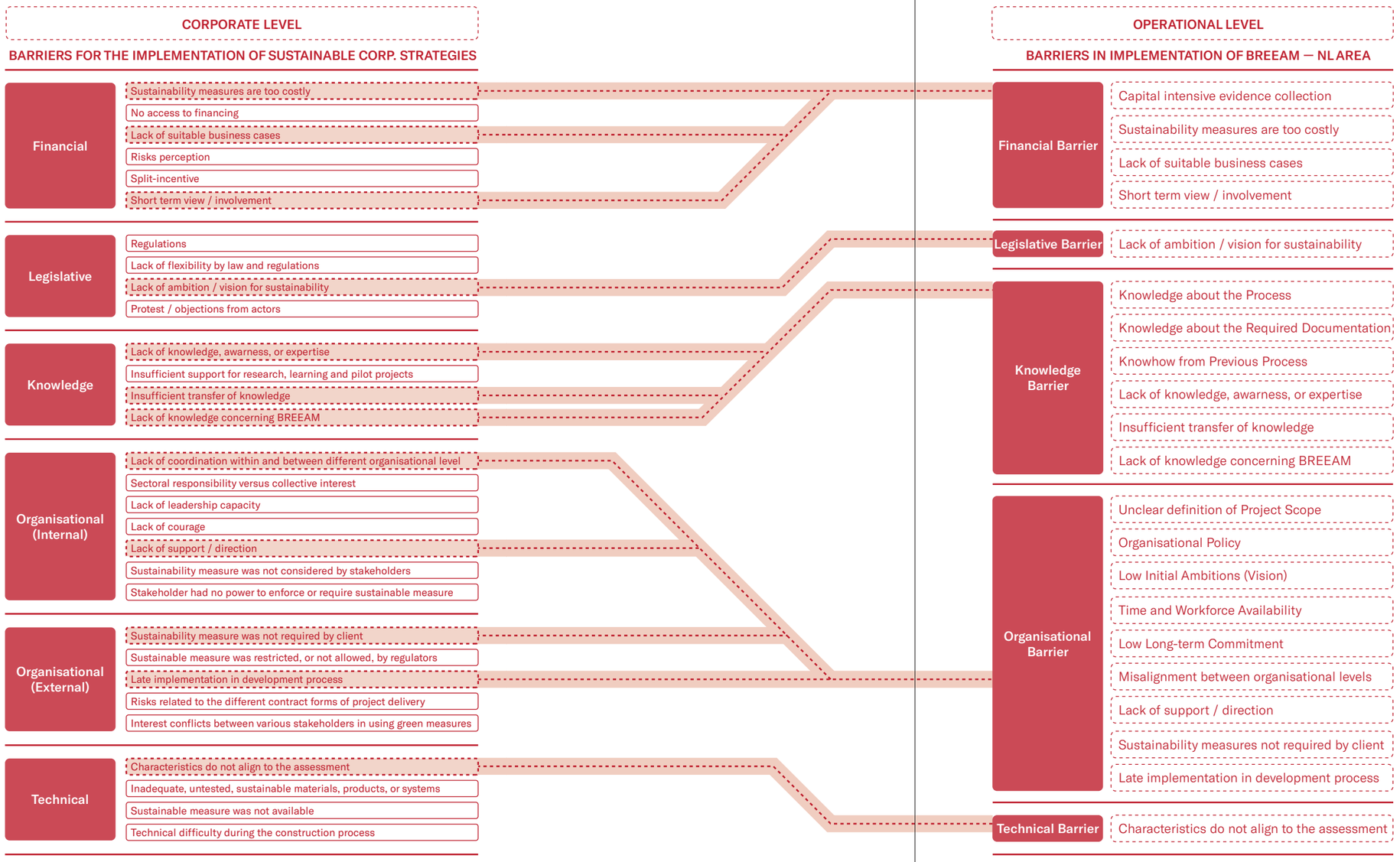


Fig. 29
Main barriers for the implementation of BREEAM-NL Area. Based on (Lambert, 2021; Regales, 2017; Simhachalam, 2008; Williams & Dair, 2007; Xiaoling, 2011)

as shown in figure 28. The first category of probable drivers for the implementation of urban sustainability assessment systems is External Drivers. They relate to external coercive rules (regulation), normative guidance, and mimetic practices which set intrinsic or extrinsic expectations for how market practitioners should act in relation to sustainable area developments.

The second category, Responsibility, addresses the mode of agency which analyses how actors behave within an institution (enacting rules of following scripts) as part of the evolving nature of the organisation (Abdelnour et al., 2017). It also foresees the control of evaluative practices and the institutional intention of deploying specific means within a specific context. It is closely related to the company culture and the knowledge within the organisation (Regales, 2017). The third category is

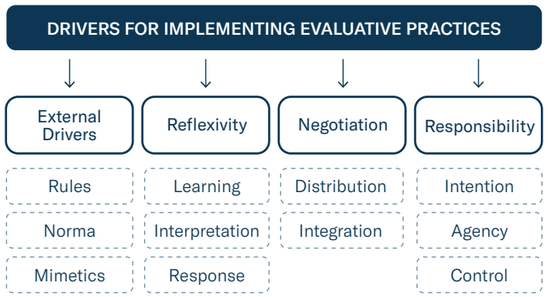


Fig. 28
Nature of the drivers for implementing evaluative practices (Callway et al., 2019).

Negotiation and involves the mediation of multiple evaluative intentions during the decision-making process. It considers the required integration (consolidation) and distribution (prioritization) of different options within the assessment practices (Callway et al., 2019). The fourth category, Reflectivity, considers the learning, interpretation and decision-making response to evaluative information (Callway et al., 2019). In practice, this translates to the willingness to use BREEAM-NL Area based on prior successful implementations within the area development process. Organisations can grow an intrinsic motivation to critically assess and reinterpret current practices based on project learnings and prior successful experiences (Regales, 2017). Altogether, these four categories identify market patterns for the implementation of neighbourhood sustainability assessments from an organisational perspective.

Implementation Barriers

The use of BREEAM-NL Area can be positioned within the operational framework of the organisational structure, as it was discussed in section 3.2. In that sense, the implementation of BREEAM-NL Area in The Netherlands foresees several barriers from a private sector perspective. The next section elaborates on the practical barriers behind the use of this USAS. From a management perspective, the implementation of BREEAM-NL Area corresponds to the operationalisation of a sustainable corporate strategies. Therefore, the use of BA aligns with the developer's strategic decision of achieving a more sustainable urban redevelopment outcome. Under this logic, literature has identified the main barriers withholding real estate developers to implement more sustainable corporate strategies. A general overview given by Lambert (2021) highlights six different categories: financial barriers, legislative barriers, knowledge barriers, internal- & external organisational barriers, and lastly technical barriers. The framework compiles the findings from (Regales, 2017; Williams & Dair, 2007; Xiaoling, 2011), and concludes that financial barriers have been identified as the main obstacle for the implementation of sustainable corporate strategies (Lambert, 2021).

Other authors have specifically addressed the challenges concerning the implementation of BREEAM-NL and emphasize the key role that knowledge and organisational-internal barriers play in hindering the implementation of USASs. Simhachalam's (2008) conclusion is associated with the experienced high workload during the implementation of the methodology. Additionally, the challenging communication and information management, and the time-consuming monitoring and verification process translate into internal-organisational limitations. Lastly, the knowledge barrier in relation to the required documentation and the unclear distribution of tasks are important elements for the implementation of the assessment (Simhachalam, 2008). Based on the

literature findings, the framework used in this research to define the barriers in the implementation of BREEAM-NL focuses on the overlapping elements of these studies as shown in figure XX.

Advantages of Implementing BREEAM-NL

Literature has briefly tried to identify what are the potential advantages of implementing USASs in urban redevelopment projects. These potential advantages almost align one-to-one to the drivers for implementing the schemes as they are a market-driven assessment tool (Regales, 2017). A list of general advantages based on Fredriksen (2015) shows that the benefits can vary between the business level, the project level and the process level. The business level includes increased marketing value, reputational benefits and increasing competitiveness. The project level includes cost reduction, promote innovation and tenant attraction. The process level includes efficient and predictable planning process, risk mitigation and good governance and anticipate legislative changes. Furthermore, from his analysis he identifies five key perceived advantages of the implementation sustainable certification schemes. Those are benefiting from an increased marketing value, getting competitive gains through better reputation, achieving more saleable dwellings for a higher selling/renting price, being ahead of legislative changes and accomplishing a more predictive planning process. (Fredriksen, 2015). In addition to those factors, he identifies the advantages of the urban sustainability assessment in itself. According to his research, the BREEAM-CM scheme allows to differentiate the project by adding value as a marketing tool (visible international scheme) and the methodology is user friendly. Moreover, as a methodological framework can reduce cost expenses and make the planning process more predictable (Fredriksen, 2015). These advantages can represent empirical added value of the implementation of BREEAM-NL Area in the Dutch context.

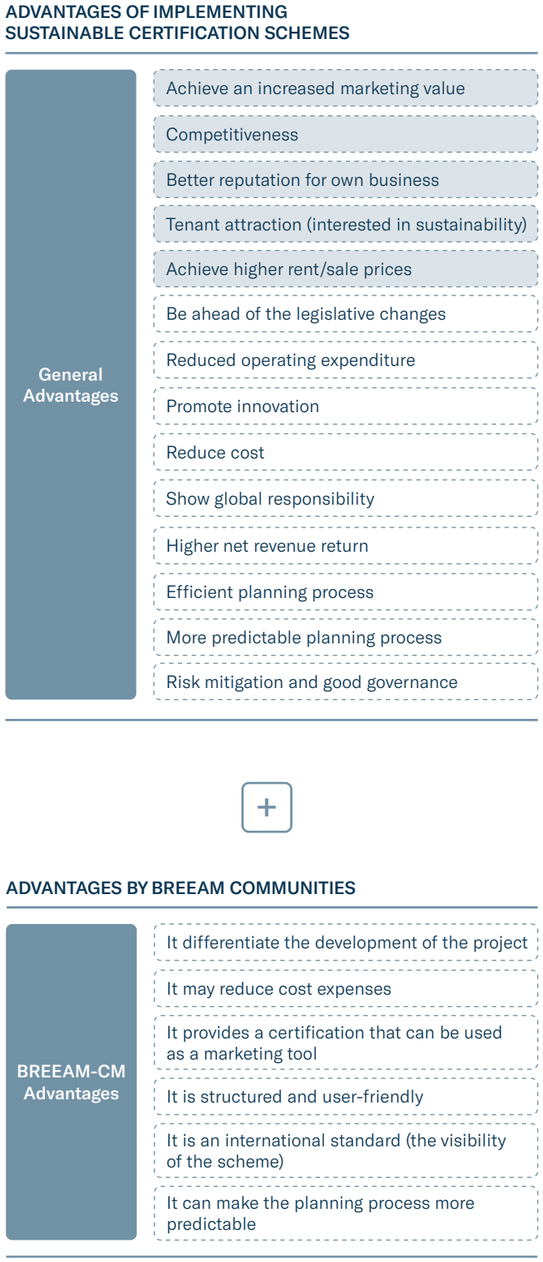


Fig. 30
Main advantages of implementing sustainable certification schemes (Fredriksen, 2015)

3.6 Conceptual Model

Based on the context diagram and as a result of the literature review chapter, it is possible to structure the conceptual model for the research. As seen in figure 31, the conceptual model provides an overview of the concepts addressed in the literature review and the presumed relationships between the main concepts. Moreover, the conceptual model and the knowledge behind it are the starting point for the empirical review. For the empirical review, the concepts present in the model will be close coded to structure the interviews with experts. The detailed explenation of the conceptual model is part of the Methodology Chapter.

"The conceptual model provides an overview of the concepts addressed in the literature review and the presumed relationships between the main concepts."

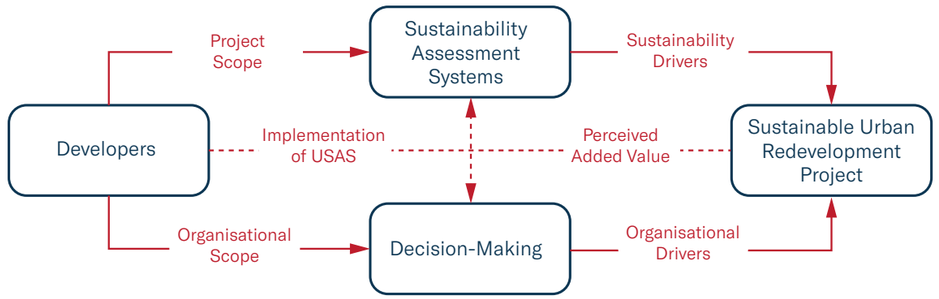


Fig. 31
Conceptual model based on literature review

CHAPTER 4
Empirical Review

As mentioned in the research methodology, the information gathered through the literature review is used to define the conceptual model. These concepts were used as close codes to process the data collected through the initial phase of the empirical review (Explorative Interviews with experts, see Appendix Interview 1-3). This first phase of the Dutch current practices, complemented by the project-based insight of developers in the NL Case 1 (Interview 4,5) is what we defined as the Dutch Case and represents the base case for the lesson-drawing approach. On the other hand, the international case-studies include interviews 6 to 12 as shown in figure 32.

Fig. 32
List of Interviewees

CASE	#	REF. #	PROJECT	ROLE	INTERVIEW DATE
Dutch Base Case	1	1	Explorative Interviews	PM/BREEAM-NL	12/2/2021
	2	2	Explorative Interviews	Sustianability Expert	12/3/2021
	3	3	Explorative Interviews	Sustianability Expert	12/15/2021
	4	4	Wisselspoor Redevelopment	PM/Real Estate Developer	2/23/2022
	5	8	Wisselspoor Redevelopment	PM/Real Estate Developer	4/15/2022
UK Context	6	5	Aylesbury Estate Redevelopment	Sustainability Expert	3/4/2022
	7	9	Aylesbury Estate Redevelopment	Urban Researcher	4/20/2022
	8	11	Aylesbury Estate Redevelopment	Social Researcher	4/25/2022
AUS Context	9	6	Brisbane Showgrounds Redevelopment	PM/Real Estate Developer	3/11/2022
	10	7	Waterloo Integrated Station Development	PM/Strategic Board Member	4/12/2022
	11	12	Waterloo Integrated Station Development	Sustainability Expert	4/26/2022
	12	10	Waterloo Integrated Station Development	PM/Real Estate Developer	4/22/2022

4.1 The Dutch Case: Current Practices

4.1.1 Sustainability Assessment System Implementation

- **RsQ1: Why do developers decide to implement USASs?**

To answer why do developers decide to implement USASs in The Netherlands it is necessary to understand what the scope of the assessment is. Moreover, to get a complete insight from an empirical perspective, this section elaborates on the main drivers and barriers identified concerning the implementation of BREEAM-NL Area.

Assessment Scope

In the Dutch context, developing parties implementing BREEAM-NL Area have a seemingly diverse profile. The first group can be categorized as small to medium private development firms, mostly oriented towards monofunctional projects like business parks, logistics, and leisure. The project scope is usually connected to the investment strategy of the developing companies and their private investors, often real estate investment funds. These types of developments usually take place in suburban areas or rural areas, therefore positioning the development within a greenfield context of little ownership fragmentation. Although these are the most common type of projects, there is also a second group of developments. This smaller group can be categorized as medium to big size development firms that partner with local authorities, such as municipalities, ports, or private organisations in joint ventures. As a result of the mixed governance, the scope of these projects tends to be more oriented toward the accomplishment of municipal ambitions and public concerns, but still mostly addressing a monofunctional programme. The second category, however, is less often seen in practice.

All these projects belong to a generation of frontrunners who allegedly strive for sustainability and decide to implement BREEAM-NL Area as part of their business operations. However, two interesting points arise when looking at the existing projects. In the first place, they tend to lack residential functions and mixed-use programmes. In the second place, among the private development firms, it is not common to see the names of the biggest Dutch real estate development firms, who therefore, have not seen the need to implement USASs into their development strategic planning agenda.

When looking at the scope of the assessment, it can be divided into a project level and an organisational level. At a project level, by implementing the assessment, project developers aim to accomplish reliable metrics that can be used to assess the sustainability of their projects. This means being able to measure and evaluate the characteristics of the project against requirements and standards for sustainability. As seen in figure 33 (See Appendix E), at an organisational level, the implementation of BREEAM-NL Area usually responds to the developers' aim to show their sustainability ambitions and get a strategic advantage in terms of reputation or financial gain. In that sense, the implementation usually responds to an external driver, like the transactional need to demonstrate to other stakeholders (both private investors and public parties) that the project scope aligns with their sustainability ambitions for the area.

>> “the way developers approach the assessment process, whether as a means or as an end, influences the impact that the assessment can have on the project and the potential benefits that it can bring to the organisation”

One last element seems relevant in terms of scope. When asking about the scope of the assessment, there is no clarity among the interviewees on whether the assessment acts as a means to achieve a more sustainable outcome, or as a result of the intrinsic organisational ambitions. Although in theory, this is a two-way relationship, in practice this defines how the assessment is perceived from a private sector perspective and therefore, how it is being used. Is the assessment perceived as a useful methodology to enhance more sustainable practices and outcomes? As the means to an end, or is it solely a checklist with criteria that need to be ticked to certify a project without further reflection. As a starting point, it is possible to highlight that the way developers approach the assessment process, whether as a means or as an end, influences the impact that the assessment can have on the project and the potential benefits that it can bring to the organisation.

Assessment Drivers for BREEAM-NL Area Implementation

In terms of drivers, Dutch developers mostly attribute the implementation of BREEAM-NL Area to their intrinsic motivation to be more sustainable. According to experts, this is the result of their internal will to operationalise their corporate strategy and sustainability goals. Now parallel to this intrinsic ambition some external drivers might influence their decision. When deciding to implement BREEAM-NL Area, Dutch developers are usually steered by external factors, like local authorities requiring certain sustainability standards for the urban development project, clients or investors requiring the use of the green certificate as a marketing tool, or other market parties pushing the boundaries for competitiveness in terms of urban sustainability. These sounds coherent since, as a market-driven sustainability assessment, USASs face market logic for their implementation (demand-supply and cost-benefit principles). That means, on one hand, that if there is no external demand for the assessment, private parties will most likely not supply it. On the other hand, it also means that no implementation will be encouraged by private parties if there is no clear benefit from it, therefore, withholding its implementation. Such benefits need to align with the scope of the organisation and its internal drivers to be sustainable, otherwise, they will not represent added value for the implementing party (See Appendix, Interview 2, 4).

As part of the interviews, Dutch field experts foresee the use of BREEAM-NL Area as a useful methodology to assess the scope of complex projects. It also allows following benchmarking practices within the industry to potentially get a competitive advantage and recognition. Moreover, it allows them to demonstrate specific requirements for sustainability, which are more and more being required by municipalities in the tendering and procurement process of redevelopment projects. Following this line of reasoning, the implementation of BREEAM-NL Area can become the means to apply for available funds and subsidies from external parties, which are perceived by developers as strong incentives (See Appendix, Interview 2, 3, 4). Moreover, according to experts, some internal initiatives to optimize organisational processes, have enhanced the use of BREEAM-NL Area, although its potential as a methodology to guide strategic planning and design within organisations is not completely recognized in the Dutch context.

>> “USASs face market logic for their implementation (demand-supply and cost-benefit principles). That means, on one hand, that if there is no external demand for the assessment, private parties will most likely not supply it”

These organisational-internal drivers are connected to their potential to reduce costs in certain aspects of the development process like a more efficient and predictable planning process, and a clearer task deployment in terms of evidence compilation and building permits.

It is relevant to highlight one element here. Internal learnings and added value associated with “organisational-internal” drivers can come from the assessment process itself and not necessarily from the accomplished certification, which on one hand makes the methodology itself a source of added value beyond the achieved quality mark, but on the other hand plays against the desired market uptake from the DGBC perspective (See Appendix, Interview 1, 2). This aligns with the fact that many projects are registered for the assessment, or even use the USAS as a guideline, but do not end up being certified. Moreover, regulatory parties are more and more using the standards from BREEAM-NL Area as guidelines for developing their own standards and sustainability briefs without necessarily encouraging the BREEAM-NL Area certification under the logic that USASs are only the means to the scope of delivering more sustainable urban redevelopment projects (See Appendix, Interview 2, 3).

Assessment Barriers for BREEAM-NL Area Implementation

According to the experts interviewed, the main barriers correspond to the financial and organisational-internal level. Certifying urban redevelopment projects is a capital-intensive process since it requires the involvement of many different experts. By enforcing an integrated reporting system, initiators can collect the information necessary to prove how sustainable the project will be. All documents, including plans, studies, and contracts are taken as evidence to achieve the expected score. However, the high workload required for this task represents higher indirect costs for the project. In addition to that, organisational limitations (capabilities) play an important role in the assessment process. In practice, initiators have not only financial constraints but also limited time and employees, which translate into in-house limitations that can withhold the implementation of BREEAM-NL Area. Other internal barriers identified are the absence of an integrated sustainable corporate strategy, a low initial ambition regarding the sustainability of the project, an unclear definition of the project scope, and the lack of a long-term commitment (See Appendix, Interview 1, 2). All these barriers represent important challenges to incentivize the market uptake of USASs.

The next identified categories are knowledge barriers and technical barriers. The first one highlights the lack of market knowledge about the certification procedure and the assessment itself. This internal barrier is complemented by the lack of knowledge in regards to the documentation required to successfully evidence the sustainable characteristics of the project. Lastly, a general lack of knowledge resulting from previous certification processes, which corresponds to the relatively low number of BREEAM-NL Area certificates deployed in The Netherlands, limits the market knowledge transfer, which consequently discourages the implementation of the certificate itself (See Appendix, Interview 2, 3)The technical barriers for the use of BREEAM-NL Area, mostly refer to the misalignment between the projects’ characteristics and the specifications of the assessment. This misalignment would indirectly represent the impossibility of accomplishing the expected certification score, which would automatically undermine the use of the methodology (See Appendix, Interview 2, 4).

4.1.2 Decision-Making

- **RsQ2: How developers' decision-making can be influenced by the implementation of USASs?**

To answer how developers' decision-making can be influenced by the implementation of USASs, it is necessary to explore the practices related to the development process and examine the role that BREEAM-NL Area can have in relation to both the project scope and the organisational scope of developers.

As seen in figure 34 (See Appendix E) according to Dutch practitioners, the implementation of BREEAM_NL Area can potentially influence the decision-making of developers in three different ways: a reflective way, a guiding way, and an evaluative way. In that sense, the USAS can play three roles in relation to decision-making: A Reflective Role, a Guiding Role, and an Evaluative Role respectively. The reach of these roles is closely dependent on the initial scope of the assessment since based on how its implementation is perceived by the initiator (as means or as end), he defines a position towards the assessment which makes the methodology more or less likely to influence their decisions. These three levels of potential are illustrated in figure.35 and their influence will now be described.

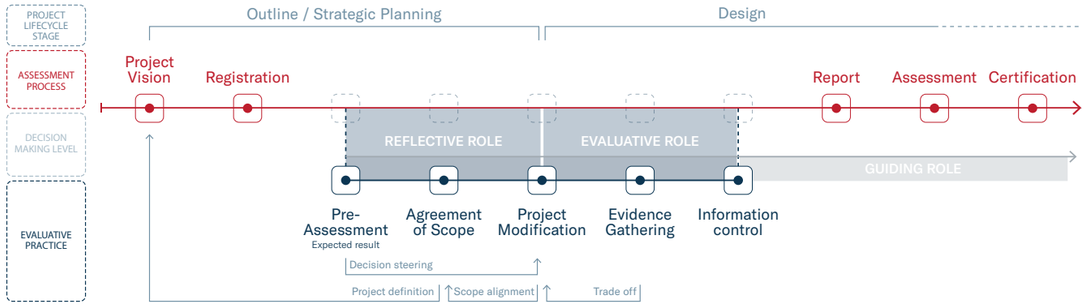


Fig. 35
Diagram of the certification process. Own figure based on (Callway et al., 2019; DGBC, 2016).

Organisational Scope

Starting with the reflective role, the implementation of BREEAM-NL Area can, to some extent, help project initiators assess their organisational scope. According to the interviews, the initial project life-cycle stages (initiation and planning) have been described as a moment characterized by high ambitions, flexibility, and openness to modifications within the organisational scope, which makes the early involvement of BA an opportunity to potentially improve the project outline. Following this logic, if BREEAM-NL Area is implemented at the early stages of the masterplanning process, it can encourage project initiators to reflect and redefine sustainable ambitions, therefore influencing the sustainability scope of the project based on their broader organisational scope. Through the reflective process, initiators can assess their drivers at a corporate level against the barriers that withhold them from achieving a more sustainable outcome, therefore allowing them to clarify their ambitions and to agree on measurable goals for the project that represent a potentially positive change of their organisational scope. According to the interviewees, this reflection is the result of the encounter between intrinsic sustainability ambitions and a suitable methodology capable of communicating with developers about the advantages of implementing more sustainable measures (See Appendix, Interview 4).

Development Process

The second way to potentially influence the decision-making of developers is through their guidance. By implementing BREEAM-NL Area, developers can assess the planning process and their internal operations. According to the interviews, the use of BREEAM-NL Area as a sustainability assessment methodology can potentially guide the formulation of the project in terms of sustainability standards (See Appendix, Interview 1). By defining critical paths for the successful accomplishment of specific assessment components, it is possible to clarify technical requirements and process workflows within the development team. Thus, the implementation of BREEAM-NL Area as a guiding framework can, to some extent, enhance the optimisation of management processes. This means, on one hand, encouraging efficient planning practices and process predictability, and on the other hand, enhancing better management practices concerning team coordination, task delegation, and project governance. Now, although BREEAM-NL Area has been specifically modified from the international assessment to better cope with Dutch legislation and planning practices, this particular component is yet not clearly recognized by development parties as a strength or particular source of value (See Appendix, Interview 4).

Project Scope

The third way in which the implementation of BREEAM_NL Area can potentially influence the decision-making of developers is in an evaluative way. From an evaluative perspective, the implementation of BREEAM-NL Area provides a practice-based framework to discuss the requirements and changes needed to achieve an integral urban development, therefore allowing them to evaluate and influence the project scope. Thus, BREEAM-NL Area can improve the communication process and act as a platform to evaluate the characteristics of the project in terms of sustainability. Now, this evaluative role can potentially lead to project trade-offs during the early stages of the development, mostly depending on the initial scope and organisational ambitions set by the initiator in the reflection phase. In practice, this happens during the pre-assessment process (See Appendix, Interview 2).

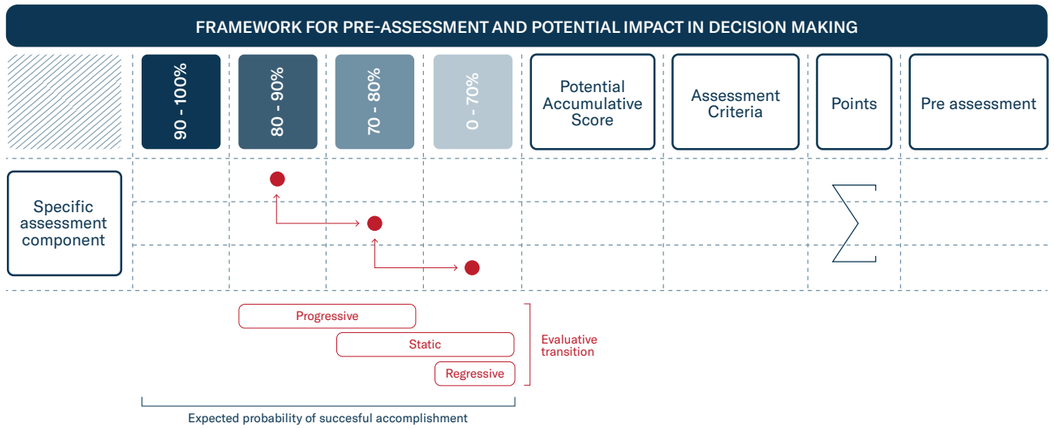
According to field experts, by collecting the available project information, BREEAM assessors can forecast the current level of compliance for a certain criterion and advise initiators on how feasible achieving a specific criterion would be based on the estimated probability of accomplishment. In addition to that, initiators can get an overview of what would the requirements be and which potential benefits could come with more sustainable solutions. Hence the evaluative role of BREEAM-NL Area can potentially assist developers to appraise the different options and outcomes for the project in terms of sustainability metrics. Moreover, as an evaluative practice, the assessment can potentially operate as a framework to weight criteria for decision-making and appraise how implementing certain solutions could benefit the project scope. As shown in figure 36.,based on this evaluation, developers can decide if ignore the recommendation and give up on a specific criterion (static transition) or apply the available recommendations and therefore, modify their decision (progressive and regressive transition) (See Section 3.2 for further

>> “According to the interviewees, this reflection is the result of the encounter between intrinsic sustainability ambitions and a suitable methodology capable of communicating with developers about the advantages of implementing more sustainable measures”.

explanation). Both literature and experts agree on the fact that static and regressive transitions suggest that developers are locked into certain ways of doing things, making them less likely to react to evaluative information that diverges from more familiar practices (See Appendix, Interview 2, 4).

Now, the extent to which BREEAM-NL Area can steer reflection, guidance, and evaluation within an urban redevelopment project is directly connected to the intrinsic ambitions of the initiator and the scope of the assessment. Following that logic, the more sustainable a company is willing to be within its corporate strategy and the more open they are to perceive the assessment as a means to accomplish sustainable outcomes, the higher the potential that the USAS has to influence their decision-making.

Fig. 36
Framework for pre-assessment and potential impact in decision-making. Own figure based on (Callway et al., 2019) and explorative interviews



4.1.3 Sustainable Urban Redevelopment Project

- **RsQ3: To what extent does the developers' implementation of USASs lead to a more sustainable urban redevelopment project?**

To answer to what extent the developers' implementation of USASs lead to a more sustainable urban redevelopment project, it is necessary to explore the added value that the private sector perceives in the implementation BREEAM-NL Area. Based on that, it is possible to assess whether those benefits can actually enhance a more sustainable outcome and thus if they can act as private-sector driven incentives.

Perceived Added Value

As a market-driven assessment, BREEAM-NL Area needs to be able to trigger some benefits for those parties deciding to use the assessment since without benefit there is no incentive for the implementation. As mentioned before, such benefits need to align with the initiators' organisational scope and their drivers for being sustainable, otherwise, the implementation would not be perceived as a way to add value to the organisation. According to Dutch field experts, the benefits of implementing BREEAM-NL Area can widely vary. As seen in figure 37 (See Appendix E) From a developer's perspective, such benefits can be divided into four main categories: Financial, Legislative, Organisational-External and Organisational Internal. This section, therefore, will elaborate on the main elements identified through the interviews concerning these four categories.

From a financial perspective, the perceived added value of the assessment mostly addresses the certification itself and not necessarily the assessment process. Although it is not that common, developers can financially benefit from certifying a redevelopment project by gaining access to special financing programs which require high standards of sustainability. They can also attract investors willing to get involved in sustainable projects and apply them to financial incentives driven by external parties. In that sense, the certification can be the means to improve the funding of the project and potentially become part of their financing strategy. Moreover, developers consider that by achieving outstanding results they can attract tenants with high sustainability ambitions, which results beneficial for them since such tenant profile is usually willing to pay higher rents or sales prices for the real estate asset.

Now, the added value resulting from the certification itself is commonly weighted against the financial burden that the assessment process represents for involved parties. As a result, developers do not perceive the assessment as a way to reduce the project's indirect costs or mitigate financial risks. This is also connected to the fact that they do not necessarily attribute the potential savings on operating expenditures to the implementation of the assessment. From their perspective, this is more perceived as a result of their internal drivers associated to cost reduction (See Appendix, Interview 4).

From a legislative perspective, Dutch developers have also identified some advantages connected to the implementation of BREEAM-NL Area. In the first place, they can become eligible for certain projects based on procurement requirements which recognize BA as a reliable way of measuring sustainability ambitions at an urban level. In the second place, they have recognized the added value that BREEAM-NL Area can bring to the table when striving for being ahead of legislative changes. This is particularly important for urban redevelopment projects because of the long timeframe and high risk associated with possible regulatory changes. In fact, since the standards measured by the USASs are often higher than the ones required by regulation, by accomplishing higher specifications developers can anticipate possible changes in regulation that could trigger the need to adapt the project specifications. In that sense, fulfilling higher sustainability standards based on the project's assessment becomes, from a managerial perspective, a possible way to mitigate legislative risks associated with the planning process. Therefore, the assessment becomes a source of value as it enhances the project adaptability which is required to successfully execute a long-term redevelopment project from a legislative perspective. However, it is worth highlighting that developers do not explicitly mention other regulatory aspects like spatial or planning incentives as part of the benefits that they can potentially get from the implementation of BREEAM-NL Area. This can be directly connected to the role local authorities decide to play in relation to specific projects, where their interest and level of involvement can vary depending on institutional variables (See Appendix, Interview 2, 4).

From an Organisational-External perspective, Dutch developers emphasize the benefits that the certification can create in terms of reputation and marketing. Implementing BREEAM-NL Area, just like other BREEAM quality marks, is perceived as a way to add value to the project in terms of marketing. Thus, as part of a marketing strategy, it can lead to external recognition, both from society, regulatory parties, and potential clients. This allows them to use their projects as promotional assets. In addition to the reputational value, BREEAM-NL Area can also enhance competitiveness in terms of benchmarking, which indirectly translates into potential financial benefits as described in the first part of this section (See Appendix, Interview 1, 4).

From an Organisational-Internal perspective, the main benefits identified by Dutch experts relate to awareness, knowledge transfer and internal process guidance. In the first place, the decision to implement BREEAM-NL Area defines a specific mindset for the organisation. Such a mindset makes the staff involved in the project more eager to reflect, evaluate and learn from the decisions that need to be taken to be able to provide the required evidence. In that sense, the organisations become more aware of what sustainability means, how it can be measured and more importantly, how it can be achieved from a methodological perspective. Such awareness, according to the interviewees, can potentially retrofit internal policies and ambitions that already strive for high standards of sustainability and therefore, adds value to the organisation as a pragmatic arena for the operationalisation of their corporate strategy. In the second place, the methodological process behind the assessment can, in some cases, enhance better team coordination by setting clear tasks and requirements for the assessment. This can add value to the operational sphere of the organisation. However, from the developers' perspective that is not commonly seen as a benefit since the implementation by itself already implies an increase in workload and complexity. Thus, when weighed against the added value that provides as a guiding framework, it usually ends up being perceived as a burden more than as a means to optimize processes (See Appendix Interview 4).

Sustainability Drivers

Having identified the potential benefits of BREEAM-NL Area, it is possible to inquiry whether the added value perceived by developers can lead to a more sustainable project, or does it corresponds to a transactional effort with a marginal output. In that sense, it is necessary to reflect on whether the assessment benefits can actually be seen as extra-drivers for being more sustainable and thus, to what extent they can potentially help overcome existing barriers.

According to Dutch field experts, the implementation of USASs can help rising awareness of how important sustainability is and how this can be translated to their redevelopment projects. However, the decision of achieving a more or less sustainable outcome, and to some extent, whether to have a more or less financially attractive project (associated to the cost concern mindset), does not necessarily come from the assessment itself. In essence, this has two main reasons which partially align with the main finding of the literature review. On one hand, practitioners recognise that generally such decisions are the result of an organisational alignment where goals and negotiables in terms of sustainability are taken at a strategic level. Thus, intrinsic ambitions and corporate decisions will have a higher hierarchy than the operational trade-offs required by the assessment to make the project more sustainable from an urban perspective. On the other hand, the value attributed to the implementation of some sustainable measures remains difficult to quantify into potential drivers that, by aligning with the developer's interest, could potentially act as explicit incentives to invest in sustainability measures. Therefore, as a qualitative discussion, it is not simple to conclude whether the implementation of BREEAM-NL Area directly leads to a more sustainable outcome. However, it is possible to witness a positive influence on the developers' mindset through the role that the assessment plays in terms of reflection, guidance, and evaluation.

>> "the decision of achieving a more or less sustainable outcome, and to some extent, whether to have a more or less financially attractive project, does not necessarily come from the assessment itself"

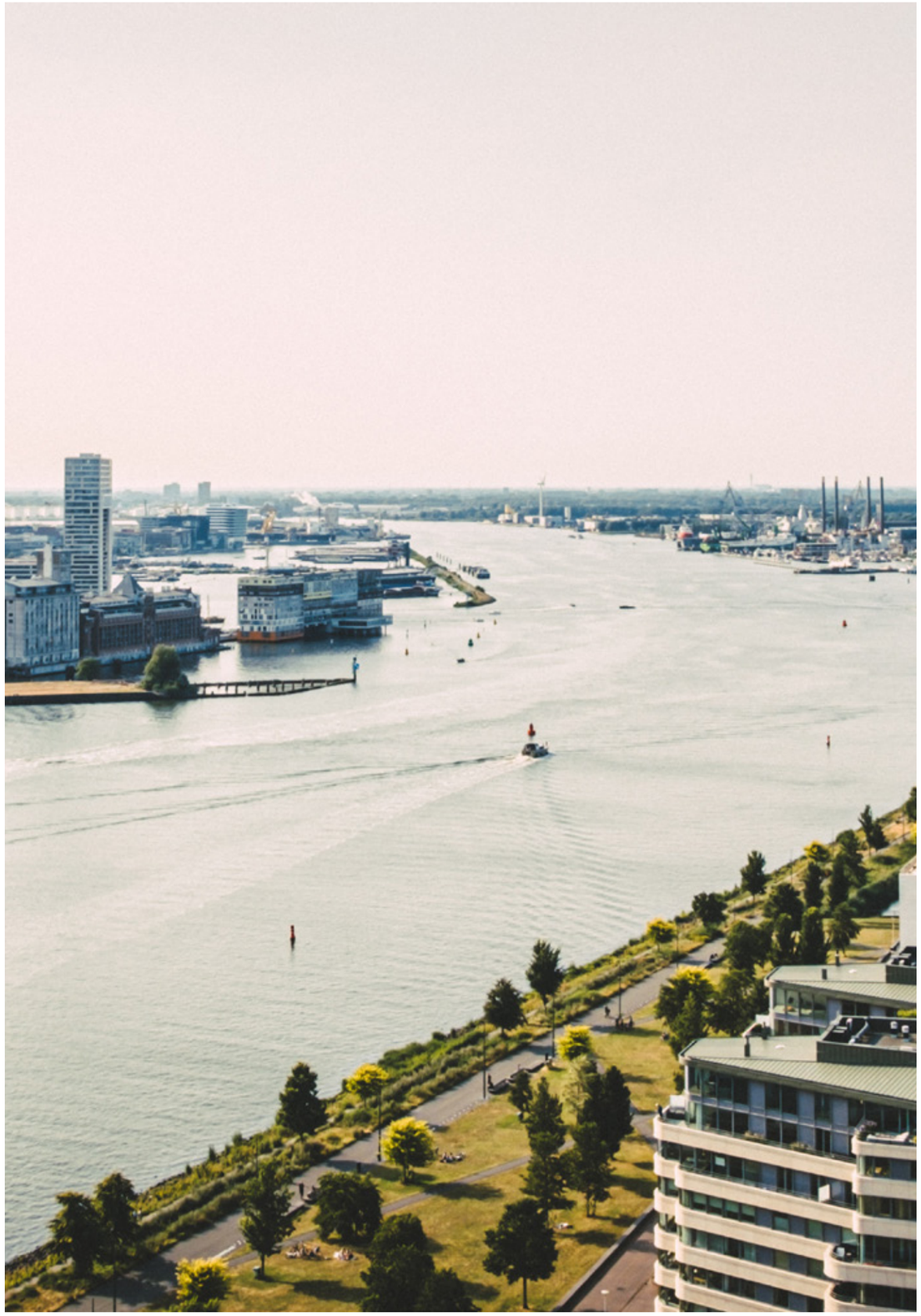


Fig. 38
Wisselspoor Redevelopment Phase 1 illustration
(Author: Proloog)

4.2 The Dutch Case: Wisselspoor Project-Based Evidence

The analysis of the Dutch practices involves the broad perspective of sustainability experts, sustainability consultants, technical advisors, and project managers from developing parties on how practices related to the implementation of BREEAM-NL Area are being perceived and experienced by developers. Following that reasoning, to refine the base case for lesson drawing, it becomes relevant to complement the analysis with project-based evidence that explicitly addresses the developers' perspective. For that aim, the developer's perception of the BREEAM-NL Area was assessed through their experience with the Wisselspoor project in Utrecht.

The Wisselspoor Redevelopment (sub-area 1) is thus the eighth area in the Netherlands and the first inner-city residential-work area to receive BREEAM area certification (BREEAM-NL, 2021c), which makes it the Dutch frontrunner project when it comes to BA certifications. The development started in the year 2015 when the Municipality of Utrecht signed the 'Development Vision & Development Framework 2e Daalsedijk'. In addition to the sustainable development framework adopted by the city council, motion 22 was passed, which requests the Board to strive for a BREEAM-NL Area development score of at least Excellent for the elaboration of the Development Vision (Utrecht Municipality, 2015). After the project tendering, the development firm Synchroon won the best bid for the regeneration of the industrial area.

The first phase of the Wisselspoor Redevelopment has an estimated area of 3 hectares and a GFA of 15.000 sqm, from which 2800 sqm correspond to new industrial, creative, and commercial facilities. Additionally, 150 housing units were to be developed on the site to complement the refurbishment of selected industrial heritage buildings. The whole masterplan foresees four different phases in a time span of 13 years, therefore aiming to be concluded by 2028. As seen in figure. 39, the four phases will add 1050 housing units to the available housing stock and they include the improvement of both public spaces, infrastructure, and communal facilities for the area. The Wisselspoor development team consists of NS, Studioninedots, Delva Landscape Architecture, Skonk, De Wijde Blik and Synchroon, in collaboration with the municipality of Utrecht (Synchroon, 2022). About the assessment process, it was Merosch who, as a sustainability consultancy firm, supported the development team with the evidence collection.

Fig. 39
Wisselspoor Redevelopment Phase 2-4
illustration (Source: Synchroon)

Although the project is not a private-sector led initiative, it does provide a clear example of the developer's perspective within the Dutch context. Thus, the interviews aimed to provide a better understanding of what their perception of the current practices is, and how it differentiates from the ones of other actors involved in the BREEAM-NL Area implementation.

4.2.1 Sustainability Assessment System Implementation

- **RsQ1: Why do developers decide to implement USASs?**

Assessment Scope

According to the developers, the main scope of implementing the assessment was to fulfil the requirements established by the local planning authorities. In fact, after winning the tendering process, a change in the land-use plan was necessary to make the tender proposal viable from a spatial planning perspective. Thus, the municipality made the implementation of the USAS part of the development requirements as means to enhance a sustainable and measurable outcome for the 3-hectare development. Since incorporating BREEAM-NL Area was not part of the developer's initial tender proposal, this automatically modified the developer's perception of the assessment, causing scepticism within the team. Moreover, as an innovative practice, it was completely unknown to the organisation and their internal procedures, which partially outweighed their awareness of other potential drivers. Therefore, as seen in figure 40 (See Appendix E) the assessment was perceived by the developers, not as a voluntary initiative, but as an end, and as a compulsory requirement to prove highly sustainable standards to external parties.

Assessment Drivers for BREEAM-NL Area Implementation

Following that logic, the main driver for the implementation was the regulatory requirement established by the local planning authorities. This does not add to the positive perception of the assessment since other potential drivers like investors' demand, reputational gain, or tenant attraction were not expected either. As a result of the pilot project, however, there was a later acknowledgement of the potential opportunity to learn for both public and private parties involved with the USAS, as a driver to achieve the certification process (See Appendix Interview 4,8).

Assessment Barriers for BREEAM-NL Area Implementation

According to the interviewees, several barriers were identified during the assessment process. In the first place, the lack of internal knowledge regarding the assessment, more specifically about the evidence collection process and the nature of the evidence, represented a big challenge for the developer. Moreover, the increase in internal workload and complex communication streams lead to an increase in indirect costs and the necessary support from sustainability consultants. From the developer's perspective, those factors also generated a challenge in terms of collaboration, where time-consuming inquiries raised apparent awareness of the low municipal knowledge about the USAS and the limited internal capabilities of the planning institutions. In addition to that, the general lack of experience outlined additional technical barriers associated with the non-comparability between the BREEAM-NL Area metrics and the municipal standards used within their development framework. Lastly, the limitation to collecting long term evidence, mostly due to the uncertainty inherent to the early project stage generated an overall perception of complexity and hesitation about the required documentation (See Appendix Interview 4,8).

>> "it really helped to understand things that you didn't know yet, but in some way. It's also a lot of paperwork. So it took a lot of time to prove things"

Real Estate Developer

4.2.2 Decision-Making

- **RsQ2: How developers' decision-making can be influenced by the implementation of USASs?**

Organisational Scope

As seen in figure 41 (See Appendix E) When analysing the perceived influence of the USAS on the developers' organisational scope, interviewees were optimistic although moderate. In that sense, the positive influence of the assessment in a knowledge acquisition process can potentially lead to a higher level of awareness in terms of sustainability. This notion is remarkable since it can enhance a broader appreciation of the Area vs. Building dichotomy in fields like circularity and biodiversity. Hence, it can potentially enhance a more ambitious company vision. This potential influence in the developers' mindset, however, is perceived as the product of repetition and for that, implementing BREEAM-NL Area would have to become part of everyday practices. This has two immediate consequences: The first one being the limited influence of the assessment in terms of reflexivity since more experience with the assessment is required, and the second one being the attribution of high sustainability ambitions solely to the intrinsic motivation and innovative corporate strategies (See Appendix Interview 4,8).

Development Process

According to the interviewees, their experience with the assessment, and its potential influence as a guiding tool in the development process was minimum. The implementation was mostly seen as a burden and even an obstacle in terms of coordination and time. Moreover, it did not contribute as a means to improve the predictability of the planning process or as a strategic practice to define long term goals (See Appendix Interview 4,8). This can be related to the initial "implementation as an end" perception and to the relatively small scale of the project for the initial phase, which could potentially evolve during the subsequent phases (Phases 2-4) as it will be further implemented within the development framework.

Project Scope

Based on the interviews Dutch developers do recognize the utility of the assessment to appraise different options. Actually, based on the evaluative nature of BREEAM-NL Area it was possible to assess decisions concerning technical specifications. However, when describing its potential influence in weighing decision trade-offs, its leverage effect on assessed decisions was limited. The evaluative process could help overcome knowledge barriers and to some extent technical barriers, but financial barriers withholding the implementation of more sustainable features remain present as long as there is no additional value for the organisation. Now, the extent to which developers would go in their evaluative response remains constrained within their internal ambitions which means, on one hand, that decisions that go over their organisational scope would not be taken and, on the other hand, that at a higher intrinsic ambition, the lower the potential influence of the assessment in the weighted trade-off (See Appendix Interview 4,8).

>> "I think it really can help during a design to read these requirements to make sure you make the right decisions in several sustainable subjects"

Real Estate Developer

4.2.3 Sustainable Urban Redevelopment Project

- **RsQ3: To what extent does the developers' implementation of USASs lead to a more sustainable urban redevelopment project?**

Perceived Added Value

As seen in figure 42 (See Appendix E), the analysis of the project-based evidence leads to identifying different benefits concerning the implementation of BREEAM-NL Area. The first element highlighted by developers

is the high reputational gain as a frontrunner project since Wisselspoor became the first mixed-use project assessed in The Netherlands with this quality mark. Although this element was partially outweighed at an early stage of the project, it became a source of value for the developer as it is expected to enhance competitiveness in future procurements when applying for tendering processes. Another element identified as a source of value was the internal learning process, which thus can lead to higher stakes in their practices. This was the means to acquire know-how on, for example, how to be ahead of regulation for long-term urban quality metrics like sustainable energy sources and heat stress planning.

Sustainability Drivers

Based on the perceived added value experienced by the developers, a general hesitation remains on the specific impact of the assessment on the project. On one hand, the implementation triggers an internal learning process that rises awareness and discussions about possible sustainability requirements at early project stages. Thus, BREEAM-NL Area is now part of the company's know-how and adds value to their knowledge toolbox as a means to operationalize the organisational drivers. On the other hand, the role of the assessment as a way to incentivize more sustainable outcomes remains blurry. This relies on the fact that the USAS did not have an active role as a means to get incentives besides its compulsory implementation for spatial planning benefits.

4.2.4 The Dutch Base Case: Conclusions

The conclusions of the Dutch Base Case are the results of the empirical review of the Dutch context. It provides a weighted perspective of both the explorative interviews and the project-based interviews, thus presenting insightful elements for the lesson drawing process. These two complementary perspectives allow us to provide a weighted analysis of the Dutch practices related to the implementation of BREEAM-NL Area. Therefore, this section aims to recap the main conclusions of the Dutch Base Case as a brief overview to set up the potential elements for lesson drawing.

Starting with the assessment scope, the interviews display a general scepticism about whether implementing BREEAM-NL Area acts as a means to achieve a more sustainable outcome, or as an end result of the intrinsic organisational ambitions. From the developer's perspective, the assessment is perceived as a reliable methodology to measure sustainability, but they expose a relatively low awareness of its utility in relation to urban scale sustainability features.

Moreover, there is an existing hesitance about whether the assessment acts as a catalyst to enhance more sustainable practices and outcomes? As the means to an end, or is it solely a checklist with criteria that need to be ticked by developing parties to certify a project without further reflection or impact. This idea is complemented by the empirical understanding that having a voluntary implementation has a different effect on the developers' approach than an enforced implementation, thus setting a different perception and attitude towards the scope of the assessment. Following that logic, it is possible to highlight that the way developers approach the assessment process, whether as a means or as an end, influences the potential impact that BREEAM-NL Area can have on the project and the potential benefits that it can bring to the organisation. Such understanding is the first field for potential lesson drawing.

Moving forward with the implementation drivers, the Dutch Base Case provides a scenario where, as a market-driven sustainability assessment, USASs face market logic for their implementation (demand-supply and cost-benefit principles). That means, on one hand, that if there is no external demand for the assessment, private parties will most likely not supply it. In addition to it, there is scepticism about the factual existence of external demand beyond the regulatory enforcement imposed by public parties, which explains the alignment between relative low market demand and the low implementation rate of the assessment. On the other hand, the cost-benefit analysis also means that no implementation will be encouraged by private parties as a voluntary decision if there is no clear benefit from it, therefore, withholding its implementation. Such benefits need to align with the scope of the organisation and its internal drivers to be sustainable, otherwise, they will not represent added value for the implementing party. That perception also represents challenges for the Dutch context, where a relatively low market uptake of the assessment causes a low project-based experience of the potential drivers for implementing USASs. The low knowledge transferability and limited experience in terms of market drivers open another possible field for potential international inspiration.

In terms of implementation barriers, the Dutch Base Case highlights the limited organisational capabilities of the different actors involved in the assessment as the main obstacle. Those limitations include not only developers' internal knowledge and market knowledge, but also local authorities' expertise and design teams' proficiency. The main aspects identified in addition to know-how challenges were high workload and complex team coordination, which translates into high indirect costs and a timely evidence collection process. All these components also represent an opportunity to draw learnings from the international case studies.

As for the influence of the assessment in the developers' decision making, the Dutch Base Case provides a neutral though modest perception, which represents a limited implementation of BREEAM-NL Area as a reflective, guiding, or evaluative tool. The reach of these roles is closely dependent on the initial scope of the assessment since based on how its implementation is perceived by the initiator, whether as means or as an end, he defines a position towards the assessment which makes the methodology more or less likely to influence their decisions. According to the empirical review, that means for the Dutch context a moderate influence of the assessment on the organisational scope, which in some cases, can lead to positively influence the developers' mindset but with a limited reach due to the developers' little experience with the USAS. This is in practice associated with the awareness that the implementation can generate within the organisation.

On the other hand, the influence of the assessment on the project scope and thus, on the decisions taken regarding the technical specifications of the project, is also limited. In practice that implies the use of a communication platform that enhances the possibility of appraising different options and assisting potential trade-offs, but with a limited influence on the weighing of decision criteria. Additionally, the influence of BREEAM-NL Area concerning development process decisions is even more limited, thus evidencing a relatively lower performance of the USAS associated with the guiding role that it can play during the process. The general understanding of the Dutch Base Case in relation to the potential influence of the assessment as means to trigger reflection, guidance and evaluation shows overall a scenario with relative high scepticism and limited evidence of its influence in terms of decision-making.

>> "the Dutch Base Case provides a scenario where, as a market-driven sustainability assessment, USASs face market logic for their implementation, hence demand-supply and cost-benefit principles "

Lastly, the Dutch Base Case illustrates a limited experience of the potential added value that the implementation of USAS can generate for developers. Thus, relatively low benefits are perceived by developing parties willing to implement BREEAM-NL Area. Based on the interviews, the relative misalignment between potential benefits and experienced benefits could, to some

extent, rely on the current position of the assessment within the implementation curve, and the early-stage adoption phase that markets and policy makers are facing to assimilate the implementation of the USAS as a new component within the sustainable urban development practices. Consequently, the perception of the assessment benefits as incentives to achieve more sustainable urban redevelopments is limited. In that sense, the impact BREEAM-NL Area is perceived as positive but marginal, since it can potentially help to overcome existing barriers associated with sustainability measures, mostly in relation to knowledge acquisition, through discussion and awareness. Hence, the impact on the drivers that lead developers to strive for more sustainable outcomes and practices is positive but non-quantifiable. For the Dutch Base Case, the limited impact is also associated with the fact that the implementation of USASs is seen as a potential although limited, and thus, relatively unexperienced role of the assessment as means to get external incentives besides its compulsory implementation for spatial planning purposes.

4.3 Criteria for Case-Study Selection & Setup

Having defined the Dutch Base Case through the variables highlighted in the conceptual model, it is possible to move forward into the parallel international case study analysis. Based on the pitfalls and singularities identified in the base case, it is possible to structure the criteria for the case study selection, to draw lessons that can potentially become a source of inspiration for recommendations in the Dutch context.

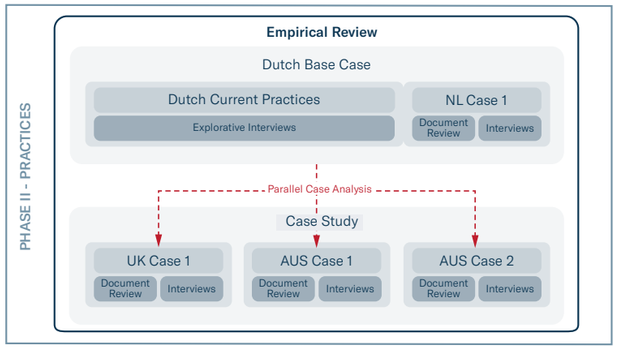


Fig. 43
Empirical Review Structure

To conduct the comparative case studies in a structured way, ten criteria for the case-study selection were identified based on the findings from the literature review section. By framing the characteristics of the case studies, it is possible to set rules for comparability to identify conceptual equivalences that can lead to the lesson drawing phase. Those criteria set up ideal targets to have a high-quality data sample. However, the presented parameters also forsee a margin of flexibility that might be required to successfully adapt to the research limitations in terms of data collection.

The ten criteria for case selection are:
1. Location: The projects (Case 1 - Case 2 – Case 3) would ideally be located in the United Kingdom, the United States, and Australia respectively to accomplish the scope of international comparative case studies. However, this first criterion had to be adapted, thus leading to replacing the United States' case for a second case in Australia.
2. Developer & Governance: The project development should have been led by the private sector or have the private developer as the main shareholder of the project (in partnership with local authorities through tendering process).
3. Scope: The project should respond to a regenerative nature, therefore dealing with existing infrastructure and aiming to achieve an integral and sustainable urban redevelopment project.

4. Urban Sustainability Assessment System: The projects should ideally have been certified by BREEAM Communities, LEED Neighbourhoods, and Green Star Communities respectively.
5. Assessment Status: The project should have been registered, or certified in the last seven years and accomplished a Pass score or superior.
6. Scale: The project should have an area in-between ten and twenty-five hectares and a minimum built area of 80.000 m2. Because of the scale, it should have been developed in different phases or have different precincts.
7. Type: The project should be a brownfield redevelopment project within the urban perimeter of the city.
8. Function: The project should have a multifunctional programme and include housing as one of the proposed uses.
9. Timeframe: The project masterplan should have a minimum timeframe of seven years to align with the long-term scope of area redevelopment.
10. Lifecycle Stage: At least one of the project phases should have been executed to 50% of the total scope to be able to assess the outcome. This last criterion, however, was impossible to guarantee through the research development due to the limited number of projects fulfilling the other criteria.

Parallel Case-Study Proposal

As shown in figure 44., this section elaborates on the three international comparative case studies based on the selection criteria listed before. The selected cases are Aylesbury Estate Redevelopment (UK Case 1), Brisbane Showgrounds Redevelopment (AUS Case 1) and Waterloo Metro Quarter Development (AUS Case 2). The analysis of each case study comprehends an initial project description with information retrieved from a document review, and a second part with the empirical review, which is the product of implementing the conceptual model as a base to setup the interviews with professionals involved, or with high knowledge, about the project.

Fig. 44
Parallel Case Study Proposal Characteristics

PARALLEL CASE STUDY PROPOSAL

Project	Aylesbury Estate Redevelopment	Brisbane Showgrounds Redevelopment	Waterloo Metro Quarter Development
Location	London, United Kingdom	Brisbane (QL), Australia	Sydney (NSW), Australia
Developer & Governance	Notting Hill Genesis (Housing Association) + Southwark Council (Local Authority)	Lendlease (Developer-Investor) + RNA (Not-for-profit local organisation)	Mirvac Group + John Holland Joint Venture + Sydney Metro
Scope	Regeneration of a Residential Neighbourhood	Regeneration of a Commercial Area	Regeneration of a Residential Neighbourhood
Urban Sustainability Assessment System	BREEAM-CM 2012	Green Star-CM	Green Star-CM
Assessment Status	Stage: Interim Cert. date: 26/08/2015 Score: Pass	Stage: Certified Cert. date: 14/11/2017 Score: 6 Stars 78	Registered
Scale	25 hectares 300.000 GFA (Developed by phases)	20 hectares 400.000 GFA (Developed by phases)	2 hectares 80.000 GFA (Developed by phases)
Type	On-Going Brownfield Redevelopment	On-Going Brownfield Redevelopment	On-Going Brownfield Redevelopment
Function	Mixed-Use Housing Oriented	Mixed-Use Commercial Oriented	Mixed-Use Transport Oriented
Timeframe	20 year Masterplan 4 Phases (2015-2035)	15 year Masterplan 3 Phases (2010-2025)	7* year Masterplan 3 Phases (2017-2024)
Lifecycle Stage	1 Phase to be Completed in 2023 (15%)	3 Phases Completed (90%)	1 Phase to be Completed in 2024 (20%)

Fig. 45
Aylesbury Estate, Plot 18 illustration
(Author: Duggan Morris).

4.4 The UK Case: Aylesbury Estate Redevelopment

Aylesbury Estate Redevelopment is a project located in London, United Kingdom. The project initiator is Notting Hill Genesis, one of the largest housing associations in London. They own and manage more than 60.000 housing units in the UK and their main scope as an organisation is to provide affordable housing through integrally sustainable projects. In the Aylesbury Estate project, Notting Hill Genesis is the development partner of the Southwark Council and is responsible to manage, design, and construct the new buildings and surrounding public space (Southwark Council, 2022). As figure 45 shows, the project scope responds to the integral regeneration of the neighbourhood while prioritizing public and societal goals.

The project masterplan has a scale of 25 hectares and an estimated built area of 300.000 m2, which includes housing, offices, retail, and several public amenities. The timeframe of the project foresees a 20-year long-term commitment (2015-2035) and the process is divided into four phases as shown in figure 46. The masterplan outline approval process started in 2014 and the first phase of the project, usually addresses as “First Development Site”, should be delivered by 2023. Meanwhile, Phase 2 and Plot 18 are already in planning permits (Notting Hill Genesis, 2022).

In terms of market-driven sustainability assessments, the development team decided to implement BREEAM-CM in 2015 as part of their sustainability strategy. The aim was to use the methodology to improve, measure, and certify the social, environmental, and economic sustainability of the large-scale development plan by integrating sustainable design into the master-planning process. The results of the assessment can be seen in figure 47 and the status is Interim. As part of the sustainability team, Notting Hill Genesis collaborated with HTA Design, LLP, Arcadis, and WSP to achieve the technical assessment of their sustainable ambitions (Notting Hill Genesis, 2018). Additionally, it is relevant to highlight that the complexity of the project concerning the existing critics about social displacement, gentrification and social housing provision goes, to some extent, beyond the scope of USASs, and without any doubt beyond the scope of this research, since the assess-ment does not set minimums for the housing program or strategies to cope with gentrification or displacement under the understanding that exiting local housing policies are the ones responsible setting up those regulatory requirements. In that sense, BREEA-CM limits its assessment to enhance strategies for community participation, provision of social services and poten-tial reuse of existing elements like infrastructure or ammenities.

Fig. 46
Aylesbury Estate Masterplan and phasing
Source: Southwark Council.

BREEAM Communities Credits **Summary**

Identifier	Issue name	Responsibility	Have mandatory standards been met?	Credits assumed	Credits available	% of credits achieved	Issue weighting	Issue score	Category score
Governance									
GO 01	Consultation plan	Client	Yes	1	1	100%	2.3	2.32	6.4
GO 02	Consultation and engagement	Client (consultation team)	Yes	1	2	50%	3.5	1.74	
GO 03	Design review	Architect	N/A	2	2	100%	2.3	2.32	
GO 04	Community management of facilities	Client	N/A	0	3	0%	1.2	0.00	
Social and economic wellbeing - Local economy									
SE 01	Economic impact	Client	Yes	2	2	100%	8.9	8.88	10.8
SE 17	Labour and skills	Client (Contractor)	N/A	1	3	33%	5.9	1.97	
Social and economic wellbeing - Environmental conditions									
SE 03	Flood risk assessment	Engineering	Yes	2	2	100%	1.8	1.80	8.4
SE 04	Noise pollution	Engineering	Yes	1	3	33%	1.8	0.60	
SE 08	Microclimate	Engineering	N/A	3	3	100%	1.8	1.80	
SE 10	Adapting to climate change	Architect	N/A	3	3	100%	2.7	2.70	
SE 13	Flood risk management	Engineering	N/A	2	3	67%	1.8	1.20	
SE 16	Light pollution	Engineering	N/A	1	3	33%	0.9	0.30	
Social and economic wellbeing - Social wellbeing									
SE 02	Demographic needs and priorities	Client	Yes	1	1	100%	2.7	2.70	10.5
SE 05	Housing provision	Client	N/A	1	2	50%	2.7	1.35	
SE 06	Delivery of services, facilities and amenities	Architect	N/A	3	7	43%	2.7	1.16	
SE 07	Public realm	Architect (Landscape Architect/Urban Design)	N/A	2	2	100%	2.7	2.70	
SE 09	Utilities	Engineering	N/A	1	3	33%	0.9	0.30	
SE 11	Green infrastructure	Landscape Architect	N/A	2	4	50%	1.8	0.90	
SE 12	Local parking	Architect	N/A	1	1	100%	0.9	0.90	
SE 14	Local vernacular	Architect	N/A	1	2	50%	0.9	0.45	
SE 15	Inclusive design	Architect	N/A	0	3	0%	1.8	0.00	
Resources and energy									
RE 01	Energy strategy	Engineering (energy)	Yes	3	11	27%	4.1	1.11	15.3
RE 02	Existing buildings and infrastructure	Architect	Yes	2	2	100%	2.7	2.70	
RE 03	Water strategy	Engineering (water)	Yes	1	1	100%	2.7	2.70	
RE 04	Sustainable buildings	Architect	N/A	4	6	67%	4.1	2.70	
RE 05	Low impact materials	Architect	N/A	3	6	50%	2.7	1.35	
RE 06	Resource efficiency	Architect	N/A	3	4	75%	2.7	2.03	
RE 07	Transport carbon emissions	Engineering (transport)	N/A	1	1	100%	2.7	2.70	
Land use and ecology									
LE 01	Ecology strategy	Landscape Architect (ecologist)	Yes	1	1	100%	3.1	3.15	7.7
LE 02	Land use	Architect (Landscape Architect/Urban Design)	Yes	1	3	33%	2.1	0.70	
LE 03	Water pollution	Engineering (water)	N/A	2	3	67%	1.0	0.70	
LE 04	Enhancement of ecological value	Landscape Architect (ecologist)	N/A	1	3	33%	3.1	1.05	
LE 05	Landscape	Landscape Architect	N/A	5	5	100%	2.1	2.10	
LE 06	Rainwater harvesting	Landscape Architect (ecologist)	N/A	0	3	0%	1.0	0.00	
Transport and movement									
TM 01	Transport assessment	Engineering (transport)	Yes	1	2	50%	3.2	1.59	10.1
TM 02	Safe and appealing streets	Architect (Landscape Architect/Urban Design)	N/A	4	4	100%	3.2	3.18	
TM 03	Cycling network	Architect (Landscape Architect/Urban Design)	N/A	1	1	100%	2.1	2.12	
TM 04	Access to public transport	Architect	N/A	2	4	50%	2.1	1.06	
TM 05	Cycling facilities	Architect (Landscape Architect/Urban Design)	N/A	2	2	100%	1.1	1.06	
TM 06	Public transport facilities	Engineering (transport)	N/A	1	2	50%	2.1	1.06	
Innovation									
Inn	Innovation		N/A	0	7	0%	7.0	0.00	0.0
								Final BREEAM Score	**69.2**
								BREEAM Rating	**VERY GOOD**
								Excellent Score >70	

Fig. 47
Aylesbury Estate BREEAM-CM Assessment
Source: HTA.

4.4.1 Sustainability Assessment System Implementation

- **RsQ1: Why do developers decide to implement USASs?**

Assessment Scope

As seen in figure 48 (See Appendix F), the scope of implementing BREEAM-CM was to benefit from a useful sustainability framework which covers a wider set of issues than just planning policy. From a project perspective, such scope includes water usage, land usage and biodiversity as criteria to measure and enhance sustainability at an urban level. These elements, according to experts, go above local authority policies and surpass building regulations, which is relevant since UK policy is strict about setting-up regulations for energy use and carbon emission reductions, but less straightforward about criteria like biodiversity, ecology, materials, or waste management. From an organisational perspective, because of the social nature of Notting Hill Genesis, the implementation of BREEAM-CM also responded to the scope of rising awareness on how complex redevelopment projects could be planned and executed, both internally and externally. This means, on one hand generating internal learnings on how to accomplish projects with high sustainability standards, and on the other hand, creating evidence for external parties on how the project represents the public benefit. Thus, it was implemented as part of the housing association's reputational strategy.

Assessment Drivers for BREEAM Communities Implementation

In terms of drivers, the first element identified is the intrinsic motivation of the housing association. Since the developer acts as a social landlord, he has a long-term investment mindset and thus, by enhancing the implementation of the assessment he aims to strengthen the quality of an area that will remain as part of the portfolio after the development phase. The second element highlighted by the interviewees is the reputational pressure caused by the emitted compulsory purchase order (CPO). In fact, as a result of the controversy driven by the project, both in media and in the political sphere, the developers aimed to provide evidence that they were doing the best job they could to keep the project as a catalyst of public interest. Other drivers identified were the aim to attract the investment community and the possibility to enable early-stage discussions about the design and formulation process which would not happen otherwise, therefore stiving for an improvement of the project outcome (See Appendix Interview 5,9).

Assessment Barriers for BREEAM Communities Implementation

As for the barriers identified by practitioners, the main challenges in the implementation of the USAS relate to coordination processes, whether within the organisation or with other stakeholders involved in the development process. The relatively low level of coordination experienced through the assessment causes, in some cases, the misalignment between different parties' work scope. As a result, the evidence collection can be hindered requiring additional effort from the management side.

This represented an increase in in-house workload, for example, unexpected economic appraisals, additional communication monitoring and time-consuming stakeholder engagement. However, field experts also mentioned potential solutions to deal with these obstacles. In the first place, suggestions were made concerning assessment enablers. Such enablers, being responsibility matrixes, cost plans or workshops can potentially improve the team coordination and enhance a more efficient evidence compilation process. In the second place, interviewees highlighted the importance of making sure that there is enough room in the scope of work for people to include some extra activities which they might not have anticipated as part of the planning process (See Appendix Interview 5).

>> "Developers had evidence [through the assessment] of a sustainability process and were able to evidence externally that they were doing a good job, that they were doing the best job that they could, because there was a lot of attention on the project"

Sustianability Expert

4.4.2 Decision-Making

- **RsQ2: How developers' decision-making can be influenced by the implementation of USASs?**

Organisational Scope

Following the framework used to analyse the Dutch practices, the first relationship to be analysed is the potential influence that the implementation of BREEAM-CM can play in relation to the organisational scope of developers, thus its reflective role. Based on the interviews with experts, the implementation of the USAS sets a mindset for open discussion in which developers

>> “The assessment says you need to set, you need to develop strategies in these areas so energy, water ecology, land use, waste and so on. So it's a useful tool to have a discussion about these strategies and then later on it's about delivering those strategies”

Sustianability Expert

who are already willing to outstand in terms of commitment can partially reflect on their organisational goals and thus, on their aspirational outcome. Therefore, as seen in figure 49 (See Appendix F), the internal reflection that comes with the process of knowledge acquisition allegedly triggers a more sustainable mindset. In that sense, a positive influence of the assessment on the developers' ambitions is foreseen by the market.

Development Process

When looking at the potential guidance that can be drawn from the implementation of USASs, field specialists in the UK are positive about the influence that BREEAM-CM can have on the planning process. Although the assessment gives a static analysis of the project at a specific point in time, its real value relies on its capacity to set long-term goals at the right level of complexity. Those goals are not necessarily expressed as quantitative targets, but also as strategies that need to be developed by experts involved in the project to cope with specific criteria at an urban level, like energy and water management, ecological impact, land use, or waste management. In that sense, the assessment generates discussions about these strategies and sets guidelines for delivering those strategies, therefore creating long-term objectives that subsequent phases will have to take into account. Moreover, the assessment becomes part of the policy documents for the project. Therefore, all actors involved in the project development have to refer back to it and check whether they are achieving the guidelines set out in the standard, which helps to set up the strategic planning of the project. This is of high value for projects like the Aylesbury regeneration project since due to the scale and timeframe, it is advantageous to have this kind of guidance when aiming to achieve a sustainable urban redevelopment (See Appendix Interview 5).

Project Scope

Concerning the evaluative nature of the assessment, sustainability experts recognized that the evaluation of different solutions based on the interaction of multidisciplinary teams could potentially lead to deciding on more sustainable solutions in terms of BREEAM-CM metrics. Following that logic, the implementation of the assessment could positively influence the decisions taken within the project in terms of sustainability as some solutions might be the product of active discussion and not per se, from a higher capital investment (See Appendix Interview 5). In practice, such a perspective represents the added value that additional information and due diligence can bring to the table when appraising different options, thus potentially leading to decide on more sustainable measures.

4.4.3 Sustainable Urban Redevelopment Project

- **RsQ3: To what extent does the developers' implementation of USASs lead to a more sustainable urban redevelopment project?**

Perceived Added Value

The first element identified in the implementation of BREEAM-CM as a source of value was the reputational benefit that it can generate. In fact, due to the complexity of the project, deciding to assess the project can lead to external recognition and thus, represents a way to provide evidence of the high standards of corporate social responsibility that developers are aiming to achieve as part of their operations. For the Aylesbury redevelopment project, this aligns with the organisational scope of Notting Hill Genesis, a housing association willing to deliver the best value for money through projects striving for the greater benefit of society. Such reputational benefit also aligns with the developer's objective of attracting investment, both from public and private sectors, who are willing to collaborate with the broader scope of the regeneration. As seen in figure 50 (See Appendix F), the second benefit highlighted by the interviewees is the possible financial benefit associated with the implementation of BREEAM-CM as an early decision enabler. In fact, according to sustainability experts, decisions that are made at an early stage of the project following the evaluative role of the assessment have a low cost and a high incremental impact on the project. On the contrary, late decisions resulting from a non-solid information basis are more likely to represent higher expenditures and therefore, hinder a sustainable outcome. This represents a potential save on development costs, mostly when ambitious projects require high technical standards and complex spatial planning characteristics (See Appendix Interview 5).

Sustainability Drivers

Based on the perceived added value experienced by field experts remains hard to quantitatively assess the impact of implementing USASs in urban regeneration projects. This is inherent to the project complexity in terms of measurable products, but also because of the multiplicity of actors and the dynamic environment in which they take place. However, from a qualitative perspective, experts have a positive perception of the assessment in relation to both the process and the outcome of the project. There is a particular emphasis on how sustainability is highly connected to the process and the interrelated practices connected to it. Therefore, interviewees prioritize the influence of the assessment in terms of process, which thus leads to higher awareness and an ongoing change of developers' mindset towards more sustainable practices.

4.4.4 The Aylesbury Estate Redevelopment Case: Conclusions

The Aylesbury Estate Redevelopment project is a pioneer project in the field of USAS implementation. The implementation of BREEAM-CM responds mainly to a reputational strategy within the organisational scope of the developer, who strives for a high standard of sustainability in a complex project with high political pressure and high social ambitions. The use of the certification as a means to rise internal organisational awareness in relation to highly sustainable solutions enable early-stage discussions about the design and formulation process which can potentially enhance urban quality in a long-term investment mindset. Although the assessment represents a potential challenge to the organisational capabilities of the actors involved, managers are able to propose solutions which land within the operational field of project management.

The influence of the assessment in the developer's decision-making process is limited although existent when it comes to generating changes in the developer's mindset as part of the reflective process associated with the assessment process. The possibility of assisting trade-offs as part of the evaluative nature is also present, mostly due to knowledge acquisition and collaboration with multidisciplinary teams. However, the main influence relies on the strategic value and the guiding role that the assessment can bring in terms of long-term planning and goals, thus setting a high emphasis on process-oriented evidence.

From a developer's perspective, the implementation of USASs can generate value for the organisation in terms of reputational gain, hence providing evidence of their social ambitions and becoming part of their marketing strategy when dealing with complex projects. Moreover, the impact of the assessment, although hard to quantify, definitely poses from the private sector perspective a more sustainable outcome as a result of the well-informed and methodological process.

Sustianability Expert

>> “I think that's very difficult to identify [the impact of the assessment] because you know, complex urban projects like this have so many issues, so many pressures that it's very hard at the end of this project to say: That changed. But, so as long as the discussion is happening, then, and I think benefits will result. It's more about the process, it's more about the process”

Fig. 51
Brisbane Showgrounds Redevelopment
(Source: RNA).

4.5 The AUS Case 1: Brisbane Showgrounds Redevelopment

Brisbane Showgrounds Redevelopment is a project located in Brisbane (QL), Australia. The project initiator is Lendlease, an Australian multinational construction, property and infrastructure company specialized in urban development and real estate investment. For the regeneration of Brisbane Showgrounds, they partnered with The Royal National Agricultural and Industrial Association of Queensland (RNA), a not-for-profit local organisation. The project is being delivered via Lendlease's integrated business model, with the Group providing funding partners, development management, project management, design management and construction (Lendlease, 2020).

The main scope of the project is to regenerate the area connected to the Royal International Convention Centre, home of the Royal Queensland Show. The event, also called Ekka, is responsible to celebrate the tradition and importance of agriculture in Australia. The project masterplan has a scale of 20 hectares (figure 52) and an estimated built area of 400.000 m2, which includes residential and commercial towers, the infrastructure and public space necessary for the Ekka, and the refurbishment of a heritage-listed pavilion known as Building 8. The timeframe of the project foresees a 15-year long-term commitment (2010-2025) and the process is divided into three phases. The masterplanning process started around 2010 and all three phases of the project are almost completed (RNA Corporate, 2022).

In terms of market-driven sustainability assessments, the development team decided to implement Green Star-CM in 2017. In fact, Brisbane Showgrounds received the highest rating for master-planned precincts in Australia, mostly following a reputational purpose while demonstrating 'World Leadership'. In addition to the assessment at an urban scale, several other buildings have reached outstanding results in terms of sustainability and innovation, including 25 King, the world's largest engineered timber office building. Among the sustainability consultancy team, outstand firms like Aurecon and WSP (Lendlease, 2017).

Fig. 52
Brisbane Showgrounds Masterplan and phasing (Source: Lendlease).

4.5.1 Sustainability Assessment System Implementation

- **RsQ1: Why do developers decide to implement USASs?**

Assessment Scope

According to the developers, the scope of implementing Green Star Communities for the Brisbane Showgrounds masterplan was to use the framework as a useful tool to orient a long-term development. Since the project timeframe extends over a 20-year lifespan, it is not simple to define strategies and set long term goals in terms of sustainability. Thus, by implementing the assessment, their objective was to be able to stand the test of time and keep the high quality envisioned at an early project stage, which for them relies on long-lasting usability of both public and private spaces. Following that line of reasoning, when the developer's business unit developed the base brief for the project, they made sure that within the feasibility study they incorporated the assessment as a mechanism to operationalize the global mandate of the company. Such initiative translated into the business case that gave life to a Project Development Agreement with the Royal National Agricultural and Industrial Association of Queensland (RNA)(See Appendix Interview 6).

Assessment Drivers for Green Star Communities Implementation

As seen in figure 43 (See Appendix G), the main drivers for the implementation of Green Star Communities were the high marketing value and the active demand by external parties. As a renowned green certification, the assessment allows developers to position their real estate product at a space and a demographic that is growing. This target segment includes potential customers with higher purchase power, but also with different requirements in terms of urban sustainability features. Hence, the assessment translates into a strategy for tenant attraction, higher recognition, advertisement and thus, potential property premiums. Such recognition aligns with active demand for this kind of assessment by institutional investors and financers. This becomes relevant for developers since big scale urban redevelopments require most of the time institutional investors and thus, the aim of capital markets to invest in certified projects drives the supply of USASs in the Australian case. Moreover, according to the interviewees, such demand lands in a planning context where planning approval processes have started to adopt minimum requirements for certain tools and ratings, therefore leading local authorities to evaluate these kinds of assessments as legislative instruments.

The developers' intrinsic motivation was another driver identified through the interviews. In fact, the implementation of Green Star Communities was also led by the operationalisation of their business strategy, or global mandate, as a top-down approach towards more sustainable practices. In relation to that top-down strategy becomes also relevant to highlight the close relationship between the developer and Green Star Association, as the tight relationship between the organisations leads to constant cooperation between board members as well as active engagement on expert panels (See Appendix Interview 6).

>> "the investors, the capital institutes and you know, end customers, they are really starting to drive that [the implementation] and they sat down and said, OK, well I want to invest in something that is achieving the best thing we can possibly achieve"

Real Estate Developer

Assessment Barriers for Green Star Communities Implementation

According to the interviewees, the main barriers identified in the implementation process were associated with the internal lack of knowledge. Since Green Star Communities certified projects are still a novel real estate product, pioneering innovative processes brings several challenges to developers, like the lack of specialized knowledge and the requirement of new technical expertise associated with the evidence collection process. Such a challenge led to the need for specialized consultancy and a potential headcount increase, which represents a rise in costs associated to additional planning paperwork. Such effort, however, also translates into steeped learning curves for mature organisations.

Although the cost management concern associated to the implementation of USASs remains responsibility of the feasibility study within the business unit, potential solutions connected to urban development practices were suggested by interviewees. From their perspective, and based on a long-term approach, the possibility to partner with other actors enables the leverage effect from multiple sites, which can potentially lead to mixed-use precincts. Such collaboration, as means for scope optimisation, can lead to an active engagement toward the creation and delivery of added value for the area. Long term commitment, thus, enhances the opportunity of value creation based on urban amenities and not only indoor spaces, which can afterwards be charged as a premium. All this allows to offset that product positioning and overcome the barrier of cost, making it possible to manage hurdle rates from investors. (See Appendix Interview 6)

4.5.2 Decision-Making

- **RsQ2: How developers' decision-making can be influenced by the implementation of USASs?**

Organisational Scope

When discussing the potential influence of Green Star Communities in decision-making, the first element highlighted by developers was the effect that the implementation can have on their organisational scope, thus in their ambitions as real estate developers. According to the interviewees, the implementation of Green Star Communities triggers the ability to generate conversation, discussion, and inspiration. As seen in figure 54 (See Appendix G), at an organisational level that discussion leads to streams of innovation that can influence the way corporations behave, both at a business level and in everyday practices, leading to more sustainable ambitions. Such perception emphasizes the reflexive role that the assessment can play and illustrates the implementation of USASs as a positive influence on the developer's mindset towards more sustainable practices.

Development Process

Based on the empirical research, developers identified three main points in relation to how the assessment process can influence the development process, thus providing potential guidance. In the first place, interviewees identified from a strategic perspective a high utility of the assessment as a guideline to draw long-term targets and large-scale requirements, emphasizing how this is relevant for a masterplan with a 20-year project lifespan and more than 15 sites. In the second place, they foresaw a high utility of the assessment as a strategy to mitigate long-term requirements of urban redevelopment like transport & infrastructure specifications. In third place, they recognized the methodology as a guiding tool that, when implemented at early stages, can

>> "Being at the forefront of driving those highly sustainable outcomes, what it does is it triggers a sense of kind of innovation and, kind of inspiration, I guess, and motivation from your people, your work staff and what that then does is it triggers the ability to generate conversation, generate discussion from comes, you know, innovation"

Real Estate Developer

advise the spatial planning process in terms of masterplanning criteria like distances, setbacks, and widths of roads and footpaths, thus acknowledging its potential influence in the design and strategic planning field.

Project Scope

According to the interviewees, by implementing the USAS it is possible to evaluate different solutions for a project component. The evaluation of different possibilities can lead to a weighted decision where developers aspiring to achieve a specific target can potentially adapt their design and delivery methods to achieve those targets. In that sense, the influence on certain decisions can go beyond the technical specification and address, for example, the decision concerning the procurement of different suppliers as means to achieve a better outcome. This applies to facades, mechanical systems, and energy sources, but also to urban components like landscape greenery, public surfaces (See Appendix Interview 6).

4.5.3 Sustainable Urban Redevelopment Project

- **RsQ3: To what extent does the developers' implementation of USASs lead to a more sustainable urban redevelopment project?**

Perceived Added Value

As seen in figure 55 (See Appendix G), the first element perceived by the developers as added value resulting from the implementation of Green Star Communities is its potential role as means to access capital incentives and financing. This is the case for banks, venture capital and investment vehicles willing to provide special services to developers with similar interests as the ones delivered through the assessment. The second element is the added value experienced as part of an effective marketing strategy for product positioning, which translates into market recognition and thus, into property premiums deriving from investments in public spaces. Connected to such market recognition, the implementation of USASs generates reliability as a developer brand, which adds value to the organisation in terms of reputation. Lastly, the assessment is perceived as a source of value as it encourages climate adaptation, particularly for flood modelling and stormwater infrastructure, which for an organisation that operates part of the developed real estate means resilience and thus, a source of financial value towards the future. These four elements built up the set of benefits identified by the interviewees (See Appendix Interview 6).

Sustainability Drivers

Based on the benefits identified before, the developer was asked whether such benefits were perceived as incentives to deliver a more sustainable outcome. According to the interviewees, the USAS would actively incentivize innovation since it triggers discussions about how certain objectives can be achieved and thus, the assessment motivates R&D and the investment in possible alternatives while challenging the whole supply chain and the procurement management. In that sense, the implementation of Green Star Communities led to a more sustainable urban redevelopment. The technical knowledge acquired during the assessment process leads to decisions than enhance innovation and therefore, to more sustainable outcomes when in alignment with the developer's drivers, in this case, high reputation, profit increase and real estate resilience.

Lastly, the awareness acquired during the assessment processes can, to some extent, lead organisations to apply learnings to their internal operations, therefore enhancing more sustainable organisations. This translates into internal incentives for improvement (e.g. waste management and energy consumption) which can have a positive influence on organisational drivers. Such awareness can, according to the interviewees, foster inspiration, and position corporations to be aspirational for change, thus enhancing a mindset towards more sustainable built environment practices (See Appendix Interview 6).

Real Estate Developer

>> "[The assessment] targets something greater that perhaps is not feasible or achievable today, but what that then does, is to position corporations and individuals to be aspirational for change"

4.5.4 The Brisbane Showgrounds Redevelopment Case: Conclusions

The Brisbane Showgrounds Redevelopment is one of the first projects of its kind in being assessed with Green Star Communities. The implementation responds to the developer's voluntary initiative to add it to the development brief as means to achieve the long-term goals foreseen in the masterplan. As part of this initiative, developers aimed to benefit from the reputational gain and their long-term investment perspective. Moreover, the use of the assessment acknowledges the active demand for it by capital markets and institutional investors, as well as the internal motivation driven by a corporate strategy with highly ambitious ESG targets. Although the implementation brings several challenges in relation to knowledge limitations, both internally and in the market, developers consider that the steeped learning curve and the strategic planning inherent to urban development processes can weight out the potential barriers, thus leading to incorporating such assessment in their future business cases.

The influence of the assessment in the developer's decision-making process mostly relies on the process level, as a result of the high utility evidenced as a guiding tool. However, evidence at a reflective level also highlights a potential influence of the organisational scope as the assessment enhances streams of innovation that can influence the way developers behave, both at a business level and in everyday practices, hence leading to higher sustainable ambitions. From an evaluative perspective, the implementation of the Green Star Communities can lead developers to a potential adaptation of the design choices and delivery methods, mostly depending on how beneficial different possibilities are perceived. Lastly, there is a high emphasis on added value experienced from investing in area development features like infrastructure, landscape, and water management systems, which thus can influence decisions associated with technical specifications and the project scope as a whole.

The main added value perceived by developers is related to their marketing strategy and product positioning, which translated into access to capital incentives from funding partners. Moreover, urban resilience and adaptability features triggered by the assessment were highlighted as a source of value. Hence, based on those benefits, developers perceived the implementation of the USAS as a means to achieve more sustainable outcomes for long-term developments while fostering innovation and inspiration.

>> **"urban resilience and adaptability features triggered by the assessment were highlighted as a source of value. Hence, based on those benefits, developers perceived the implementation of the USAS as a means to achieve more sustainable outcomes for long-term developments while fostering innovation and inspiration"**

Real Estate Developer

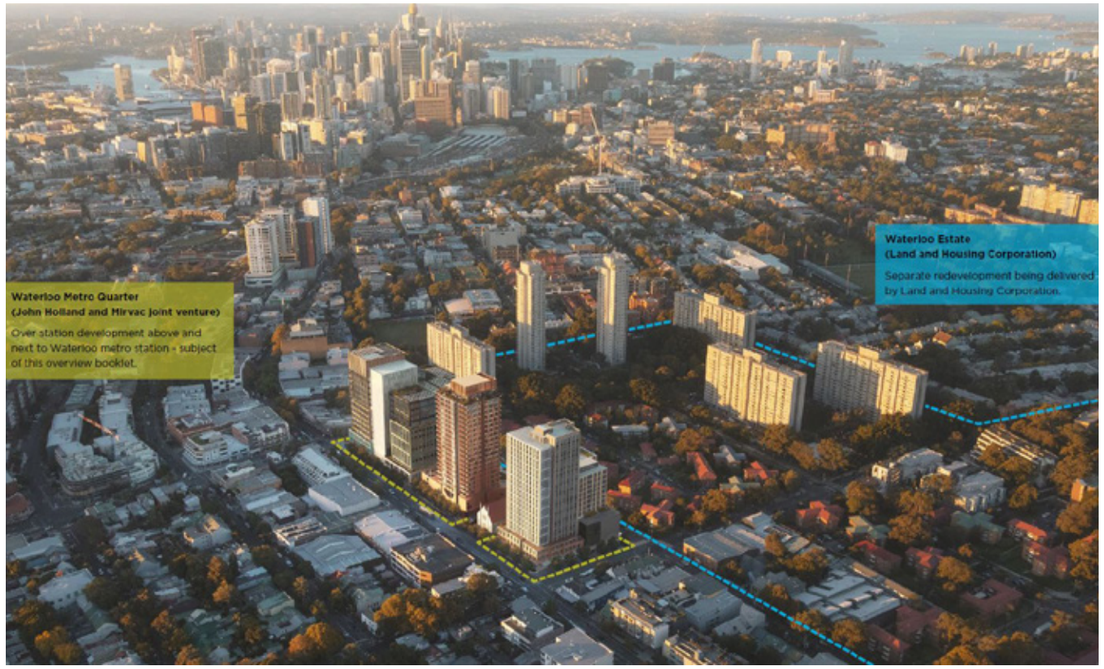
Fig. 56
Waterloo Metro Quarter Development Illustration.

4.6 The AUS Case 2: Waterloo Integrated Station Development

Waterloo Integrated Station Development, or Waterloo Metro Quarter Development (WMQD), is located in Sydney (NSW), Australia, and belongs to Australia's biggest public transport infrastructure project, Sydney Metro. The integrated project is led by a public-private initiative that involves John Holland Group (JHG) and Mirvac as joint-venture partners, and Sydney Metro as the main representative of the NSW Government and the public Interest (NSW Department of Planning and Environment, 2022). Mirvac and JHG are private developers with wide expertise in infrastructure and building construction. After winning the bid for the Waterloo Metro Quarter Development in 2019, the joint venture stated their aim to be part of the long-term investment in the area, where retail and office components will be managed by the private parties as part of their strategy to deliver meaningful social renewal (Property HQ, 2019).

The WMQD comprises the development of two hectares and foresees the construction of five different building envelopes in addition to the delivery of the underground Waterloo metro station as part of the integral development. As shown in figure 56., the mixed-use programme consists of commercial premises, public space, community facilities and residential apartments, from which at least 5% will be social housing. The project has an estimated area of 70.000 sqm and is divided in three precincts which will be developed within a seven-year masterplan that runs since 2017 with the approval of the Waterloo metro station and expects to be finalized by 2024 (figure 67) (NSW Department of Planning and Environment & Sydney Metro, 2020). In terms of market-driven sustainability assessments, the development team registered the over station development using the Green Star Communities quality mark in 2017 as part of their ambition to transform Waterloo while improving community spaces in the inner city for generations to come (John Holland, 2021).

Fig. 57
Waterloo Metro Quarter Development Masterplan and phasing (Source: Metro Sydney).



4.6.1 Sustainability Assessment System Implementation

- **RsQ1: Why do developers decide to implement USASs?**

Assessment Scope

The first element to analyse is the scope of implementing the assessment. As seen in figure 58 (See Appendix H), the main objective of implementing the Green Star Communities rating, from a project perspective, was to benefit from a useful framework that takes into account metrics beyond the building level, like management process, urban scale services and community involvement, all considered important factors in long-term and large-scale projects. From an organisational perspective, the implementation of the assessment responded to their tendering strategy, in which Green Star Communities was perceived as the most cost-effective route for the developers to prove high sustainability ambitions to external parties. In fact, during the procurement process, the client nominated as part of their ambition for the area the utilisation of the USASs, as it could strengthen the community aspects of the over station development (OSD). Following that logic, developers decided to follow the suggestion made by the public entity and register the project for the assessment as a means to achieve higher competitiveness on the bidding proposal (See Appendix Interview 7,10).

Assessment Drivers for Green Star Communities Implementation

The implementation of the assessment thus was driven by the active demand of the USAS from the public client. Since Sydney Metro nominated Green Star Communities within the Ecologically Sustainable Development Strategy (ESD), the developers saw in the implementation of the assessment both an opportunity to effectively demonstrate an alignment with the ESD principles outlined by the client, and a potential competitive advantage during the tendering phase. Another factor identified as a driver in the interviews was the developer's intention of attracting high profile tenants, which is directly related to a potential increase in residential premiums as higher segment clients have different requirements in terms of communal facilities, transport infrastructure and wellness. In that sense, by implementing the USAS they can strive to reach higher standards in urban facilities that will translate into higher revenue from their privately owned assets (See Appendix Interview 7,10).

>> "The client, being a public a government organization, asked us [to implement it]. They want to do the right things, so they nominated the Green Star Communities assessment for the over station development since there is a community space there. The buildings themselves have been nominated by the client which is John Holland development arm in joint venture with Mirvac"

Real Estate Developer

Assessment Barriers for Green Star Communities Implementation

Since the assessment has not yet been fully implemented its main barriers have not yet been clearly identified by the developers. In fact, this reflects the first barrier which is the limited internal knowledge about the USAS and the practical challenges specifically associated with the implementation. However, some elements were identified as knowhow from other similar assessments. The first one was the document-heavy and resource-intensive process, which was identified as the second main factor, after indirect costs, for non-implementing these kinds of assessments. According to the interviewees, such a demanding process automatically generates other challenges like highly complex coordination between design teams, construction teams and procurement teams. The last barrier identified was the cost uplift associated to the implementation. Those additional indirect costs, if not taken into account at the early stages of the project or if weighted out against non-flexible project budgets, can collide against the internal constraints of the business case causing developers to withhold the implementation (See Appendix Interview 10,12).

However, field experts also mentioned potential solutions to deal with these challenges. In the first place, they suggested an early alignment between the professional teams i.e. architects, planners and technical experts through prior training about the assessment, which could ease the implementation process and boost the positive impact of the assessment. In the second place, they approached the operational challenges that the assessment represents for developers as a barrier that could be partly overcome through the development of supplier network integration platforms capable of increasing the efficiency of the process while reducing the workload.

4.6.2 Decision-Making

- **RsQ2: How developers' decision-making can be influenced by the implementation of USASs?**

Organisational Scope

When analysing the potential influence that the implementation of the assessment can have on the organisational scope developers, interviewees were sceptic though optimistic about the range of the influence. Since USASs are still a novel product for developers, the project-based influence experienced is limited due to the current low market uptake. However, they did acknowledge a potential influence as organisational reflection is likely to happen as part of the feedback loop caused by the repeated implementation of the assessment. As seen in figure 59 (See Appendix H), according to the interviews, the implementation of USASs as part of the sustainability toolbox of developers can increase the maturity of the industry and raise awareness of how to handle more sustainable procedures. Thus, as part of the reflective role that USAS can play in terms of organisational scope, such awareness represents a potential influence of internal processes at a mindset level, for example normalizing budgeting for assessments as a compulsory component of project feasibility practices.

Development Process

According to developers, the guiding role associated with the implementation of the assessment is limited to the current project phase and assessment status. However, they recognised that, by using the Green Star Communities rating, they set aspirational goals that act as general guidelines expressed as assessment metrics. That grants them to meet the requirements with the conviction that best practices are being enhanced from their side. Moreover, by allowing them to focus on non-solved project level aspects outside the assessment, they can optimize their energy and resources.

Project Scope

Based on the interviews, the implementation of USASs can have a high influence on decisions related to project specifications. On one hand, the

prescription of certain materials and technical solutions as part of the evaluative process can lead to efficient decisions that easily influence the outcome. On the other hand, it positively influences decisions related to urban features like sustainable drainage, water sensitive urban design or crime prevention through environmental design provisions (CPTED). Those aspects, as part of a broader perspective towards sustainable urban development, lead to a further understanding of technical specifications associated to the urban development scale and thus, can potentially influence decisions taken at early stages of the urban proposal (See Appendix Interview 7,10,12).

- **RsQ3: To what extent does the developers' implementation of USASs lead to a more sustainable urban redevelopment project?**

4.6.3 Sustainable Urban Redevelopment Project

Perceived Added Value

As part of the benefits perceived from the implementation of the assessment, the first element described by the interviewees was the possibility to internalize the experience from the first certification. In fact, according to them, such opportunity can lead to a lesson learning process that can be socialized around the company to expand the internal knowledge. The second element highlighted by developers, as seen in figure 60 (See Appendix H), was the competitiveness that it embodies for project development applications, both for the tendering process of Waterloo Integrated Station Development and for future projects where credentials and expertise in relation to USASs play an important role in the selection of contractors. Following that logic, implementing Green Star Communities leads to competitiveness from a market perspective and a better eligibility profile from a public tendering perspective. Moreover, that competitiveness is also associated with the reputational gain caused by the addition of the assessment to the developer's toolbox. Such inclusion does not only allow him to differentiate from other market actors as a tier-one field leader, it also represents the opportunity to improve the service based provision of the assessment as a market product based on his expertise, thus leading to a more accurate and beneficial offer of the USAS as a service (See Appendix Interview 10).

Sustainability Drivers

Based on the added value that the assessment represents for developers, interviews stated that the implementation of USASs has a positive impact over all three pillars of sustainability, thus also acting as a potential driver for implementing more sustainable practices. That impact, although hardly quantifiable and not necessarily high, can lead to secondary effects in terms of wellbeing and community that go beyond the assessment metrics, therefore triggering a more sustainable project outcome. Moreover, when evaluating the potential role that the USAS can play as an incentive to modify the organisational drivers of developers some aspects were mentioned, like

Real Estate Developer

>> "Green Star Communities] will make the assessment of the development and the approving [of the SSDA] a lot more efficient if you've got it all in place at the beginning"

the implementation as means to achieve faster planning permits in highly complex projects, referring to the State Significant Development Approval (SSDA) in the WMQD case. The fact that the implementation of the USAS can lead to timesaving in planning permits can thus potentially lead, not only to a higher market uptake but also indirectly trigger a higher pursuit of sustainability features at an urban development level. Another aspect identified by the interviewees was the existing trend at local level to provide extra GFA or spatial planning incentives to developers based on outstanding results achieved through building scale green certifications. Although such incentives do not yet apply to Ecological Sustainable Assessments, the existing inertia around policy incentives associated to green ratings represents the possibility to take them into account to strive for sustainable urban redevelopment projects (See Appendix Interview 7,12).

4.6.4 The Waterloo Integrated Station Development Case: Conclusions

The implementation of Green Star Communities in the Waterloo Metro Quarter Development is perceived as a pioneer project in terms of sustainable urban redevelopment. The scope of the assessment implementation aligns with the developer's tendering strategy, which allows him to prove sustainability ambitions to external parties, thus reaching higher competitiveness on their bidding proposal for the project. Hence, the implementation is driven by the active demand of the public client, who nominates Green Star Communities within their ESD strategy. Factors like the potential increase in residential premiums based on the rising urban requirements of high segment clients and tenant attraction are also criteria taken into account for the implementation. On the other hand, the awareness of the implementation barriers is limited to the current assessment status. Nonetheless, initial perceptions based on internal know-how include document-heavy and resource-intense evidence compilation, complex coordination of teams and potential cost uplift within rigid project budgets.

Concerning the potential influence of the assessment on the decisions taken by the developers, the highest influence is perceived at the project scope level, mostly due to the prescription of sustainable solutions that enhance efficient decision-making, and the induced awareness in relation to technical aspects at an urban scale. The role of the assessment as a guiding tool is limited by the project stage, although there is an acknowledgement of the potential benefit as a convenient communication tool to guide team coordination processes. At a reflective level, the influence on the developers' organisational scope is perceived as something likely to happen, mostly based on the repetition and its inherent feedback loop. Thus by enhancing awareness on how to handle more sustainable procedures, it can potentially increase the maturity of the industry and its mindset.

When assessing whether the implementation of the USAS leads to more sustainable development the WMQD team is optimistic about it. By deciding to implement Green Start communities, developers accept to strive for high standards of urban sustainability, which also represents for them benefits in terms of competitiveness, reputation, experience, marketing, and service provision. Thus, a positive impact over all three pillars of sustainability is perceived in the urban redevelopment project.

>> "once you have the criteria from the assessment, then of course you are aiming for more and therefore, you are more likely to achieve a higher standard. Therefore, there's a positive influence, although it's hard to quantify it as a five or ten percent".

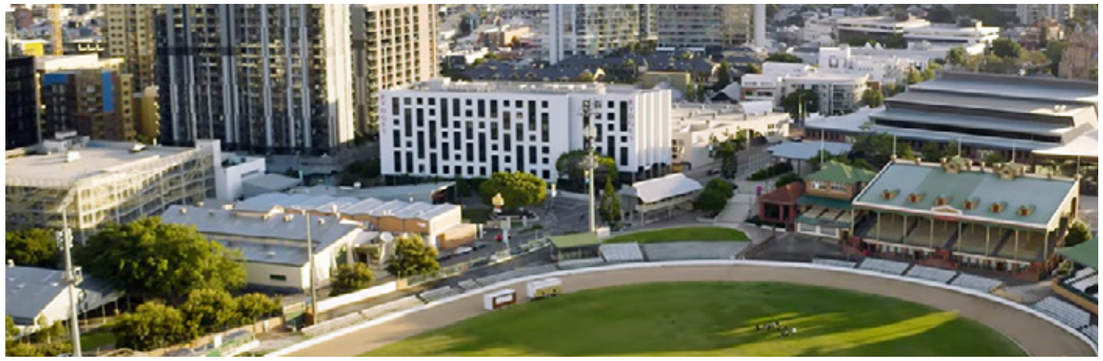
Real Estate Developer

CHAPTER 5

Comparison Findings & Recommendations

Wisselspoor Redevelopment. Synchroon + Gemeente Utrecht

Aylesbury Estate Redevelopment. Notting Hill Genesis + Southwark Council



Brisbane Showgrounds Redevelopment. Lendlease + RNA

Waterloo Metro Quarter Deevelopment. John Holland + Mirvac + Sydney Metro

After having individually analysed the proposed case studies, the next step according to this research's methodological structure is to analyse the conclusions from the cases as a whole, aiming to identify common patterns throughout the international practices. The scope of it is to strive to triangulate the research analysis and reach conceptual equivalences that can lead to the lesson drawing phase. As a starting point for the parallel case-study analysis the results from the different cases where mapped following the same conceptual framework used to structure the individual case analysis. Then each concept was assessed based on the information retrieved from the three different cases. By having an overview of all the results, it was possible to identify common patters in the implementation of USASs. The findings from the parallel case-study analysis are the triangulated information that will then be used to draw lessons and inspirational practices in relation to the elements identified during the conclusions of the Dutch Base Case.

Fig. 61
Results Parallel Case-Study Sustainability Assessment System Implementation

5.1 Parallel Case-Study Analysis

RQ1		UK CASE 1 AYLESBURRY ESTATE REDEVELOPMENT	AUS CASE 1 BRISBANE SHOWGROUNDS REDEVELOPMENT	AUS CASE 2 WATERLOO METRO QUARTER DEVELOPMENT	PARALLEL CASE STUDY ANALYSIS
CONCEPT	SUB-CONCEPT	RESULT	RESULT	RESULT	COMMON PATTERNS
Sustainability Assessment System Implementation	**Assessment Scope**	Useful framework for aspects beyond planning policy and building regulation (water usage, land usage, biodiversity, ecology, materials,waste)	Useful framework to orient a long-term project developed	Useful framework for metrics beyond the building level, like management process, urban scale services and community involvement	High emphasis on framework utility for urban scale sustainability features
		Reputational Strategy Effective way to proof sustainability awareness	Business Strategy Opportunity to benefit from long term urban investment	Tendering Strategy Most cost effective route for developer to proof sustainability ambitions to external parties	Allignment between assessment scope and corporate strategy
		Means to rise organisational-internal awareness and external recognition	Means to achieve long-term goal in masterplan	Means to have a higher competitiveness on the bidding proposal	Voluntary USAS implementation as means to achieve their organisational goals (reputation, long-term vision & competitiveness)
	Assessment Drivers	Incorporated to masterplan under pressure for high standards and reputational gain	Incorporated by the development brief (Private Law)	Incorporated in the tendering proposal. Ecologically Sustainable Development Strategy nominated Green Star-CM as part of SSDA high standard approval	Implementation driven by a growing tendency to involve USASs as sustainable development criteria
		-	Active demand by institutional investors and financers (capital markets)	Active demand by public client. Ecologically Sustainable Development Strategy nominated Green Star-CM Attract High tenant Profile	Implementation driven by active demand for the assessment
		Ensure urban quality in a long term investment mindset (Value For Money)	Influenced by the global mandate of the organisation (Top-Down approach) Close relationship between developer and Green Star Association	-	Implementation driven by corporate ambitions and organisational scope
		Attract investment community Enable early stage discussions about design and formulation process	Tenant attraction and marketing value	Potential increase for residential premiums as higher segment clients have different requirements in terms of communal facilities, transport infratructure, wellness	Impementation driven by the willingness to attract investors for funding and tenants for premiums
	Assessment Barriers	In-house workload increase (e.g., Economic Appraisals)	Additional paperwork	Document heavy and resource intensive	Resource intensive Assessment Process
		-	Indirect Cost increase	Cost uplift within project budget and internal contraints (business case)	Moderate Implementation Costs
		Standard sets goals at the right level of complexity	Lack of specialized knowledge	Assessment process has not yet been implemented First Green Start Communities Assessment Leads to Limited internal knowledge	Limited Internal knowledge associated with limited expertise
		Low coordination and Scope missalignment between parties	Lack of market knowledge	Cooordination between design teams, construction teams and procurement teams	Challenge in terms of coordination, work scope and market knowledge
		Suggested solutions: Implementation of assessment enablers and prior work scope negotiation	Suggested solutions: Implementation of scope optimisation and urban development principles to weight out increase in costs	Suggested solutions: early alignment between professional team through prior assessment training and supplier network integration through platform development	Emphasis on early implementation, integral team training, assessment enablers and more efficient information management practices

5.1.1 Sustainability Assessment System Implementation

Assessment Scope

If we start by looking at the scope of the assessment, all three cases show a high emphasis on the frameworks' utility in relation to urban scale sustainability features, which is relevant since it evidences the developers' awareness of the actual difference between USASs and the building scale certifications. In general terms that aligns with the assessment scope defined by Callway et, al. (2019) and the DGBC (2021). In second place, the decision to implement the assessment follows in all cases an objective that aligns with the corporate strategy of the developers, thus accentuating the main scope of the organisations. Moreover, the implementation of the assessment follows a voluntary logic that is tightly connected to the perception of the assessment as a means to achieve their organisational goals, in these cases being good reputation, long term vision and high competitiveness. Such alignment corresponds with the idea of organisational alignment exposed by Vieira De Castro et al., (2020). Based on literature studies and the explorative interviews, the findings of the parallel case study analysis where mapped on figure 62, thus highlighting key elements for the implementation of USASs. Those are the key aspects to draw inspiration for a broader market-uptake.

Implementation Drivers

When we analyse the assessment drivers it is possible to identify a pattern of implementation driven by a growing tendency to involve USASs as sustainable development criteria, whether by local authorities, clients, or social actors, thus recalling to external drivers as suggested by Callway et, al. (2019). The aforementioned pattern aligns with the fact the implementation is mostly driven by active demand, thus emphasizing the role that clients, both public and private, as well as institutional investors play in the market uptake of these assessments. In addition to that, it is possible to pinpoint that the implementation was highly driven by the corporate ambitions of the developers and their organisational scope, as illustrated by Vieira De Castro et al., (2020). Therefore, there is also a common willingness to attract investors for potential funding due to the project scale, which is complemented by the intention of attracting tenants willing to pay higher premiums on the developed assets as stated by Fredriksen (2015).

Fig. 62
Motivation criteria for the implementation of USASs. Own figure based on Callway et al., 2019; Vieira De Castro et al., 2020 and explorative interviews

Implementation Barriers

In terms of assessment barriers, there is general agreement about the main challenges in relation to the implementation. The developers' perception about a resource-intensive assessment process aligns with a notion of the moderate implementation costs as a cost uplift within the projects' budgets. In addition to that, as frontrunner projects there is a tendency to point out the limited internal knowledge of organisations, which is associated to the little expertise in relation to the implementation of USASs, as stressed by Regales (2017). Moreover, the different challenges in coordination underline a general lack of market knowledge and the complexity that the potential misalignments in terms of work scope can create during the assessment process as expressed by Simhachalam (2008). In relation to these barriers, different potential solutions were suggested by the experts, and although there is not patter as a one-fits-all specific solution, there is a tendency to emphasize on certain principles like on the importance of an early implementation, on the benefits of an integral team training, on the relevance of deploying project-management based assessment enablers and the urgency to establish more efficient information management practices. Based on the criteria established through literature review, the results from the experienced barriers in the implementation of USAS where mapped in figure 63. Those elements thus become the main factors for potential improvement in the implementation process.

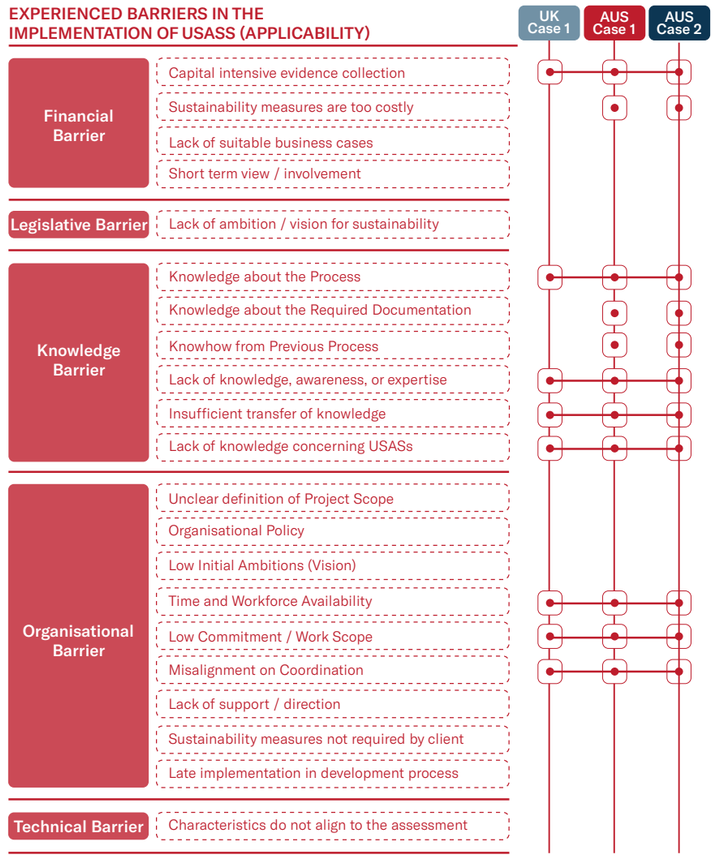


Fig. 63
Experienced Barriers in the implementation of USASs. Own figure based on Lambert, 2021; Regales, 2017; Simhachalam, 2008; Williams & Dair, 2007; Xiaoling, 2011)

5.1.2 Decision-Making

RQ2		UK CASE 1 AYLESBURRY ESTATE REDEVELOPMENT	AUS CASE 1 BRISBANE SHOWGROUNDS REDEVELOPMENT	AUS CASE 2 WATERLOO METRO QUARTER DEVELOPMENT	PARALLEL CASE STUDY ANALYSIS
CONCEPT	**SUB-CONCEPT**	**RESULT**	**RESULT**	**RESULT**	**COMMON PATTERNS**
Decisión Making	**Organisational Scope**	-	Positively leads to more sustainable ambitions	Potential organisational reflection is likely to happen as part of the feedback loop (with repetition) but limited due to a low experience with the assessment	Positive perception of the assessment's reflective role with a potentially high influence on organisational scope (developers ambitions)
		Sets an open mindset for developers willing to outstand in terms of commitment	Enhances streams of innovation that influence the way corporations behave, both at a business level and in everyday practices	Can influence internal processes at a mindset level (Normalizing budgenting for assessments within project feasibility practices)	Positive influence as a catalyst to rise awareness (developers mindset and industry maturity)
		-	-	-	-
	Development Process	High utility in terms of developing strategies and defining future delivery of those strategies - Sets long term goals that become part of the policy documents for the future development of the project	High utility as guideline to draw long-term targets and large scale requirements High utility as strategy to mitigate long-term requirements (transport & infrastructure specifics)	Set goal through the assessment By meeting the requirements best practices are enhanced	High emphasis on the assessment's guiding role based on strategic planning goals and long-term urban development approach
		High utility in terms of process and discussion	Early stage assessment can advise spatial planning process in terms of masterplanning criteria (distances, setbacks, widths of urges and roads and footpaths)	Influences the team coordination process Potential high utility in terms of process and discussion	High utility as communication enabler for discussion, coordination, and advice
		-	-	-	-
	Project Scope	Allows evaluation of different solutions based on multidisciplinary teams	Allows evaluation of different solutions based on multidisciplinary teams	Prescription of certain materials and technical solutions can lead to efficient decisions	Positive influence as an evaluative practice Project decisions mostly influenced through technical knowledge acquisition,
		Active discussion positively influences decisions taken within the project in terms of sustainability	Active discussion positively influences decisions taken within the project in terms of sustainability	Possitively influences decision related to sustainable drainage, water sensitive urban design, CPTED Crime prevention thorough environmental design provisions	Potential influence on the proyect scope and decision weighting is limited by the organisational scope (developers ambitions)
		-	-	-	-

Fig. 64
Results Parallel Case-Study Decision-Making

Organisational Scope

Following the scope definition principle illustrated by Willows & Connell (2003) and the progressive reflection led by evaluative practices Callway et al., (2019), the possible influence that the implementation of USASs can have on developers' organisational scope was assessed. All three cases forecast a limited though positive perception of the assessment's reflective role. Based on the parallel analysis of the case studies it is possible to state that the implementation of USASs involves the incorporation of new practices and those practices, in addition to the acquired knowledge, can potentially lead to an open mindset for discussion. That mindset potentially translates into higher awareness and thus, into inspiration for developers willing to outstand in the market. Hence, awareness and inspiration become drivers for reflecting and setting up higher sustainability ambitions. That reflective role of the USAS translates into a positive influence in the organisational scope and a potential feedback for the corporate strategy.

However, it is also relevant to stress two elements. In first place, the potential influence of the assessment is perceived to be dependent on the repetition and the necessary feedback loops associated to the implementation. In second place, the USAS is not primarily implemented with the purpose to trigger reflection at a corporate policy level, but as suggested before, during its operationalisation it does have the potential to introduce new practices on daily basis that prompt an open mindset for corporations, thus enhancing possible streams of innovation. In that sense, the risen awareness and acquired knowledge from the implementation can help shaping the way corporations behave, both at a business level and in everyday practices, thus enhancing the industry maturity towards more sustainable practices.

Development Process

Based on Morris & Jamieson (2005), the influence of USAS as a strategic planning practice lands within the guiding role of the assessment. Based on that definition, the results of the three case studies reiterate a high emphasis on the assessment's guiding role, especially in relation to the utility that it can bring in terms of assessing and defining strategic planning goals, which is a commonly seen a priority in a long-term urban development approach by developers whose business plan or development strategy foresees an active involvement in the area after the execution phase. The implementation's utility as a guiding tool is also complemented by a high influence in terms of process which is supported by the advantages that USASs brings in terms of communication management, team coordination and advice in terms of design and technical expertise.

Project Scope

The analysis and trade-off of the project scope, which corresponds with the project stage presented by Roberts & Henneberry (2007), lands within the decision making model proposed by Willows & Connell (2003). Based on the influence that the assessment can have at that level, we looked at the existing patterns in relation to decisions taken towards the accomplishment of the project as a product, and the three cases acknowledge a positive influence of the USAS as an evaluative practice. In that sense, developing parties have experienced, not only the possibility to evaluate different solutions based on multidisciplinary teams, but also the potential adaptation of their design and delivery methods to achieve the project scope. That means, on one hand a partial steering of the decisions towards highly sustainable solutions, as long as the decision scope and the weighing-criteria process lands within the developers' ambitions. On the other hand, it represents a potentially more efficient decision-making process in relation to technical specifications, mostly as a result of the knowledge acquisition process and the professional advice received throughout the assessment implementation. The results of all three level of influence where mapped in figure 65.

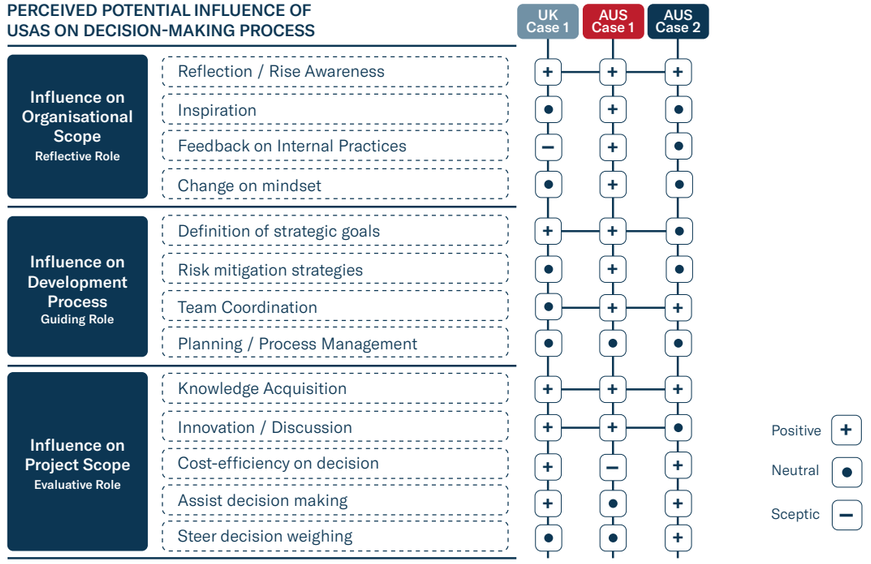


Fig. 65
Perceived potential influence of USASs on decision making process. Own figure based on Willows & Connell, 2003; Callway et al., 2019; Roberts & Henneberry, 2007; and Morris & Jamieson, 2005)

5.1.3 Sustainable Urban Redevelopment Project

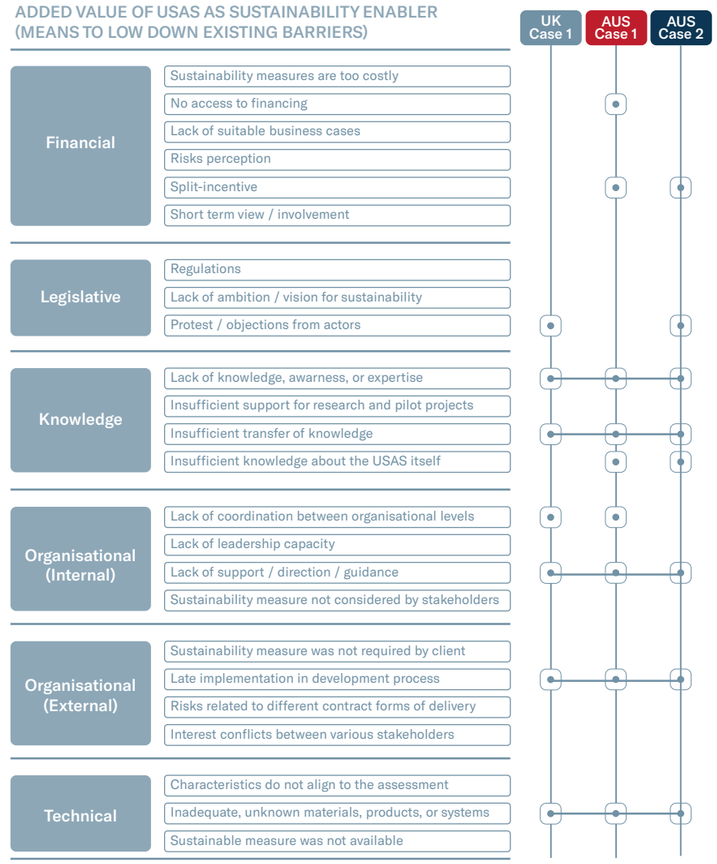
RQ3		UK CASE 1 AYLESBURRY ESTATE REDEVELOPMENT	AUS CASE 1 BRISBANE SHOWGROUNDS REDEVELOPMENT	AUS CASE 2 WATERLOO METRO QUARTER DEVELOPMENT	PARALLEL CASE STUDY ANALYSIS
CONCEPT	**SUB-CONCEPT**	**RESULT**	**RESULT**	**RESULT**	**COMMON PATTERNS**
Sustainable Urban Redevelopment	**Perceived Added Value**	Effectively attracts investors Saves money as part of an early decision enabler	Access to capital incentives in terms of financing (banks, venture capital, investment vehicles) Enhances resilience as a souce of financial value	Improve service based provision of the assessment as a market product Source of highest residential market premiums based on urban facilities	Experienced financial benefits vary
		Helps justifying decisions to external parties	Generates reliability as a developer brand	Reputational gain to differentiate the company from other market actors as field leaders	High emphasis on reputational benefits
		Generates External Recognition	Effective Marketing Strategy for Product Positioning	Competitiveness for project development applications	High emphasis on competitiveness and marketing benefits
		Internal learning process	-	Internalize experience Lesson learning process can be socialized around the company	High emphasis on internal learnings as benefits
	Sustianability Drivers	Main impact on the outcome relates to the process	Main impact on the outcome relates to innovation	Positive impact over all three pillars of sustainability	Positive impact of the assessment as sustainability driver mostly enhances process and innovation
		Partial allignment as means to stimulate develoepers drivers for sustainable urban development	Partial allignment as means to stimulate develoepers drivers for sustainable urban development	Partial allignment as means to stimulate develoepers drivers for sustainable urban development	Partial allignment as means to stimulate develoepers drivers for sustainable urban development
		Explicit causal effects are hard to quantify in complex urban regeneration projects	Enhances long-term adaptability and resilience of both public and private spaces	Secondary effects in terms of wellbeing and community that go beyond the assessment metrics	Positive impact of the assessment as a sustainability driver in hardly quantifiable
	Organisational Drivers	As long as it enhances new discussions it is beneficial	Acquired awareness can lead to apply learnings into organisational operations as incentives for improvement (Inspiration as driver for trade-off between operational level & strategic level)	Increses the maturity of the industry and raises awareness of how to handle more sustainable procedures.	Implementation acts as a positive incentive for developers to be more sustainable (organisational internal awareness)
		Enhances better outcomes in terms of community involvement and process	Enhances resilience as a souce of financial value	Enhances better outcomes in terms of community facilities	Implementation of the assessment can lead to strive for mor sustainable urban outcomes as part of the value creation strategy
		-	Planning approval processes have started to adopt minimum requirements for certain tools and ratings (buildng level)	The implemention fo the assessment within the State Significant Development Approval (SSDA) can lead to speedier planning permits	Implementation can act as means for potential external incentives as part of a policy trend (planning incentives or GFA concessions**)

Fig. 66
Results Parallel Case-Study Decision-Making

>> “overcome some existing barriers in the implementation of more sustainable solutions, thus acting as a mean to low down barriers. Although the scope is limited, it does represent a positive impact of the assessment on the project outcome”.

Perceived Added Value

As part of the perceived added value, the parallel case analysis showed that by using USASs developers where able to overcome some existing barriers in the implementation of more sustainable solutions, thus acting as a mean to low down barriers. Although the scope is limited, it does represent a positive impact of the assessment on the project outcome. The barriers overcame, as stated before, mostly relate to knowledge acquisition, awareness and acquired expertise, which beyond translating into intrinsic value for the company, enhance the use of better solutions for the project. Moreover, as a communication platform, its early implementation helped setting direction and guidelines for the accomplishment of the project sustainable goals. These elements are mapped in figure 67 following the categories suggested by Lambert, 2021 and others, to illustrate the identified patterns.



When assessing the results of the three case studies, it is possible to identify some tendencies in relation to the experienced benefits. From the developers’ perspective, the perceived added value of implementing the assessments can be divided into three components. The first one corresponds to reputational benefits and mostly addresses the suitability of the USAS to justifying decisions to external parties, thus also positioning the developer as an organisation with high standards of CSR that differentiates from other market players. This component is interconnected to the competitiveness that the assessment provides to the company. In fact, there is a high emphasis on the implementation of USASs as part of an effective marketing strategy,

Fig. 67
Added value of USAS as means to lower down barriers. Own figure based on Lambert, 2021; Regales, 2017; Simhachalam, 2008; Williams & Dair, 2007; Xiaoling, 2011.

>> “USAS can act as means to reach organizational drivers, thus as an incentive to reach more sustainable solutions, which directly relies on the benefits that are perceived from the implementation. ”.

both for product positioning and brand positioning. Thus, competitiveness does not only strengthen the position of market players in terms of tenant attraction and sales, but also poses advantages in tendering processes and bidding proposals where ESD criteria can be distinctive factors.

The third component identified as added value for developers is the internal learnings that the implementation of the assessment generates for the company. The knowhow acquired through the process allows to internalize the experience, thus leading to a lesson learning curve that can be socialized around the company. This is valuable since it allows developers to integrate USASs as part of their toolbox of services under scenarios of active client demand, or in case they voluntarily suggest its implementation for competitive purposes, thus improving their internal capabilities to achieve an efficient implementation of the assessment. Lastly, the financial benefits experienced by developer widely vary as specific project characteristics and external factor enter to play an important role. That makes it harder to define constant patterns associated to the developers’ perception. However, it is possible to highlight noteworthy singular aspects.

1. In relation to strategic planning and design expenditures, as an early implemented tool it can potentially save indirect costs when there is full commitment to achieve a certain sustainability standard.
2. In relation to reputational gain, it can be perceived as a cost-efficient methodology to raise external approval from public parties.
3. In relation to funding, when the project size makes it necessary to have external funding from institutional investors, it can be an effective means to attract investors.
4. In relation to marketing, it can unlock the highest market premiums as a result of high-profile tenant attraction.
5. In relation to market services, the provision of the assessment can be offered to clients within revenue streams when the implementation has been internalized.

All these are individual aspects of potential financial gain, but based on the information collected through the case studies, the diversity in perceptions makes them more like benefits associated to projects specific characteristics and not to a clear common pattern.

Sustainability Drivers

Based on the added value that the assessment represents for developers, it is possible to identify a tendency throughout the case studies that highlights the positive impact of implementing USASs as a means to achieve more sustainable urban redevelopments. The logic underlined across the case studies shows that, although explicit causal effects of the assessment are hard to quantify in complex urban regeneration projects, USASs are perceived as means to reach, according to developers, higher standards of sustainability in all three pillars of sustainability. Moreover, the positive impact of the assessment as sustainability driver mostly enhances process-oriented results and innovation within the industry, which is coherent with the experienced partial alignment between the benefits of implementing USASs and developers’ drivers for sustainable urban development, thus positioning the assessment as means to stimulate them.

At an organisational level, the positive impact stressed before can also have a repercussion on the developers’ scope, which throughout the research has been addressed as the influence of the reflective role in the organisational ambitions. That potential impact tends to act as a positive incentive for developers to be more sustainable, thus rising internal organisational awareness in relation to sustainable practices. From the developers’ perspective, that is remarkable in relation with the implementation of USASs since the case studies displayed that the awareness acquired by organisations can lead to strive for more sustainable urban outcomes as part of the value creation strategy, thus having a positive impact on the organisational drivers. This is the case for criteria like resilience, climate adaptation, deployment of community facilities or even community involvement, all characteristic elements of sustainable redevelopment projects, and from which developers can indirectly benefit as part of the implementation of USASs. Lastly, there is a pattern of perceiving the implementation as means for accessing potential external incentives. Although this is still part of a bigger picture which positions policy formulation at the centre of urban development, case studies highlight a trend from regulatory parties to involve more and more sustainability assessments as material for the application of planning incentives as speedier planning permits or special permits, or as GFA concessions which although they only currently apply to building scale ratings, could become in the future a part of a compensation system to stimulate better projects at urban level.

Based on the perceived added value highlighted in the parallel case study analysis, it is possible to reach two conclusions. The first one is that the USAS can act as means to reach organizational drivers, thus as an incentive to reach more sustainable solutions, which directly relies on the benefits that are perceived from the implementation. The second one is that USASs can act as sustainability driver, or enhancers, by lowering down existing barriers in the implementation of sustainable solutions. Following those two conclusions, and with the aim to synthesize the experienced added value of implementing USASs, figure 68 conceptualized the findings stressed above following the criteria from Regales (2017).

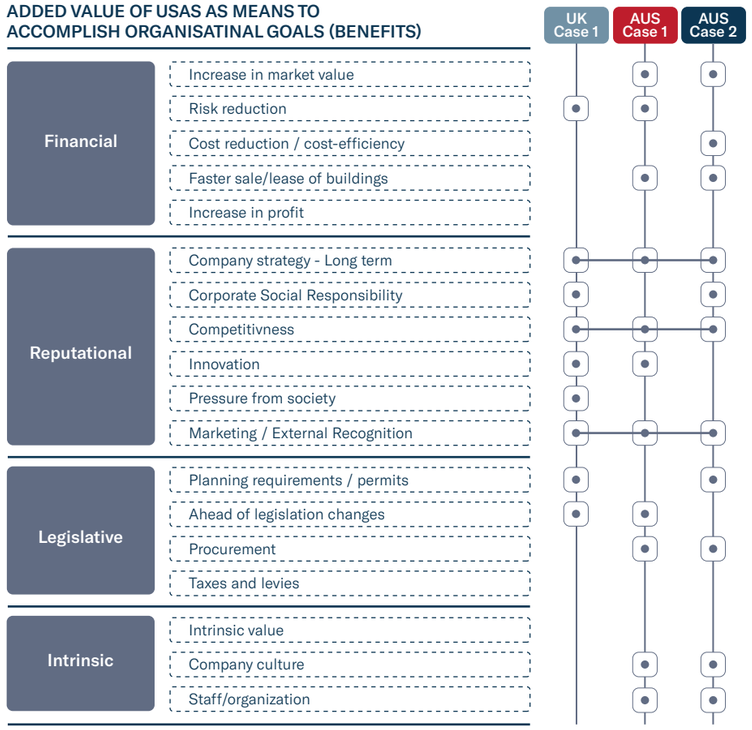


Fig 68
Added value of USAS as means to accomplish organisational goals.Own figure based on Regales, 2017.

5.2 International Case-Studies vs Dutch Base Case

To move forward with the analysis, it is necessary to compare the two scenarios, being the findings from the International Case-Studies and the conclusions from the Dutch Base Case. The table below summarizes the aspects analysed through the conceptual model and identifies similarities and differences between the two contexts, thus positioning the findings within the lesson drawing framework.

		PARALLEL CASE-STUDY ANALYSIS		NL BASE CASE
CONCEPT	**SUB-CONCEPT**	**RESULTS**		**RESULTS**
Sustainability Assessment System Implementation	**Assessment Scope**	Relative High Voluntary implementation Role as means to achieve their organisational goals (reputation, long-term vision & competitiveness)	Difference	Relative Low Voluntary implementation as Role as end on itself
	Assessment Drivers	Perceived High Alignment between assessment drivers and intrinsic motivation Implementation highly driven by active demand	Difference	Perceived Low Alignment between assessment drivers and intrinsic motivation Implementation less driven by active demand
	Assessment Barriers	Challenges in terms of Implementation Costs, coordination, work scope and market knowledge	Similarity	Challenges in terms of Implementation Costs, coordination, work scope and market knowledge
Decisión Making	**Organisational Scope**	Positive perception of the assessment's reflective role with a potentially high influence on organisational scope (developers ambitions)	Similarity	Positive perception of the assessment's reflective role with a potentially high influence on organisational scope (developers ambitions)
	Development Process	High emphasis on the assessment's guiding role based on strategic planning goals and long-term urban development approach	Difference	Low emphasis on the assessment's guiding role Potential obstacle for planning process
	Project Scope	Positive Perception of potential influence on the proyect scope Decision weighting is limited by the organisational scope (developers ambitions)	Similarity	Positive Perception of potential influence on the proyect scope Decision weighting is limited by the organisational scope (developers ambitions)
Sustainable Urban Redevelopment	**Perceived Added Value**	Experienced Benefits High emphasis on reputational benefit, scompetitiveness and marketing benefits and internal learnings	Difference	Potential Benefits Lower emphasis on reputational benefit, competitiveness and marketing benefits and internal learnings
	Sustianability Drivers	Relative high utility as sustianability enabler Knowledge-technical-organisational barriers Positive impact mostly enhances process and innovation	Difference	Relative low utility as sustianability enabler Associated to low experience and enforced implementation
	Organisational Drivers	Partial alignment as means to stimulate develoepers drivers for sustainable urban development (potential external incentives) Implementation acts as a positive incentive for developers to be more sustainable (organisational internal awareness)	Difference	Hesitance of potential that the implementation can have as means to get external incentives Partial alignment as means to stimulate develoepers drivers for sustainable urban development

5.2.1 Sustainability Assessment System Implementation

Assessment Scope

As seen in figure 69 (See Appendix I), when we confront the findings from the parallel case-study analysis with the conclusions from the Dutch Base Case, the first outstanding element is the higher emphasis that international cases provide in relation to the developers' awareness of the methodological utility of the framework in relation to urban scale principles. That evidences a higher knowledge of assessment's structure, principles, and criteria, which redefines the scope of the assessment and explicitly connects it to the urban development practices, and not to the single building certification field. Moreover, international cases show a clear alignment between the decision to implement USASs into their practices and their corporate strategy. That means acknowledging the assessment as means to achieve something that might be beneficial for their organisation, and which aligns with their scope as a development firm.

In international practices, according to the identified patterns, that leads to a voluntary implementation of the assessment as part of their strategy to achieve their organisational goals, whether it is related to competitiveness, reputation, or long-term vision. Such perception partly differs from the Dutch Base Case, where the industry has certain scepticism about the scope of the assessment, where a perceived voluntary or enforced implementation, sets a specific approach towards the USAS. For voluntary implementations there is relatively low intrinsic motivation whereas for enforced implementation the scope of the assessment is mostly perceived as an end to proof high sustainability standards to external parties, therefore causing scepticism for the market parties.

Assessment Drivers

On regards to the assessment drivers', international cases show an implementation which is effectively driven by the active demand from external parties, whether private clients, investors, or local authorities. However, it is necessary to clarify that an active demand still foresees a voluntary implementation from the developer and thus, it is not perceived by the developing parties as an obligation, but as a suggestion which, because of the potential benefits that might bring, is followed by the market actors. Moreover, the international cases exemplify as part of the voluntary implementation, an alignment between the implementation and the developers' corporate ambitions. These two factors, complemented by a growing tendency to involve USAS as trustworthy metrics for sustainable urban development, show a synergy between actors that actively drives the use of USASs.

On the other hand, the Dutch Base Case shows a context with lower demand, where local authorities enhance its implementation, in some cases, as a compulsory requirement for pilot projects. Moreover, there is an existing awareness of the need for demand in order to enhance the implementation, but there is relative low evidence of such demand beyond private investors of monofunctional greenfield developments. Lastly, both scenarios highlight as a driver the intention of attracting possible clients and end users, but the Dutch practices provide less evidence of it actually happening, mainly because of the lack of projects with multifunctional programs assessed.

>> "an active demand still foresees a voluntary implementation from the developer and thus, it is not perceived by the developing parties as an obligation, but as a suggestion which, because of the potential benefits that might bring, is followed by the market actors".

Assessment Barriers

In terms of implementation barriers, both scenarios have identified relatively similar challenges. That means on one hand, that the implementation USASs as a methodology has certain challenges on its assessment process that do not seem to be context dependent, but more intrinsic to the framework itself. On the other hand, also means that under similar barriers for withholding developers to implement them, the international practices allegedly face higher external motivations, and to some extent higher intrinsic ambitions from developers, which leads to have a different level of market uptake even when operational barriers stay constant. That represents also a more positive perception from the parallel case-study analysis in relation to how to overcome the existing barriers that withhold the potential implementation of USASs.

5.2.2 Decision-Making

Organisational Scope

As seen in figure 70 (See Appendix I), when comparing the influence of the assessment in the developers' decision making, the two scenarios provide relatively similar perceptions on the extent to which USASs can influence the organisational scope. Both the Dutch Base Case and the parallel case-study analysis suggest that the potential influence as a reflective tool is limited, since in practice the purpose of implementing it is not to use it as a framework for organisational-reflection. However, international cases show a higher optimism on the likelihood of this happening since, as part of a voluntary implementation, it foresees certain level of commitment towards the strived sustainability standards, which involves the incorporation of new practices. Those practices, in addition to the acquired knowledge, can potentially lead to an open mindset for discussion. That mindset potentially translates into higher awareness and thus, into inspiration for developers willing to outstand in the market. Hence, awareness and inspiration become drivers for reflecting and setting up higher sustainability ambitions. That reflective role of the USAS translates into a positive influence in the organisational scope and potential feedback for the corporate strategy.

Development Process

When comparing the two scenarios, the biggest difference in terms of decision-making influence happens at the guiding level. The Dutch Base Case suggests a potential steering of developers throughout the planning process which, however, is not acknowledged by the local industry, technically to the extent of becoming and obstacle instead of a guiding tool during the development process. These findings diverge from the experience of international developers, who positively emphasize on the assessment's guiding role, especially in relation to the utility that it can bring in terms of assessing and defining strategic planning goals. in a long-term urban development approached by developers who's business plan or development strategy foresees an active involvement in the area after the execution phase.

Project Scope

The comparison of the two scenarios in relation to the influence of the assessment on the project scope and thus, on the decisions taken regarding the technical specifications of the project are similar. Both contexts experience a limited influence since the potential leverage on the project scope and decision weighing is limited by the organisational scope. That basically means "developers will not do what they do not want to do" which explains why if something is not within the corporate ambitions it is not likely to happen. Moreover, although both scenarios highlight the use of the methodology as a suitable communication platform for appraising different options and potentially assisting trade-offs, the results from the parallel case studies seem reveal a better perception of the extent to which the USAS could help overcoming certain barriers that withhold developers to opt for more sustainable urban features. Such leverage relies on the knowledge acquisition process that characterizes the implementation of the assessment, thus making the collaboration with multidisciplinary teams and the prescription of certain technical solutions a valuable component on the evaluative process.

5.2.3 Sustainable Urban Redevelopment Project

Perceived Added Value

By contrasting both scenarios in relation to the perceived added value that developers have experienced from the implementation, the conclusions from the international case-studies confirm some of the benefits that Dutch field experts have highlighted as potential benefits, although according to project-based evidence they might not necessarily happen in Dutch practices. As seen in figure 71 (See Appendix I), the parallel case-study analysis concluded as common pattern a high emphasis on reputational benefits, competitiveness, and marketing, which in all cases aligns with the initial implementation purpose stated by the developing parties. That partially explains why the voluntary implementation of the USAS was done by developers after external parties actively demand for it.

>> "The parallel case-study analysis concluded as common pattern a high emphasis on reputational benefits, competitiveness, and marketing, which in all cases aligns with the initial implementation purpose stated by the developing parties"

Sustainability Drivers

Based on the added value that the assessment represents for developers, both scenarios identify a positive impact of implementing USASs as a means to achieve more sustainable urban redevelopments. Although explicit causal effects of the assessment are hard to quantify in complex urban regeneration projects, USASs are perceived as means to reach, according to developers, higher standards of sustainability from a developer perspective. This applies for the implementation both as enabler and as an incentive.

Moreover, the comparison shows that while the Dutch Base Case recognizes the intrinsic motivation as main driver for the implementation of USASs, and thus partly attributes the relative low implementation rate to a low initial ambition from developers, the International Cases recognize the importance of intrinsic motivation but also highlights an undermined component which is crucial for the market implementation. That is the necessary alignment of the experienced assessment benefits with the criteria that drive developers to deliver more sustainable urban redevelopments. In fact, the Dutch Base Case illustrates a relative low acknowledgement of USAS as sustainability enabler from the developers' perspective since the potential benefits from the assessment implementation do not necessarily match with the experienced added value.

Lastly, both scenarios highlight the potential impact that USASs can have in developers' awareness and thus, the limited but potential change in mindset that it could trigger. In that sense, the implementation could act as a positive incentive for developers to be more sustainable. However, Dutch developers are more sceptic on the implementation of the assessment as means to get external recognition, which partly differs with the perception that international developers have expressed before. Based on the findings of the parallel case study analysis, and the followed comparison between international cases and the Dutch Base Case. It is possible to move forward towards the research outcomes stated in Chapter 2; the recommendation and the framework.

5.3 Empirical Lessons Recommendations to DGBC

If we recap the objectives of this thesis, chapter two states as the first goal "to provide learnings based on the current practices and motivations behind the use of USASs, which can be structured as a recommendation for a potential improvement of BREEAM-NL Area and the practices related to it in the Dutch context". Thus, this sub-chapter aims to materialize the research done through the case-study analysis into a set of practical recommendations that can operate as advice for the Dutch Green Building Council. It is structured following:

Sustainability Assessment System Implementation
- Communicate about the differences
- Encourage external demand
- Enhance intrinsic motivation
- Ease implementation
- Maximise the potential benefit

Decision-Making
- Be optimistic about the influence of the reflective role
- Dare to reflect on the perception of the guiding role
- Acknowledge the limitations of the evaluative role

Sustainable Urban Redevelopment
- The chicken-egg paradox; strive for both

5.3.1 Sustainability Assessment System Implementation

- **Communicate about the differences:**

International cases illustrate, from a developer's perspective, a higher emphasis on the framework's utility when assessing urban scale sustainability features. That is relevant since it evidences the developers' awareness of the actual difference between USASs and the building scale certifications. In that sense, it is important to communicate with developers about the differences between BREEAM-NL Area and other building-scale quality marks. It is not only a difference in scale, it is also a difference in scope, whereby requesting evidence and enhancing long-term strategic planning about elements like process management, urban scale services (water usage, land usage, biodiversity, ecology, and waste management), and community involvement, developers in other countries have experienced a positive impact on their long-term goals. By stressing these differences, it is possible to raise awareness of why implementing BREEAM-NL Area can be worth in urban redevelopment projects

- **Encourage external demand:**

It is no surprise that market-driven assessments require demand to drive their implementation. In that sense, to increase the willingness to supply the assessment. it is important to involve other actors and encourage an active demand for the assessment. International cases have shown that other markets have been able to incorporate other parties as external drivers for the implementation. It is in first place local authorities, but then also institutional investors, private clients, financers, and end-users. Here we talk about a market synergy where stakeholders believe in the necessity for the assessment. Such symbiosis requires certain guarantees from the quality mark and there, the DGBC is key responsible for proving to external parties that BREEAM-NL Area is a suitable tool to maximise public value in sustainable urban developments. One way to do that is by showcasing successful pilot projects, as it is currently being done in The Netherlands, and that can be an effective strategy to bring on board local authorities and even end-users. However, the need for the supply is also generated by those who have a bigger leverage effect on the developers' practises, and those are the ones who can guarantee financial incentives. Thus, for other stakeholders like institutional investors and financers, an extra effort might be needed to guarantee that BREEAM-NL Area criteria are translatable to more commonly used metrics in the financial sector, like ESG performance indicators, with the scope of enhancing the reliability of the assessment and improving its applicability. Lastly, when striving for external demand it is crucial to address the bigger problem, at the end is not only about USASs, it is about being responsible towards the future.

- **Enhance intrinsic motivation:**

When it comes to implementing BREEAM-NL Area, external demand must be complemented by intrinsic motivation. The coordination of those two components is the key to a higher market uptake. The question then becomes: how to increase the developers' intrinsic motivation? The parallel case-study analysis concludes that developers are more likely to implement market-driven USASs when they acknowledge the alignment between their sustainable corporate strategy and the scope of the assessment. In that sense, international practices stress on the importance of perceiving the assessment as means to achieve something else, something that is valuable for them and thus, something that aligns with their organisational drivers. The cases analysed during this research emphasize the role that the implementation of USASs can have as means to strengthen corporate drivers, in particular competitiveness, reputation and long-term company vision amongst others. Therefore, it is of high importance when addressing developers to emphasize how the implementation of BREEAM-NL Area aligns with their sustainable corporate strategy, which might be the best way to enhance intrinsic motivation.

- **Ease implementation:**

If we look at BREEAM-NL Area as a market product, it is necessary to accentuate how important it is for its implementation to make it easy. The complexity of BREEAM-NL Area as a methodology is inherent to the nature of the field. However, from a developers' perspective, there are some elements that could potentially ease the implementation, thus enhancing a more positive attitude towards the assessment process. In fact, according to this research findings, some principles could help overcome the main barriers identified for the assessment.

1. Emphasize on the importance of an early implementation. That makes things easier for everyone, helps save time, makes the evidence compilation process more efficient, sets realistic goals, and increases the positive impact of the assessment on the project outcome. Moreover, it also triggers a change in mindset, where the early implementation of BREEAM-NL Area becomes a means to achieve outstanding results instead of a post-evaluative checklist.

2. Promote an integral team training. A successful implementation should not only rely on the BREEAM expert and the BREEAM assessor. Hence, spreading knowledge about BREEAM-NL Area in other involved fields, like the procurement team, the design team and the development team would certainly ease the implementation. However, this is just the tip of the iceberg, since making the assessment process as efficient as possible still requires going deeper and having professionals with the expertise to apply that knowledge into the supplier procurement strategies, the contractual management of development processes and coordination of cost-control

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>> “international practices have emphasized the utility that USASs can bring in terms of assessing and defining strategic planning goals, which is a commonly seen a priority in a long-term urban redevelopment”.

and budget planning practices. Moreover, this effort to increase the market knowledge does not only involve private parties involved in the redevelopment, it also addresses the need to train municipal parties if they have a facilitating role in the redevelopment process, as actors need to know what they are talking about if they want to collaborate.

3. Emphasize on the relevance of assessment enablers. The coordination process is one of the biggest challenges when implementing BREEAM-NL Area. Thus, emphasizing the relevance of deploying project-management based assessment enablers, like responsibility matrixes, prior work scope agreements, flexible cost plans, workshops, and schedules is crucial to facilitate an efficient assessment process. These practices should run parallel to the implementation and retrofit the different actors to improve the communication process.

4. Enhance more efficient information management practices. Naturally, such a challenge does not only address the Dutch Green Building Council, it addresses the whole built environment industry. However, the DGBC as the local operator of BREEAM-NL Area does play a crucial role as it should strive for a higher level of integration. Although the explicit solution requires further research, there are ongoing studies about supplier network integration platforms which raise different questions, and potential solutions about how to involve other market actors (e.g service providers, suppliers, regulatory entities) to improve the data management in communication platforms. All this, with the end scope of reducing the developers’ workload and increasing the efficiency of the assessment process.

- **Maximise the potential benefit:**

BREEAM-NL Area needs to be an attractive methodology for developers in order to increase the market uptake. Following that line of reasoning, it is crucial to maximising the potential benefit of the assessment. From the DGBC perspective doing that requires taking into account two different components: a direct component and an indirect component. The direct component addresses the benefits that built up the intrinsic value of the assessment. It is highly related to the implementation of the assessment as a sustianability enabler since it helps lowering down existing barriers, and is non-market dependent. To maximise it is important to:

1 Strive for the best knowledge acquisition process, by proving a thorough analysis of the industry, available technologies, and novel strategic practices, which can be complemented by the knowledge of high-quality prescribed solutions, and thus, by extension showcasing evidence requirements which align with the local practices,
2 Strive for a high suitability of the assessment in relation to the developers perspective (see Ease Implementation for further elaboration)
3 Aim to keep the assessment up to date, thus aligning with the market trends and latest planning regulations.
4 Evaluate which components within BREEAM-NL Area can be strengthened to increase their influence on developers’ mindsets, most likely through reflection, inspiration, and recommendations.

The indirect component addresses the benefits that built-up the value of the assessment based on external drivers, and thus are context-dependent. Moreover, they represent the opportunity to perceive the implementation as means to achieve other benefits which do not necessarily depend on the direct role of DGBC (e.g. competitiveness based on external recognition, potential financial incentives in collaboration with institutional investors or public parties, reputational gain) but do represent an opportunity for the DGBC to strive for improvement (see Encourage External Demand for further elaboration)

5.3.2 Decision-Making

- **Be optimistic about the influence of the reflective role:**

The biggest discussions about willingness to be, act and deliver sustainability happens in the field of organisational ambitions and intrinsic motivation. In relation to that, the findings of this research highlight how, from a developer’s perspective, the implementation of USAS can play a positive influence on their mindset, mostly by participating in conversations and discussions that act as means to raise awareness. Even if that influence is limited by other external factors, developers do perceive in the implementation an added value that steers their gradual transitions towards more sustainable ambitions, and thus more sustainable practices. Furthermore, the lower the initial ambition, the higher the potential influence the assessment can have, as it represents a disruptive methodology to approach sustainable urban redevelopment.

- **Dare to reflect about the perception of the guiding role:**

Urban redevelopment projects are highly complex and thus the scope of BREEAM-NL Area differentiates from other quality marks. Following that logic, international practices have emphasized the utility that USASs can bring in terms of assessing and defining strategic planning goals, which is a commonly seen a priority in a long-term urban redevelopment. That represents an advantage for developers whose business plan or development strategy foresees an active involvement in the area after the execution phase (see Communicate About the Differences for further elaboration). Therefore, it is worth reflecting about what could be the reason for a lower awareness of such benefit in the Dutch context: Do the developers’ profiles and the project characteristics mismatch with the requirements needed to perceive such added value? Is it the low awareness about the strategic scope of BREEAM-NL Area what hiders the acknowledgement? Is it the scepticisms about the implementation challenges what prevents developers from recognising the potential advantages that USASs can bring to the development process? Or is it because the methodology somehow does not match with the current planning and development practices? All those questions represent opportunities to reflect upon and potentially improve.

- **Acknowledge the limitations of the evaluative role:**

According to this research’s findings, the implementation of USASs can positively steer decisions towards highly sustainable solutions, as long as the decision scope and the weighing-criteria process land within the developers’ ambitions. That means that, although it can have a positive influence, the extent to which USASs can steer decision-making tends to remain within the organisational scope of developers. For that reason, by acknowledging the limitations that BREEAM-NL Area has as an evaluative practice, it is possible to focus on two main aspects. The first one is to prioritize the influence on developers’ mindsets, since rising organisational ambitions is the main path towards achieving more sustainable outcomes (see Be optimistic about influence of the reflective role for further elaboration). The second one is to understand that optimizing the knowledge acquisition process throughout the assessment is the best way to steer developers’ decisions, since the implementation mostly helps to overcome barriers associated with knowledge, organisational-internal and technical aspects (see Maximise the potential benefit for further elaboration).

5.3.3 Sustainable Urban Redevelopment

- **The chicken-egg paradox; strive for both**

Inquiring about the explicit causal effects that USASs have in urban redevelopment projects might not be a simple task, as such impact is difficult to quantify. From a qualitative perspective, it might even be a mistake to ask that question in the first place. International practices emphasize that the positive impact of the assessment as a sustainability driver predominantly enhances process-oriented results, which makes further reflect whether sustainability refers only to the outcome, or is also about process and innovation, where USASs can play a big role. On the other hand, based on the partial alignment illustrated between developers' drivers and implementation benefits, it is possible to position USASs as a means to stimulate higher sustainability standards, under the logic that the more beneficial it is for developers to enforce sustainable practices, the more sustainable they will behave, and thus, the higher the impact of the assessment will be as means to achieve more sustainable urban redevelopments. Following that reasoning, it is necessary to ask: Should we align the benefits of the assessment to the developers' drivers to enhance higher sustainability? or do we aim to steer the developers' drivers so that they better align with the benefits that higher sustainability ambitions bring to the table? In practice, that is a bidirectional relationship, and to guarantee a more advantageous implementation of BREEAM-NL Area both are necessary. That synergy between the alignment of incentives and the change in mindset is what ultimately will lead to a more sustainable urban redevelopment.

Moreover, that dynamic raises one final question: Do developers implement USASs to be more sustainable? Or do they want to be more sustainable and thus, they decide to implement USASs? Based on this study, the answer to that remains a paradox. A paradox where the important point should not be the order of the factors, but the product. It is essential to think about what we are doing, each one of us as market actors, to enhance more sustainable outcomes, and reflect whether the results that are being achieved through our active involvement, are actually more sustainable than what the result would be if we were not there. Then, the answer is clear, the complexity behind sustainable urban redevelopment project requires the commitment of all actors involved and therefore, if the perceived impact of urban sustainability assessment systems is positive, then the DGBC should hold to their role and keep facilitating the implementation of BREEAM-NL Area, while striving for bettering. At the end, the bigger picture is not about the assessment itself, it is about the impact that fulfilling our responsibilities can have towards a more sustainable future.

>> "Should we align the benefits of the assessment to the developers' drivers to enhance higher sustainability? or do we aim to steer the developers' drivers so that they better align with the benefits that higher sustainability ambitions bring to the table? "

5.4 Empirical Lessons Recommendations to Dutch Developers

To complement section 5.3, this sub-chapter aims to materialize the research findings into a set of recommendations that illustrate the potential impact that USASs can have on developers' decision-making process based on their perceived added value. These two sets of recommendations are complementary, like two sides of a coin, and should be read together to properly understand the synergy between Dutch developers and the DGBC.

According to chapter two, the second goal of this research is "to provide an overview of how market-driven rating tools for urban sustainability assessment can steer the decision-making process of developers towards more sustainable urban redevelopment projects". Thus, by addressing the variables analysed throughout this research, we aim to highlight this research's findings as means to communicate developers about the positive impact that implementing USASs can have on their practices.

- **Adapt to sucessfully implement**

Benefiting from the implementation of USASs requires adaptation. The development industry is dynamic and thus, new management practices are there to stimulate market benefits in alignment with societal goals. However, this also means that industries need to adapt to be able to benefit from new practices. This research suggests four main elements that are relevent to take into canconsideration when implementing BREEAM-NL Area. Those are 1)Emphasize on the importance of an early implementation, 2) Promote an integral team training, 3) Emphasize on the relevance of assessment enablers and 4) Enhance more efficient information management practices (see Ease Implementation for further elaboration).

- **Recognize the scope out of the box**

Urban redevelopment projects go beyond the building scale. The same principle applies to Urban Sustainability Assessment Systems. The scope of the assessment lies outside of the box. Thus, it is not only a difference in scale, it is also a difference in objectives, whereby requesting evidence and enhancing long-term strategic planning about elements like process management and urban scale services (water usage, land usage, biodiversity, ecology, and waste management), developers in other countries have experienced a positive impact on their long-term goals. Following that line of reasoning, international practices have emphasized the utility that USASs can bring in terms of assessing and defining strategic planning goals, which is commonly seen as a priority in a long-term urban redevelopment.

The definition of such strategic goals also represents a positive guidance towards risk mitigation strategies for criteria like climate adaptation, energy sources, heating island effects, traffic requirements or even community involvement, all risk factors to be considered when striving for an efficient development process. If we add to those findings the benefits that the assessment can bring in terms of team coordination, it is possible to highlight how beneficial it can be for developers to implement USASs, as they can play a guiding role towards a more efficient development process. Hence, such implementation represents an advantage for developers whose business plan or development strategy foresees an active involvement in the area after the execution phase.

- **Seize the moment**

According to this study, international frontrunners exemplify an implementation driven by a growing tendency to involve USASs as sustainable development criteria. That trend aligns with an active external demand, either by local authorities, private clients, or end-users, each of them through their own means. Although that demand requires market adaptation, as exposed in the reflection of this thesis, there are reasons to believe that such trend could be replicated by the Dutch market. In the first place, pilot projects are now being delivered in the Dutch context as a means to showcase the impact of BREEAM-NL Area and, although there is a required learning curve that foresees market adaptation, it also implies a valuable source of competitiveness for the private sector, from which early adopters will benefit as the implementation curve moves forward towards more sustainable practices.

In the second place, redevelopment projects that raise inspiration, like the ones addressed in this research, are starting to appear in international practices as a way to illustrate the positive impact that the early implementation of USASs can have on a complex project. Those examples can make the provision of USAS an attractive way to demonstrate urban sustainability for external parties and thus, increase the local demand. Those two reasons suggest that Dutch pacemakers should seize the moment and assume the commitment that a voluntary implementation requires to be able to benefit from the competitiveness that it will generate.

- **Reflect is pertinent**

Being a frontrunner in the development industry and delivering successful projects requires adapting and reflecting on how results are being achieved, as the dynamism of the industry favours different ambitions at different points in time based on societal expectations and changing customer preferences. Thus, top-tier developers strive for innovation and foresee within their organisational scope high standards of sustainability, as that purpose aligns with broader societal goals. Based on this research, the implementation of USASs can have a positive impact on developers' ambitions in terms of sustainability. The reason for that relies on the reflective role that the assessment can play, since by enhancing conversations and discussions, and as a result of feedback loops deriving from repetition, the assessment can act as means to raise awareness, thus potentially influencing developers' mindset. Even if that influence can be limited by other factors like their voluntary willingness to implement it, or the expected benefits retrieved from it, this study suggests that developers do perceive in the implementation an added value that steers their gradual transitions towards more sustainable ambitions, and thus more sustainable practices. In that sense, implementing USASs allows them to benefit from the reputation that highly sustainable brands experience from market recognition, while internally enhancing higher sustainability standards.

- **Evaluate is necessary**

The most ambitious redevelopment projects require commitment and a critical evaluation of the proposed outcomes at an early project stage. As part of the knowledge acquisition process that characterizes the Evaluative Role, USASs can help overcome certain barriers that would otherwise withhold the implementation of more sustainable practices – mostly in the fields of organisational internal and technical knowledge. That means, being able to find better solutions based on multidisciplinary expertise, team coordination, prescription of suitable solutions and strategic definition of goals. All these elements embody the intrinsic value of the USAS, and position it as a sustainability enabler since it can have a positive influence on the project scope by lowering existing barriers. At a decision-making level, that represents an opportunity for developers to benefit from a cost-efficient process, as the assessment can assist and potentially steer certain decisions, which translates into know-how and the possibility to accomplish their sustainability goals.

>> "the implementation can act as an intrinsic incentive to be more sustainable by highlighting, within the developers' value creation strategy, the integration of urban features that positively influence the project scope, like resilience, climate adaptation, deployment of community facilities, or even community involvement, as they can represent a source of value from which developers can indirectly benefit as part of the implementation of USASs."

- **Implement is beneficial**

International practices illustrate the importance of developers acknowledging the implementation of USASs as means to achieve benefits that represent added value for them. The cases analysed during this research emphasize the role that the implementation of USASs can have as means to accomplish corporate drivers, in particular, competitiveness based on external recognition, reputation and long-term company vision. In addition to that, developers highlighted the value of the implementation as part of their marketing strategy and product positioning, from which highly sustainable urban features could unlock the highest market premiums as a result of high-profile tenant attraction. Moreover, the implementation can act as an intrinsic incentive to be more sustainable by highlighting, within the developers' value creation strategy, the integration of urban features that positively influence the project scope, like resilience, climate adaptation, deployment of community facilities, or even community involvement, as they can represent a source of value from which developers can indirectly benefit as part of the implementation of USASs. Furthermore, the implementation of USASs can act as means to get external incentives. For example, leading to potential access to special financing programs which require high standards of sustainability, as it currently happens with infrastructure projects. Thus, developers can attract investors and capital markets willing to get involved in sustainable projects. In that sense, the certification can be the means to improve the funding of the project and potentially become part of their financing strategy. Other markets have also suggested spatial planning incentives, which depend on the incorporation of ESD criteria into the sustainable urban policy sphere, and from which benefits can be shaped into compensation systems or advantages in special planning procedures. However, it is important to highlight that those potential benefits rely, as suggested before, on context-dependent implementation curves and market adaptation principles.

To recap, by implementing USASs it is possible to position those benefits as a means to incentivize developers to reach more sustainable outcomes, while at the same time, making it more beneficial for private actors to accomplish higher standards for urban sustainability. Thus, this sub-section positions the assessment: 1) As a means to accomplish organisational drivers, which makes sustainability more beneficial, 2) As a sustainability enabler by lowering down barriers and enhancing a more efficient decision-making process, 3) As a means to improve the development process in terms of strategic decision-making, 4) As a means to raise internal awareness and enhance more sustainable decisions, 5) As a means to achieve external incentives in a transition towards sustainable urban policies

Operationalisation of Conceptual Model based on findings

CHAPTER 6
Research Conclusion

6.1 Research Questions

As evidenced throughout this research, both theoretical and empirical studies propose the implementation of USASs in urban redevelopment projects as a means to analyse how to enhance more sustainable practices, with the final objective of stimulating the private sector to deliver greater public value to society. That exercise requires the alignment of incentives, the coordination between private actors, and the facilitating role of the public sector. Therefore, this research aims to conclude by giving a recap on how the insights from the study align with the bigger picture.

As mentioned in the second chapter, the goals of this research were first, to provide learnings based on the current practices and motivations behind the use of USASs, which could be structured as a recommendation for a potential improvement of BREEAM-NL Area and the practices related to it in the Dutch context; and second, to provide an overview of how market-driven rating tools for urban sustainability assessment can influence the decision-making process of developers, both from theory and practice. In line with these objectives, the research provides an answer to the following research questions:

- **RsQ1: Why do developers decide to implement USASs?**

According to the study, developers decide to implement USASs based on two main factors. Those are external drivers and intrinsic motivation. As market-driven sustainability assessments, they follow demand-supply and cost-benefit principles, which explains why developers' willingness to implement USASs relies on active demand by external parties, being private and public sector through their own means, on the expected benefits that they bring to the organisation as a source of value, and on the alignment between the organisational drivers and their sustainability drivers. Those three elements make the voluntary implementation a means for developers to achieve their organisational goals, mostly concerning reputational benefits, higher competitiveness, and long-term corporate vision.

- **RsQ2: How developers' decision-making can be influenced by the implementation of USASs?**

Based on the research findings, the implementation of USASs can influence the decision-making process of developers in three different ways; by playing a reflective role, a guiding role, and an evaluative role. Following that line of reasoning, USASs can respectively influence the organisational scope, the development process and the project scope of developers. Starting with the reflective role, the implementation of USASs can, to some extent, help project initiators assess their organisational scope. Although developers do not perceive it as part of the initial scope, the implementation can lead to discussions that set an open mindset. Communication then can become the trigger to raise awareness and thus, a potential source of inspiration for developers willing to outstand in the market. Hence, awareness and inspiration become potential drivers for reflecting and setting up higher sustainability ambitions. Therefore, the reflective role of the USAS can then translate into a positive influence on the organisational scope, and potentially, into feedback for the corporate strategy and business operations.

In second place, the implementation of USASs can have a guiding role, especially concerning the utility that it can bring in terms of assessing and defining strategic planning goals, which is a commonly seen a priority in a long-term urban redevelopment by developers whose business plan or development strategy foresees an active involvement in the area after the execution phase. Thus, it can positively influence decisions taken concerning the development process. The assessment's utility as a guiding tool is also complemented by a high influence in terms of process which is supported by the advantages that USASs bring in terms of communication management, team coordination and advice in terms of design and technical expertise.

In third place, the implementation of USASs can have an evaluative role, which based on this study, represents not only the possibility to evaluate different solutions based on multidisciplinary teams, but also the potential adaptation of their design and delivery methods to achieve the project scope. That means, on one hand, partially steering the decisions towards highly sustainable solutions, as long as the decision scope and the weighing-criteria process land within the developers' ambitions. On the other hand, it represents a potentially more efficient decision-making process in relation to technical specifications, mostly as a result of the knowledge acquisition process and the professional advice received throughout the assessment implementation. Those three scenarios set a field for potential influence in decision making at an organisational level, process level and project level.

Lastly, it is relevant to highlight that the reach of these roles is closely dependent on the initial scope of the assessment and the developer's perceptions of it. Therefore, based on how the implementation is perceived by the initiator, whether as means or as an end, and by extent whether perceived as voluntarily or enforced, developers define a position towards the assessment which makes the methodology more or less likely to influence their decisions. In other words, an implementation perceived as a checklist or enforced by external stakeholders is less likely to alter developers decisions than a voluntary implementation driven by the intention of setting ambitious goals.

- **RsQ3: To what extent does the developers' implementation of USASs lead to a more sustainable urban redevelopment project?**

From a developer's perspective, answering to what extent the implementation of USASs leads to a more sustainable urban redevelopment project poses different challenges. This research aimed to identify whether the assessment benefits perceived by developers could actually be seen as extra drivers for being more sustainable and thus, to what extent they can potentially help overcome existing barriers in the accomplishment of more sustainable outcomes. Following that logic, this research highlights the positive impact of implementing USASs as a means to achieve more sustainable urban redevelopments. Although the explicit impact of the assessment is difficult to quantify, and ultimately out of the scope of this research, USASs are perceived by market players as means to reach higher standards of sustainability following the triple bottom line approach. Moreover, the positive impact of the assessment as a sustainability driver mostly enhances process-oriented results and innovation within the industry, which is coherent with the experienced partial alignment between the benefits of implementing USASs and the developers' drivers for accomplishing a sustainable urban development, thus positioning the assessment as means to stimulate them.

However, answering this question also requires acknowledging some limitations, and thus, recognizing that decisions related to delivering a more or less sustainable outcome, and to some extent, whether to have a more or less financially attractive project, many times do not necessarily come from the evaluative practice itself. In that sense, as a result of the cost concern mindset that chases the industry, the decision to deliver more sustainable projects leans on an organisational alignment where goals and negotiables in terms of sustainability are ofter taken at a strategic level following a top-down approach. Thus, intrinsic ambitions and corporate decisions will have a higher

hierarchy than the operational trade-offs required by the assessment to make the project more sustainable from an urban perspective. Such limitation stresses the importance of understanding the role that the assessments can play in terms of reflection, guidance, and evaluation to improve their potential impact as described in RsQ2.

- **MRQ: How can sustainability be enhanced from a private sector perspective in urban redevelopment projects when implementing USASs?**

According to the study, when facing urban redevelopment projects, USASs can act as means deliver more sustainable urban outcomes. In fact, the developers' implementation of USASs can act as a private-sector driven incentive to stimulate them towards the delivery of greater public value to society. That means, in the first place, that the partial alignment between developers' drivers and implementation benefits, embodies an opportunity to stimulate higher sustainability standards, under the logic that the more beneficial it is for developers to enforce sustainable practices, the more sustainable they will behave, and thus, the higher the impact of the assessment will be as a means to achieve higher ambitions. Those benefits need to align with the scope of the organisation and its internal drivers to be sustainable, since otherwise, they will not represent added value for the implementing party, and although there is room for improvement on that, the incorporation of USAS appears as a favourable option.

In the second place, this research evidences that USASs can act as sustainability driver, or enhancers, by lowering down existing barriers in the implementation of sustainable solutions. Although the role of the assessment as a sustainability enabler is limited, it does represent an opportunity to positively influence the project outcome. The barriers overcame, mostly relate to knowledge acquisition, awareness and acquired expertise, which beyond translating into an intrinsic value for the company, enhance the feasibility of more sustainable practices. In third place, the limited but potential influence on the developer's mindset, complemented by the experienced benefits from the assessment, play a potential role as a catalyst for change in their value creation strategy, for which criteria like resilience, climate adaptation, deployment of community facilities, or even community involvement, can start to represent a source of value from which developers can indirectly benefit as part of the implementation of USASs. Thus, it sets a path to bring the private sector on board to effectively address the transition and implementation of more sustainable urban policies.

6.2 Reflection

The objective of this sub-chapter is to critically reflect about the presented research. Every research has limitations, challenges, and thus, room for improvement. By acknowledging the limitations and reflecting on the methodological decisions taken, it is possible to understand which implications does this research have in a broader context, both in academy and in practice.

Research Relevance

Sustainability as an overarching term has become an everyday practice in human behaviour. Going from the general to the specific, all actors involved in society have taken a position towards the challenges that reaching a sustainable future represents. Thus, each party has found its own means to help accomplish this mission. Sustainability and private sector are two variables that tend to be addressed with scepticism. Therefore, this research becomes relevant as an attempt to understand how existing sustainability assessment tools are being used in practice, and which role can they play as means to assist the decision-making process of developers at an urban level.

By combining literature review with explorative interviews, it was possible to illustrate the current Dutch practices in relation to the implementation of BREEAM-NL, and by complementing it with project-based information, it was possible to better orient the findings of this research towards a more pragmatic outcome. Moreover, by assessing international practices, it was possible to depict how, to what extent, and why the implementation of urban sustainability assessment systems represents an opportunity to influence the decision-making processes of developers towards more sustainable practices. That insight aligns within a broader picture which makes us reflect on how to stimulate the private sector through the alignment of drivers and incentives, while aiming to steer more sustainable organisational ambitions.

Research Design and Methodology

The proposed research design took as a starting point a qualitative approach to try to address the dynamism of the field of study. By initially defining a base case, it was possible to set up a field for potential lesson drawing. However, triangulate information through parallel case-study analysis represents several challenges in terms of data collection, time and collaboration, as the number of cases becomes one of the factors for reliability. Although the definition of a conceptual model made the case study analysis possible and seemingly efficient, limitations on research scope and time-consuming data processing became critical elements, as narrowing the scope represents an opportunity to go deeper, but also implies missing valuable information that enriches the quality of the research. Such paradox is commonly seen on existing research and therefore, it is necessary to acknowledge that a research proposal with less concepts might have provided more specific outcomes, but would not have had the clarity needed about existing dynamics to provide advice on the complexity of current practices. It is also relevant to highlight the role that flexibility plays in research design, as defining guidelines and parameters is crucial to enhance research reliability, but to some extent can also represent a burden when confronted with empirical limitations. Thus, a margin of adaptability is necessary to reach the best possible outcome within the capabilities of the research. In our case, that meant adjusting the criteria for case study selection and interviewee profile within reasonable margins to better align with the willingness to collaborate from private parties.

According to the methodological framework, the research aimed to align with both the pragmatic nature of urban development practices and projects, and the need to develop conceptual (management) knowledge for academics. Following that line of reasoning, defining the base case trough both literature review and empirical review was a coherent choice to identify what the differences between theory and practice where for the current Dutch practices. Moreover, it helped in the iterative process that led to the consolidate the conceptual model needed to analyse the case studies. Incorporating at a later stage a Dutch case also helped to refine the base case for lesson drawing, as it was relevant to complement the analysis with project-based evidence that explicitly addressed the developers' perspective.

The parallel case-study analysis required a first individual analysis of the three international cases, and a further comparative analysis between the three of them through patter identification. Such process took mostly into account patterns regarding similarities, as those similarities allow to better evidence context independent variables for potential lesson drawing. In addition to that, the objective of translating findings through pattern

identification was to achieve trustworthy analytical generalizations, and although it is clear that the data sample does not necessarily represent the broader perception of the analysed markets, by analysing outstanding projects, it is more likely to find inspiration for potential lesson drawing. The conclusions from the parallel case-study analysis were then contrasted with the conclusions from the Dutch base case to be able to reach the outputs of this research.

Following that line reasoning, it is relevant to highlight that implementing case-studies as a methodological approach required repetition and a pre-structured definition of variables which makes the analysis time-consuming and demanding. There is one last component which was only briefly discussed during this research; the possibility of introducing an expert panel to externally validate the findings as it have been useful to assess their quality and utility. That testing has not been achieved on time due to delays with the collection of empirical data. This translates into a limitation in terms of applicability, since having feedback and comments from experts could increase the relaiability of the generalizations adressed in the findings. Thus, to move forward with the utility of this research, that task remains responsibility of future researchers.

Case-Study Selection

The selection of case studies was an iterative process where, as explained before, adaptation was required. Since both the literature review and the explorative interviews were used to define the criteria for case selection, it was possible to set reliable basis for comparability, which however, implies by contrast acknowledging how their differences can also have an impact on the analysis of patterns. That is of particular of importance since analysing projects in different contexts, implementing different USASs, and different institutional dynamics represents the necessity to acknowledge context dependent variables and the impossibility of transferring lessons one-to-one, as stated in section 2.3. Although that represents a challenge in terms of methodology, having identified relevant differences and critics in relation to it during the literature review was of great value, as it allowed to have a prior knowledge level which could enhance critical thinking. Moreover, the limitations on assessable projects due to the novelty of the field narrowed the selection process while the relative low response from potential interviewees translated into a timely process of empirical data collection. On the other hand, the international case studies assessed, as well as the Dutch one, highly fulfil the expectations of the research by displaying exemplary characteristics, both as a source of learning and inspiration.

Throughout the selection process, some relevant reflections came also to the table in relation to the applicability of the findings and how the project characteristics somehow dictate their relationship with the Dutch context. Starting with the scale, most of the projects certified with USASs don't have a masterplan scale. They still tend to be building oriented or block-oriented, therefore changing the scope of assessment. This directly relates to the project's programme. Most of the projects have a single owner and a monofunctional oriented programme, which depending on the context can be housing or elderly homes (UK), commercial functions (US), private organisations (AUS) or business and logistics parks (NL). These aspects already drastically limit the available choices to set up comparative case studies. If we complement these pattens with the usual greenfield location of such projects, we can already see some decisions in terms of the selected cases. They all strive for brownfield redevelopments with mixed uses and, to some extent, for social sustainability and local involvement as core premises of their scope. They also have a masterplan scale, where long-term commitment and active involvement of local authorities are needed, even when private actors are the ones initiating the project. These are all aspects that can be seen as a source of inspiration for the redevelopment of Dutch cities. Moreover, the governance of the selected projects has remarkable similarities with the Dutch redevelopment context, where area redevelopment is driven by collaboration instead of being the result of huge market actors imposing impressive capital investments and high-density proposals in the urban landscape.

Data Collection and Findings

As a starting point for the research, the literature review provided the basis to manage this research from an academic perspective. Then the input from the empirical review, both from explorative interviews and in-depth interviews started to gradually complement, and to some extent confront, the theory and the practice. In that sense, coming back to literature was of high value to be able to conceptualize the findings and built the two outputs of this research. Data collection had different challenges like the low leverage that the "student hat" had in countries outside Europe, or the impossibility of physically reaching the office of collaborators, which could have potentially increased the participation rate and data sample. Moreover, the document review was limited by several factors, like the relatively a small data pool from which cases could be selected based on the pre-established criteria, the restricted accessibility to hard data, and the field of research itself, since information about elements like intention and perception are difficult to quantify, and thus are not commonly present in public available information. On the other hand, that only accentuates how relevant it was to go for in-depth interviews as a method of data collection, since it allows to gather knowledge about subject perception and contextual understanding. For the data processing was crucial to go back to the literature and try to conceptualize the gathered information to build up comprehensible sets of data. Moreover, those sets made it possible to illustrate the principles addressed in the recommendation and proposed framework. Lastly, the applicability of the framework remains limited to the academic analysis, mostly because it provides an insight into the research that has not been tested by field experts to inquire about its suitability to inform and convince.

Process and Position within MBE

The graduation process, as described by one of my supervisors, is like your first walk in an unknown city. While walking new places, everything looks interesting, everything looks attractive, and sometimes you might get distracted by the captivating shine of novelty. Some distractions might lead to dead ends and sleepless nights. Some others, create great memories, and all together they built up what will end up being your personal learnings from an MSc thesis. Throughout that process, iteration and curiosity guided a path filled with enriching feedback loops and then, the support from my supervisors was key to land a rewarding outcome. From each milestone achieved, a new challenge came to the table and then, being able to add some flexibility while following the research structure proved to be necessary to accomplish a methodologically coherent outcome. The final result of this thesis highlights how ambition and motivation need to be handled with precaution since reaching a realistic result requires to walk with a goal. You will not reach Rome if you pick up every stone.

This research is part of the Management in the Built Environment (MBE) track of the MSc Architecture, Urbanism, and Building Sciences program at the Delft University of Technology. The research has been developed at the intersection of two main disciplines within the MBE master track, the Urban Development Management (UDM) and the Real Estate Management (REM)

chairs. On one side, UDM focuses on designing concepts, principles, and instruments that support effective strategies with outcomes that produce and promote an urban environment that meets the demands of sustainability and resilience, hence using process, place, product, and people at the centre of the research. On the other side, REM addresses changing goals in society and organizations, sustainability requirements and feasibility from an user perspective, aiming to deliver value towards a resilient future. Within this research, those two fields intersect in a single question: How can sustainability be enhanced from a private sector perspective in urban redevelopment projects? Following that logic, we aim to inquiry what are the means, how can they be used, and what are the main variables that need to be taken into consideration when willing to implement market-driven rating tools as a strategic component to deliver value to society in urban redevelopment projects.

6.3 Framework for Analysis

As a final step in this research, the evaluation of our findings led to a model that, by illustrating the relationship between the different variables addressed through the conceptual model, exemplifies the potential impact that USASs can have on developers' decision-making process. This framework takes as a starting point the definition of concepts retrieved from both literature and empirical review (See section 2.3 Analytical Case Study Model), and exposes the findings from the parallel case study analysis as a means to demonstrate, from an analytical perspective, how the assessed variables interact. Although this framework has mostly an academic application due to its limitations as a communication tool, it can be seen as an early step in theory development.

Figure 72 presents a stylized picture of the framework underlying the primary focus of this research, the potential impact of USASs in developers' decision-making process. As expressed in the introduction, the existing gap between sustainability assessment methods and decision-making processes needed to be filled to ease the transition towards a broader definition of value into the business rationale of developers (Jackson & Orr, 2021). Such scietific gap positioned this research and lead to the final model. The graph represents a decision-making model that maps the areas of influence of USASs

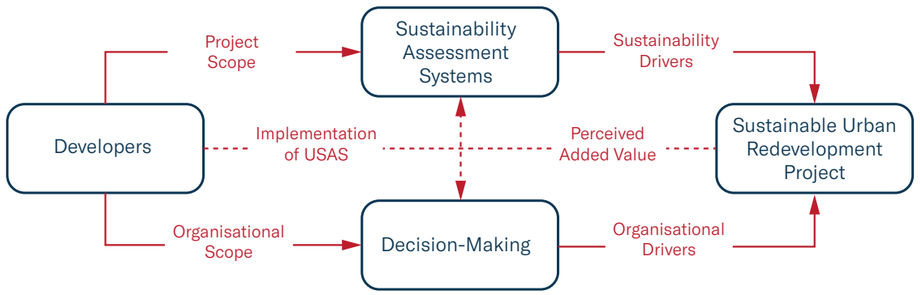
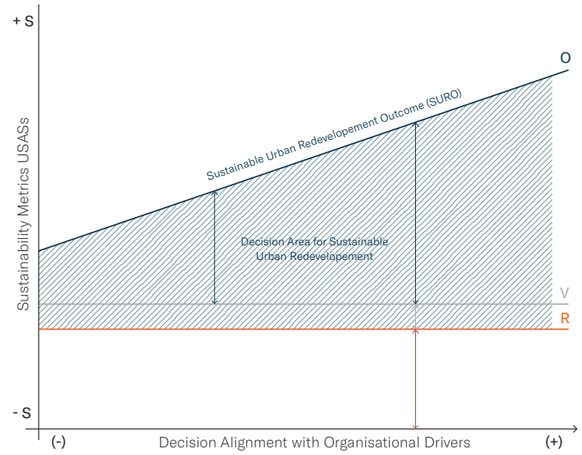


Fig. 7.
Analytical case study model (Conceptual Model)



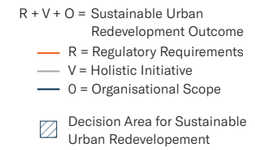


Fig. 72
Stylized conceptual framework for the impact of USASs in developers' decision-making process (1). Own figure.

in relation to a single taken decision concerning the potential Sustainable Urban Redevelopment Outcome. The vertical axis indicates the sustainability metrics of a specific decision measured through USASs standards, going from less sustainable to more sustainable. It can be exemplified by a generic "X Star outcome", or by particular criteria component within the assessment. The horizontal axis indicates the alignment of the analysed decision with the organisational drivers of the developer, going from lower alignment to higher alignment. Following these two parameters, the figure can allow us to see conceptually what the qualitative relationship between the variables is, and evaluate the recommendations in section 5.3 and 5.4 from a developer's perspective.

The minimum levels of sustainability are defined by the regulatory requirements (R) that local authorities set for the specific project. From there on, two factors define the Sustainable Urban Redevelopment Outcome (SURO); the first one is the developer's holistic initiative to reach more sustainable outcomes (V), which although limited should not be disregarded, and the second one is the organisational scope (O) which sets the ambitions for the project in terms of sustainability. Following a market logic, the more beneficial it is for developers to be sustainable - either in terms of organisation, process, or product – the more sustainable they will strive to be. Thus, the higher the benefit - in terms of alignment between a certain decision and the organisational drivers, the higher the ambition in terms of sustainability will be for the project. That explains the positive slope of the organisational scope (O). Those three components define the potential Sustainable Urban Redevelopment Outcome and frame the decision area.
As shown in figure 73, at the time of setting up a sustainability goal for an urban redevelopment project (G), the developer is confronted with the barriers (B) that such ambition entails. The intersection where ambitions and barriers meet is then the braking point for decision making, where the developer has to weigh his decision-making criteria – being organisational drivers and barriers – to define whether it is feasible to reach the goal. That weighing process bisects the decision area into two regions. On the left side of the decision axis (D) the ambitions do not reach the goal, which means that the motivation - in terms of alignment between the decision and the organisational drivers is not strong enough– to make the sustainability goal realistic. On the right side of the decision axis (D) the ambitions are higher than the goal which makes the decision concerning that outcome realistic.

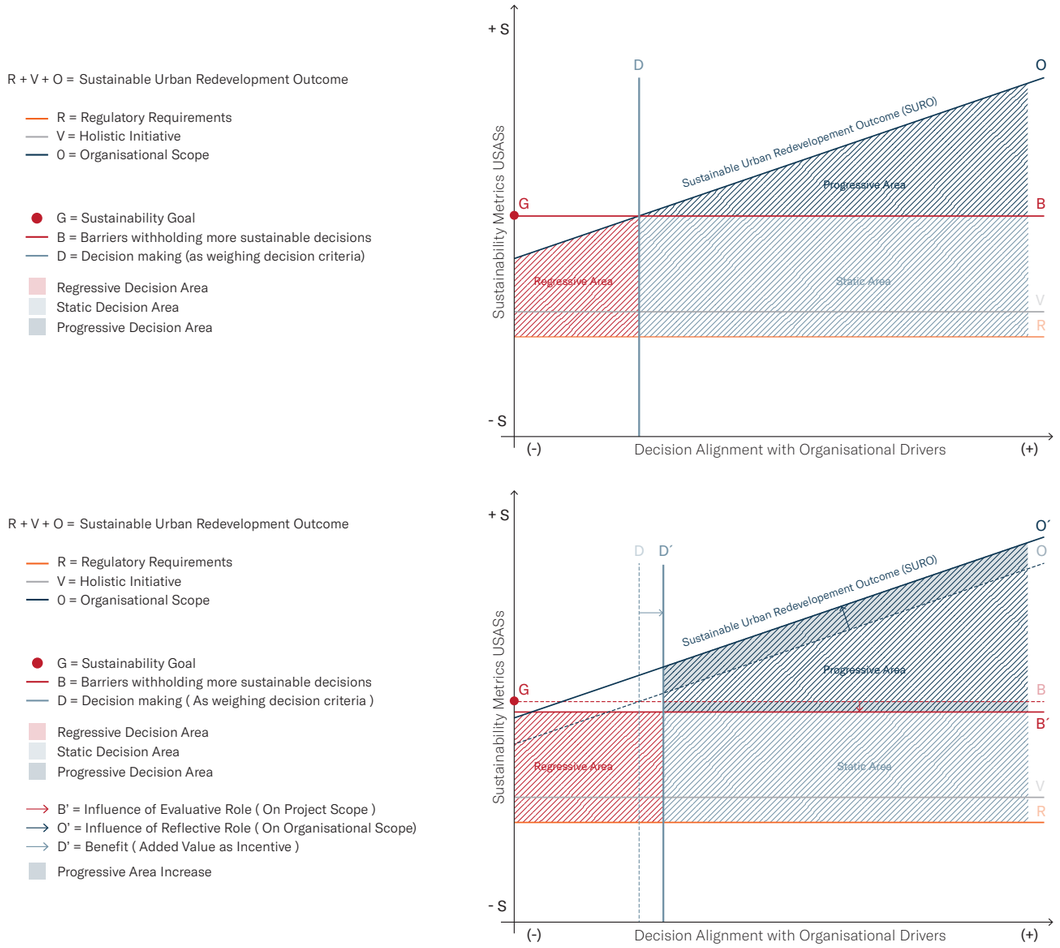


Fig. 73
Stylized conceptual framework for the impact of USASs in developers' decision-making process (2). Own figure.

Fig. 74
Stylized conceptual framework for the impact of USASs in developers' decision-making process (3). Own figure.

Moreover, when developers implement USASs as an evaluative practice, those decision areas represent different possible responses to the assessment. On the left side, the Regressive Area represents a set of decisions where no influence of the assessment is taken into account, as the barriers are higher than the ambitions, and thus, those decisions are considered unfeasible. On the right side, two possible scenarios appear. The first one is the Static Area, where although there is enough ambition by the developers to reach the goal, the barriers are still higher than the organisational drivers and thus, positive responses from the assessment are later deprioritised, leading to lower sustainable outcomes. The second one is the Progressive Area, where the alignment between the decision and the organisational drivers is high enough to overcome the existing barriers, thus leading to a positive response from the assessment and a highly sustainable outcome resulting from a beneficial decision.
Based on this research, a positive influence of USASs was evidenced in relation to the decision-making process of the developers. Following that line of reasoning, this framework exemplifies those findings by analysing the impact that the assessment can have on the same decision (D). As show in figure 74., as part of the knowledge acquisition process that characterizes the Evaluative Role, USASs were able to help overcome certain barriers that would otherwise withhold the implementation of more sustainable practices (B) – mostly in the fields of organisational internal and technical knowledge – thus, having a positive influence on the project scope by lowering down existing barriers (B'). At a decision'making level that represents an opportunity for developers to more easily accomplish their sustainability goals in relation to the project.

On the other hand, the implementation of USASs highlighted a potential influence on the develoeper's mindset, thus positively influencing their organisational scope and, by extensions, their sustainability ambitions (O). Hence, the Reflective Role can rise awareness and therefore, unlock more sustainable outcomes though reflection and inspiration (O'). At a decision-making level that translates into potentially higher aspirations in terms sustainability. Those two complementary ways of influencing decision-making represent an opportunity to increase the progressive area. In practice, that means increasing the possibility of the assessment clearly informing and thus steering the decision towards more sustainable outcomes in urban redevelopment projects.

Lastly, USASs can act as means to align organisational drivers and sustainability drivers though the perceived added value that developers have identified on the implementation. Hence, the assessment as a means to accomplish organisational drivers can lead to benefits that partially align with their drivers and thus, leads them to achieve their goals. That means, on one hand, reaching a higher alignment of the decision with their organisational drivers, and thus to a higher benefit from taking the same decision (D'), and on the other hand, acknowledging those benefits as a mean to incentivize developers to reach more sustainable outcomes.

The synergy behind this model allows to evidence in a more comprehensive way that by implementing USASs, developers can reach more sustainable decisions, make earier decisions, and get more benefit from those decisions. Thus, the positive impact of USASs in developers decision making represents an opportunity in terms of incentive alignment, by potentially leading to both more sustainable outcomes and more beneficial outcomes for developers as shown in figure 75. Finally, it is worth to highlight that there is still a high potential for further alignmen, for which the reccomentdation of this thesis aims to provide some insight on possible solutions.

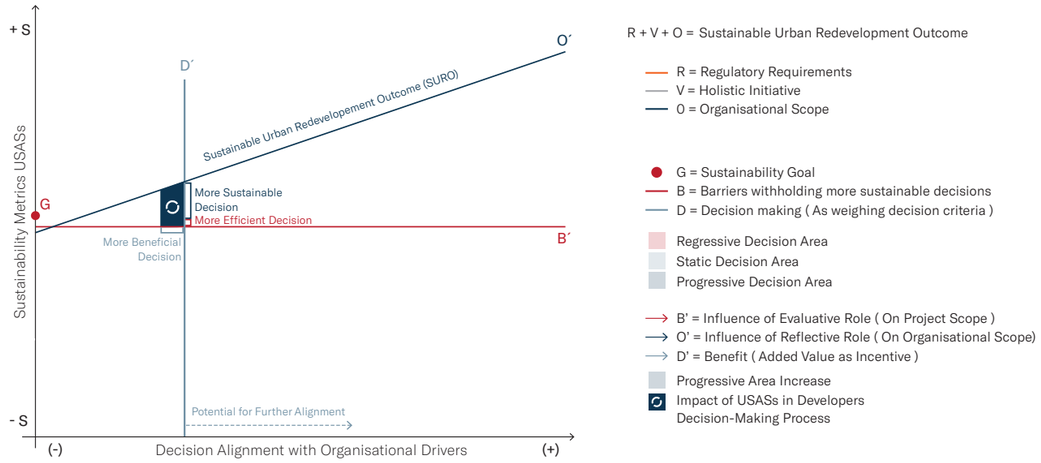


Fig. 75
Stylized conceptual framework for the impact of USASs in developers' decision-making process (4). Own figure.

6.4 Inspirational Lessons

As stated in Chapter Two, the aim of drawing inspirational lessons is not to copy rigorously from one context to the other, but to build potential sources of inspiration that require further analysis to be applicable in the Dutch context. Thus, the set of elements highlighted in this section act as part of the thesis reflection and their transferability should be critically assessed by the reader.

- The carrot should be perceived as a carrot to act as a carrot

As a starting point for inspirational lessons, the international context illustrates how relevant it is for market-driven USASs to be perceived as a voluntary choice. It is not surprising that voluntary actions generate in developers a different response to the challenges that the implementation poses in terms of commitment. Willing to enhance the implementation of USASs as means to incentivize more sustainable outcomes from developers makes sense based on this research findings. Hence, it is a possible path to lead developers into higher standards of sustainability in urban redevelopment projects, and it mostly involves the coordination of private actors within the value creation process, plus the facilitating role of public parties. Thus, it could be perceived as a private-sector driven incentive, but its potential influence is highly dependent on a voluntary perception of the assessment. In that sense, the carrot needs to be perceived as a carrot to release its whole potential.

- Blow with the flow

International markets show a growing tendency to involve USASs as sustainable development criteria, whether by local authorities, clients, or social actors. The aforementioned pattern aligns with the fact the implementation is mostly driven by active demand, thus emphasizing the role that clients, both public and private, as well as institutional investors, play in the market uptake of these assessments. Although each context lands within its own institutional environment, they all recognize the need to bring on board the private sector to provide the public value that local authorities are sometimes not able to guarantee because of limited capabilities. Thus, USASs are being evaluated as means to achieve those outcomes, and therefore, local authorities are exploring how to incorporate them as means to enhance public value.

- The best is yet to come

Pilot projects and frontrunner initiatives are key elements when testing innovative means to cope with societal needs. However, they also represent special challenges for the parties involved, thus hindering the further implementation of certain solutions. Following that logic, enforcing the implementation of market-driven solutions might be a short-term option, based on the implementation curve and the early-stage adoption phase that USASs are facing. However, that might not be likely to work in the long-term, unless the market adoption exponentially grows, as it could limit the real potential of voluntary implementation and potentially cause negative effects in terms of competition and market intervention. Moreover, the relative misalignment between potential benefits and experienced benefits could, to some extent, rely on the early adoption phase that markets and policymakers are facing to assimilate the implementation of the USAS as a new component within the sustainable urban development practices. Thus, the further we move, and the higher the synergy between actors involved, the more value it could represent for society, and developers.

- Trust the synergy towards more sustainable practices

USASs are the tip of the iceberg on a synergy that involves all professionals involved in the built environment. In that sense, this thesis does not want to exemplify urban sustainability assessment systems as the pot of gold that will pay for the future of urban redevelopment. However, they do represent one of the many components from which the industry can draft lessons toward a more responsible future. Based on this research, the risen awareness and acquired knowledge from the implementation of USASs can help shape the way corporations behave, both at a business level and in everyday practices, thus enhancing the industry's maturity towards more sustainable practices.

- Increasing the added value involves market adaptation

As exposed during the recommendations, the value of USASs foresees both intrinsic components and external factors. By improving the intrinsic components and steering external factors it is possible to maximize the potential benefits of the assessment, which is crucial to convincing developers to reach high standards of sustainability beyond compliance. Those two components involve market adaptation, from the supply and demand side, to be able to reduce barriers while increasing the benefits. That common effort demands collaboration, all together towards the bigger mission.

6.5 Recommendation for Further Research

This research touches upon different streams of academic research and thus, by defining the scope of it, some limitations set a path toward potential future research. In the first place, this research relies on the idea that by implementing USASs, a more sustainable outcome is achieved, and by extension does not go deeper to inquire about the used metrics as they belong to a general consensus. Although this statement is confronted and confirmed with practice through qualitative criteria, a quantitative inquiry of the metrics, and would be useful to evaluate the delivery of assessed projects. This first research stream closely aligns with the comparative studies that address specific assessment components and aim to inquiry whether the way USASs work are the right way to measure sustainability

A second stream of research could use the current alignment between USASs and developers' organisational drivers to deeply analyse which specific actions need to be deployed by different market actors, to increase the potential impact of the assessment as means to incentivize more sustainable redevelopments. To do that, the recommendations from this thesis should be externally validated to afterwards define a possible strategy to integrate different stakeholders around the implementation of USASs. That set of recommendations would be valuable to keep steering the market synergy towards a broader idea of value enhanced by the private sector towards the accomplishment of public good.

A third possible research could move forward with the early steps in theory development exposed through the framework for analysis. Some interesting discussions have raised around what would be the result of implementing the same principle to bring other perspectives on board. As an analytical tool it could lead to operationalise variables which are not simple to visualize.

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Appendix A

Example Exploratory Interview Protocol

Understanding the Dutch Practices

Explorative Interview #X
Date: XXX
Interviewee: Name

Contact Email

Dear XXX,
My name is Gian Carlo Carini, and I am a Management in the Built Environment master's student at TU Delft. I am currently working on my graduation thesis, which happens to be tightly connected to your field of expertise. I saw that you were involved in the BREEAM_ NL Area certification of the Project XXX and I would love to hear about your experience in this process.
My research, in collaboration with Erwin Heurkens & Hilde Remoy, addresses the implementation and impact of rating tools (BREEAM_NL Area) in Dutch urban regeneration areas. To better understand the Dutch context and best practices, I would like to know if you would be interested in participating and sharing some of your knowledge to enrich this research process.
If the answer is yes, we could set up a short online meeting (30 min) in the upcoming three weeks and get to talk a bit more about your experience.
I could also share with you more details about the scope of the research,
Looking forward to hearing from you,
Thanks for your time,
Gian Carlo Carini

Interview Protocol

Prior Relevant Information

-Description of the organisation, role and profile relevance of the interviewee.
-Relationship of the interview with the scope of the empirical research phase.
-Prior relevant information needed to be considered for the interview (References, Context, Document Review)

Methodology and General Considerations

· Kind Rapport
· Semi-Structured Interview
· Open and Non-Suggestive Questions
· Neutral Probing Technics

The main objectives of the interview are:
· To provide a better understanding of
· To collect information about the current Dutch practices related to the use of BREEAM-NL Area Certifications.

Introduction

· Welcoming message (Ask for permission to record and confirm use of information for academic purposes)
· Role as TU Delft Students
· Description of the Research Topic – Thesis abstract
· Relevance of the research
· Interviewee suitability for the study

Questions

1. Warm-up and Framing

1.1 Topic (Framing)
Could you briefly introduce yourself and describe what your role within the XXXX is?

1.2 Topic (Framing)
What is the role of XXXX in the Dutch industry?

2. BREEAM-NL Area

2.1 Topic: (Needs for a local scheme)
What were the drivers to create a Dutch certification scheme?
What are the main differences between BREEAM-CM Communities and BREEAM-NL Area?
Do they use the same assessment system? How comparable are they? (Criteria, Metrics)

2.2 Topic: (Timeframe)
When does the certification process take place?

2.3 Topic: (Stakeholder Mapping)
Who are the main stakeholders involved in a BREEAM-NL Area certification process?

2.4 Topic: (Process)
Could you explain the certification process for BREEAM-NL Area?

2.5 Topic: (Project Characteristics)
Which kind of projects apply for the assessment?

2.6 Topic: (Drivers)
Why do developers apply for BREEAM-NL Area?
What are the main drivers for developers?
What are the benefits of having a certified project?

2.7 Topic: (Limitations)
What are the practical barrier for the implementation of BREEAM-NL Area?

2.8 Topic: (Current Practices)
How would you assess the implementation of BREEAM-NL Area by the Dutch market?

2.9 Topic: (Challenges)
What are the main challenges behind market implementation of this assessment system?

2.10 Topic: (Impact)
Can BREEAM-NL Area assess the decision-making process of developers? Example?

Interview Transcript

Interview transcript available upon request, following all ethical considerations under the protocol of anonymity and confidentiality. Based on Bhandari, (2021)

Appendix B

Example Case Study Interview Protocol

Case Study XXX
Interview #
Date: XX
Interviewee: XXX

Contact Email

Dear XXX,
My name is Gian Carlo Carini and I am an MSc student in Management in the Built Environment (MBE) at Delft University of Technology (Netherlands). I am currently working on my graduation thesis “The Impact of Sustainability in Developers' Decision-Making Process", supervised by Dr. Erwin Heurkens and Dr. Hilde Remoy.

https://www.tudelft.nl/onderwijs/opleidingen/masters/aubs/msc-architecture-urbanism-and-building-sciences/master-tracks/management-in-the-built-environment

As part of this MSc research, I am conducting and comparing international ‘frontrunner’ case studies on urban redevelopment projects with sustainability certifications. My research addresses the implementation and impact of sustainability assessment systems in urban redevelopment projects from a private sector perspective. Based on desk research I have selected the ProjectX for further study as one of my three case studies, and according to what I found online I assume that you have been directly involved in this project. Learning from your experience as Role X would tremendously enrich the research.

Therefore I would like to kindly ask you if you would be willing to spend 1 hour of your time sharing your professional insights and expertise with regard to this project in an online interview. This conversation would be highly valuable to our scientific research, and I am more than willing to provide you with the latest insights from theory and practice with regard to the topic. In addition, the conversation will be confidential, qualitative data gathered during the interviews is anonymized in my thesis report. The final thesis report with an international comparative case study research (in US, UK, AUS) will be sent to you once completed of course.

Please, let me know whether you are available for an interview, and do not hesitate to contact me, or suggest a direct colleague for this interview if this is more to your convenience. We really appreciate it.

Thanks for your kind help,
Best Regards

Interview Protocol

Prior Relevant Information

-Description of the organisation, role and profile relevance of the interviewee.
-Relationship of the interview with the scope of the empirical research phase.
-Prior relevant information needed to be considered for the interview (References, Context, Document Review)

Methodology and General Considerations

- Kind Rapport
- Semi-Structured Interview
- Open and Non-Suggestive Questions
- Neutral Probing Technics

The main objectives of the interview are:

- To collect information about the interviewees experience in relation to the implementation of USAS X in project XXX

Conceptual Model used for Data Analysis

Introduction

- Welcoming message

(Ask for permission to record and confirm use of information for academic purposes)

- Role as TU Delft Students
- Description of the Research Topic – Thesis abstract
- Relevance of the research
- Interviewee suitability for the study

Questions

Research Question		Research Sub-Question	Concept	Sub-Concept	Interview Questions
MRQ How can sustainability be enhanced from a private sector perspective in urban redevelopment projects?	Before Implementation	**RsQ1** Why do developers decide to implement USASs?	Sustainability Assessment System Implementation	Assessment Scope	What was the scope of the assessment?
					Why did you implemented the USAS?
				Assessment Drivers	What were your motivations to implement an USAS?
					What led you to implement the assessment?
				Assessment Barriers	What were the main barriers experienced in relation to the implementation?
					How did you overcome these barriers?
	During Implementation	**RsQ2** How developers' decision-making can be influenced by the implementation of USASs?	Decision Making	Organisational Scope	Did the assessment made you reflect about your organisational scope?
					Did the assessment influenced how sustainable you should be as an organisation?
				Development Process	Did the assessment influenced the decision taken in terms of development process?
					Did the assessment guide you throughout the masterplanning and design process?
				Project Scope	Did the assessment influenced the decision taken in relation to the project scope?
					Did the assessment help you assist decision in relation to technical aspects?
	After Implementation	**RsQ3** To what extent does the developers' implementation of USASs lead to a more sustainable urban redevelopment project?	Sustainable Urban Redevelopment	Perceived Added Value	What were the benefits from assessing the project?
					How did the assessment translated into added value for the organisation?
				Sustainability Drivers	Did the assessment help you overcome existing barriers?
					Do you think the implementation of a USAS led to a more sustainable outcome?
				Organisational Drivers	Do you think these assessments could be seen as a private sector incentive?
					Where there any incentives for implementing the assessment?

Interview Transcript

Interview transcript available upon request, following all ethical considerations under the protocol of anonymity and confidentiality. Based on Bhandari, (2021)

Appendix C

Interview Reference List

Case	#	Ref. #	Project	Role	Status	Interview Date
Dutch Base Case	1	1	Explorative Interviews	PM/BREEAM-NL	Done	2/12/2021
	2	2	Explorative Interviews	Sustianability Expert	Done	3/12/2021
	3	3	Explorative Interviews	Sustianability Expert	Done	15/12/2021
	4	4	Wisselspoor Redevelopment	PM/Real Estate Developer	Done	23/02/2022
	5	8	Wisselspoor Redevelopment	PM/Real Estate Developer	Done	15/04/2022
UK Context	6	5	Aylesbury Estate Redevelopment	Sustainability Expert	Done	4/03/2022
	7	9	Aylesbury Estate Redevelopment	Urban Researcher	Done	20/04/2022
	8	11	Aylesbury Estate Redevelopment	Social Researcher	Done	25/04/2022
AUS Context	9	6	Brisbane Showgrounds Redevelopment	PM/Real Estate Developer	Done	11/03/2022
	10	7	Waterloo Metro Quarter Redevelopment	PM/Strategic Board Member	Done	12/04/2022
	11	12	Waterloo Metro Quarter Redevelopment	Sustainability Expert	Done	26/04/2022
	12	10	Waterloo Metro Quarter Redevelopment	PM/Real Estate Developer	Done	22/04/2022

Appendix D

List of Figures

Appendix E

Dutch Current Practices

NL BASE CASE - DUTCH CURRENT PRACTICES				
RESEARCH SUB-QUESTION	CONCEPT	SUB-CONCEPT	CATEGORY	RESULT
RsQ1 **Why do developers decide to implement USASs?**	**Sustainability Assessment System Implementation**	**Assessment Scope**	Project Perspective External	Reliable Metrics
			Organisational Perspective External	Reputational Business Strategy
			Organisational Perspective Internal	Not Clear vision whether Means or End Scope
			Legislative External	Local Authorities Procurement
		Assessment Drivers	Financial External	Attract Investors Attract Clients / End Users
			Organisational Internal	Helpful Methodology for sustainability assessment
			Organisational Internal	Initiatives of Process Optimisation
		Assessment Barriers	Organisational Internal	High Workload and Time Consuming
			Financial Internal	High Indirect Cost
			Organisational Internal	Low Internal Knowledge Low Initial Ambition
			Organisational External	Low Demand Low Knowledge Transfer
			Organisational External	Misalignment with Technical Requirements

Fig. 33
Results for RsQ1 from interviews 1,2,3,4.

NL BASE CASE - DUTCH CURRENT PRACTICES				
RESEARCH SUB-QUESTION	CONCEPT	SUB-CONCEPT	CATEGORY	RESULT
RsQ2 **How developers' decision-making can be influenced by the implementation of USASs?**	**Decision Making**	**Organisational Scope**	Reflective Role Organisation	Neutral though modest perception Potential redefinition of Sustainability Ambitions and Goals
			-	-
			-	-
		Development Scope	Guiding Role Process	Potential Improvement of Planning Process Predictability
			Guiding Role Process	Improve Management Practices
			-	-
		Project Scope	Evaluative Role Product	Assist Potential Trade-Offs
			-	Appraise Different Options
			-	-

Fig. 34
Results for RsQ2 from interviews 1,2,3,4.

NL BASE CASE - DUTCH CURRENT PRACTICES				
RESEARCH SUB-QUESTION	CONCEPT	SUB-CONCEPT	CATEGORY	RESULT
RsQ3 **To what extent does the developers' implementation of USASs lead to a more sustainable urban redevelopment project?**	**Sustainable Urban Redevelopment**	**Perceived Added Value**	Benefit Financial	Possible Access to Financing Attract Investors and Tenants
			Benefit Legislative	Possible Procurement Eligibility Possible Regulation Predictability
			Benefit Organisational External	Possible Reputation Possible Marketing
			Benefit Organisational Internal	Internal Awareness Potential Retrofit Corporate Strategy
		Sustianability Drivers	Imapct Product	Can potentially help overcoming existing barrier associated to sustainability measures
			Imapact Organisational Internal	Intrinsic motivation as main driver
			Imapact Product	Positive influence is not quantifiable
		Organisational Drivers	Incentive Organisational Internal	Rises Awareness and Discussion Catalyst for a change in mindset
			Incentive Organisational Internal	Goals and negotiables in terms of sustainability are taken at a strategic level
			Incentive External	Could potentially act as means to get external incentives

Fig. 37
Results for RsQ3 from interviews 1,2,3,4.

NL Case 1

NL CASE - WISSELSPOOR REDEVELOPMENT				
RESEARCH SUB-QUESTION	CONCEPT	SUB-CONCEPT	CATEGORY	RESULT
RsQ1 **Why do developers decide to implement USASs?**	**Sustainability Assessment System Implementation**	**Assessment Scope**	Project Perspective External	Perceived as a reliable methodology but relative low awareness of its utility in relation to urban scale sustainability features by market marties
			Organisational Perspective External	Planning Requirement for change in Land Use Plan Partial alignment between corporate strategy and assessment scope
			Organisational Perspective Internal	End to proof high sustianability standards Scepticism about the assessment scope depending on voluntary or enforced implementation
		Assessment Drivers	Legislative External	Driven by a regulatory requirement
			Financial External	No demand from investors
			Organisational Internal	Scepticism about methodology
			Organisational Internal	Pilot Project: Opportunity for local authorities to learn
		Assessment Barriers	Organisational Internal	High Workload and Time Consuming Work Scope Limitations
			Financial Internal	High Indirect Cost
			Organisational Internal	Low Internal Knowledge
			Organisational External	Low Municipal Knowledge and Hesitance (Limited Internal Capabilities)
			Organisational External	Non comparability with municipal standards Limitations to collect long term evidence due to uncertanty

Fig. 40
Results for RsQ1 from interviews 4,8.

NL CASE - WISSELSPOOR REDEVELOPMENT				
RESEARCH SUB-QUESTION	CONCEPT	SUB-CONCEPT	CATEGORY	RESULT
RsQ2 **How developers' decision-making can be influenced by the implementation of USASs?**	**Decision Making**	**Organisational Scope**	Reflective Role Organisation	Can potentially enhance a more ambitiuos company vision through repetition
				Can potentially enhances a broader perspective of Area vs. Building (circularity and biodiversity)
				-
		Development Process	Guiding Role Process	Low influence in terms of development process guidance
			Guiding Role Process	Implementation as an obstacle in terms of coordination and time
		Project Scope	Evaluative Role Product	Limited inlfiuence in potential Trade-Offs
			Evaluative Role Product	Enhances Appraisal of Different Options (evaluative response)

Fig. 41
Results for RsQ2 from interviews 4,8.

NL CASE - WISSELSPOOR REDEVELOPMENT				
RESEARCH SUB-QUESTION	CONCEPT	SUB-CONCEPT	CATEGORY	RESULT
RsQ3 **To what extent does the developers' implementation of USASs lead to a more sustainable urban redevelopment project?**	**Sustainable Urban Redevelopment**	**Perceived Added Value**	Benefit Financial	No financial Incentive
			Benefit Legislative	Future Competitiveness in procurement elegibility (Tender) Ahead in regulation for long term quality (sustainable energy and heatstress)
			Benefit Organisational External	High reputation as a frontrunner (First mixed-use Project NL)
			Benefit Organisational Internal	Internal learning process
		Sustianability Drivers	Imapct Product	It can potentially help at early stages due to the awareness of sustainability requirements
			Imapact Organisational Internal	Low acknowledgement of as sustainability driver empowerer
			Imapact Product	Positive influence is not quantifiable
		Organisational Drivers	Incentive Organisational Internal	Rises Awareness and Discussion
			Incentive Organisational Internal	High intrinsic motivation is the main factor for sustaiable developments
			Incentive External	Not active role as means to get incentives besides the compulsory impementation for spatial planning benefits (Change in land use plan)

Fig. 42
Results for RsQ3 from interviews 4,8.

Appendix F

UK Case 1

UK CASE 1 - AYLESBURRY ESTATE REDEVELOPMENT				
RESEARCH SUB-QUESTION	CONCEPT	SUB-CONCEPT	CATEGORY	RESULT
RsQ1 **Why do developers decide to implement USASs?**	**Sustainability Assessment System Implementation**	**Assessment Scope**	Project Perspective External	Useful framework for aspects beyond planning policy and building regulation (water usage, land usage, biodiversity, ecology, materials,waste)
			Organisational Perspective External	Reputational Strategy Effective way to proof sustainability awareness
			Organisational Perspective Internal	Means to rise organisational-internal awareness and external recognition
		Assessment Driver	Organisational External	Incorporated to masterplan under pressure for high standards and reputational gain
			-	-
			Organisational Internal	Ensure urban quality in a long term investment mindset (Value For Money)
			Financial External	Attract investment community Enable early stage discussions about design and formulation process
		Assessment Barriers	Organisational Internal	In-house workload increase (e.g., Economic Appraisals)
			-	-
			Organisational Internal	Standard sets goals at the right level of complexity
			Organisational External	Low coordination and Scope missalignment between parties
			Organisational Solution	Suggested solutions: Implementation of assessment enablers and prior work scope negotiation

Fig. 48
Results for RsQ1 from interviews 5,9,11.

UK CASE 1 - AYLESBURRY ESTATE REDEVELOPMENT				
RESEARCH SUB-QUESTION	CONCEPT	SUB-CONCEPT	CATEGORY	RESULT
RsQ2 **How developers' decision-making can be influenced by the implementation of USASs?**	**Decision Making**	**Organisational Scope**	Reflective Role Organisation	Sets an open mindset for developers willing to outstand in terms of commitment
			-	-
			-	-
		Development Process	Guiding Role Process	High utility in terms of developing strategies and defining future delivery of those strategies - Sets long term goals that become part of the policy documents for the future development of the project
			Guiding Role Process	High utility in terms of process and discussion
			-	-
		Project Scope	Evaluative Role Product	Allows evaluation of different solutions based on multidisciplinary teams
			Evaluative Role Product	Active discussion positively influences decisions taken within the project in terms of sustainability
			-	-

Fig. 49
Results for RsQ2 from interviews 5,9,11.

UK CASE 1 - AYLESBURRY ESTATE REDEVELOPMENT				
RESEARCH SUB-QUESTION	CONCEPT	SUB-CONCEPT	CATEGORY	RESULT
RsQ3 **To what extent does the developers' implementation of USASs lead to a more sustainable urban redevelopment project?**	**Sustainable Urban Redevelopment**	**Perceived Added Value**	Benefit Financial	Effectively attracts investors Saves money as part of an early decision enabler
			Benefit Organisational External	Helps justifying decisions to external parties
			Benefit Organisational External	Generates External Recognition
			Benefit Organisational Internal	Internal learning process
		Sustianability Drivers	Imapct Process	Main impact on the outcome relates to the process
			Imapct Organisational Internal	Partial allignment as means to stimulate develoepers drivers for sustainable urban development
			Imapct Product	Explicit causal effects are hard to quantify in complex urban regeneration projects
		Organisational Drivers	Incentive Organisational Internal	As long as it enhances new discussions it is beneficial
			Incentive Organisational External	Enhances better outcomes in terms of community involvement and process
				-

Fig. 50
Results for RsQ3 from interviews 5,9,11.

Appendix G

AUS Case 1

AUS CASE 1 - BRISBANE SHOWGROUNDS REDEVELOPMENT				
RESEARCH SUB-QUESTION	CONCEPT	SUB-CONCEPT	CATEGORY	RESULT
RsQ1 **Why do developers decide to implement USASs?**	**Sustainability Assessment System Implementation**	**Assessment Scope**	Project Perspective External	Useful framework to orient a long-term project developed
			Organisational Perspective internal	Business Strategy Opportunity to benefit from long term urban investment
			Organisational Perspective Internal	Means to achieve long-term goal in masterplan
		Assessment Drivers	Legislative External	Incorporated by the development brief (Private Law)
			Financial External	Active demand by institutional investors and financers (capital markets)
			Organisational internal	Influenced by the global mandate of the organisation (Top-Down approach) Close relationship between developer and Green Star Association
			Financial External	Tenant attraction and marketing value
		Assessment Barriers	Organisational Internal	Additional paperwork
			Financial Internal	Indirect Cost increase
			Organisational Internal	Lack of specialized knowledge
			Organisational External	Lack of market knowledge
			Organisational Solution	Suggested solutions: Implementation of scope optimisation and urban development principles to weight out increase in costs

Fig. 53
Results for RsQ1 from interview 6.

AUS CASE 1 - BRISBANE SHOWGROUNDS REDEVELOPMENT				
RESEARCH SUB-QUESTION	CONCEPT	SUB-CONCEPT	CATEGORY	RESULT
RsQ2 **How developers' decision-making can be influenced by the implementation of USASs?**	**Decision Making**	**Organisational Scope**	Reflective Role Organisation	Positively leads to more sustainable ambitions
			Reflective Role Organisation	Enhances streams of innovation that influence the way corporations behave, both at a business level and in everyday practices
		Development Process	Guiding Role Process	High utility as guideline to draw long-term targets and large scale requirements High utility as strategy to mitigate long-term requirements (transport & infrastructure specifics)
			Guiding Role Process	Early stage assessment can advise spatial planning process in terms of masterplanning criteria (distances, setbacks, widths of urges and roads and footpaths)
		Project Scope	Evaluative Role Product	Allows evaluation of different solutions based on multidisciplinary teams
			Evaluative Role Product	Active discussion positively influences decisions taken within the project in terms of sustainability

Fig. 54
Results for RsQ2 from interview 6.

AUS CASE 1 - BRISBANE SHOWGROUNDS REDEVELOPMENT				
RESEARCH SUB-QUESTION	CONCEPT	SUB-CONCEPT	CATEGORY	RESULT
RsQ3 **To what extent does the developers' implementation of USASs lead to a more sustainable urban redevelopment project?**	**Sustainable Urban Redevelopment**	**Perceived Added Value**	Benefit Financial	Access to capital incentives in terms of financing (banks, venture capital, investment vehicles) Enhances resilience as a souce of financial value
			Benefit Organisational External	Generates reliability as a developer brand
			Benefit Organisational External	Effective Marketing Strategy for Product Positioning
				-
		Sustianability Drivers	Imapct Process	Main impact on the outcome relates to innovation
			Imapct Organisational Internal	Partial allignment as means to stimulate develoepers drivers for sustainable urban development
			Imapct Product	Enhances long-term adaptability and resilience of both public and private spaces
		Organisational Drivers	Incentive Organisational Internal	Acquired awareness can lead to apply learnings into organisational operations as incentives for improvement (Inspiration as driver for trade-off between operational level & strategic level)
			Incentive Financial	Enhances resilience as a souce of financial value
			Incentive Organisational External	Planning approval processes have started to adopt minimum requirements for certain tools and ratings (buildng level)

Fig. 55
Results for RsQ3 from interview 6.

Appendix H

AUS Case 2

AUS CASE 2 - WATERLOO METRO QUARTER DEVELOPMENT				
RESEARCH SUB-QUESTION	CONCEPT	SUB-CONCEPT	CATEGORY	RESULT
RsQ1 **Why do developers decide to implement USASs?**	**Sustainability Assessment System Implementation**	**Assessment Scope**	Project Perspective External	Useful framework for metrics beyond the building level, like management process, urban scale services and community involvement
			Organisational Perspective External	Tendering Strategy Most cost effective route for developer to proof sustainability ambitions to external parties
			Organisational Perspective Internal	Means to have a higher competitiveness on the bidding proposal
		Assessment Drivers	Organisational External	Incorporated in the tendering proposal. Ecologically Sustainable Development Strategy nominated Green Star-CM as part of SSDA high standard approval
			Organisational External	Active demand by public client. Ecologically Sustainable Development Strategy nominated Green Star-CM Attract High tenant Profile
			Financial External	Potential increase for residential premiums as higher segment clients have different requirements in terms of communal facilities, transport infratructure, wellness
			-	-
		Assessment Barriers	Organisational Internal	Document heavy and resource intensive
			Financial Internal	Cost uplift within project budget and internal contraints (business case)
			Organisational Internal	Assessment process has not yet been implemented First Green Start Communities Assessment Leads to Limited internal knowledge
			Organisational External	Cooordination between design teams, construction teams and procurement teams
			Organisational Solution	Suggested solutions: early alignment between professional team through prior assessment training and supplier network integration through platform development

Fig. 58
Results for RsQ1 from interviews 7,10,12.

AUS CASE 2 - WATERLOO METRO QUARTER DEVELOPMENT				
RESEARCH SUB-QUESTION	CONCEPT	SUB-CONCEPT	CATEGORY	RESULT
RsQ2 **How developers' decision-making can be influenced by the implementation of USASs?**	**Decisión Making**	**Organisational Scope**	Reflective Role Organisation	Potential organisational reflection is likely to happen as part of the feedback loop (with repetition) but limited due to a low experience with the assessment
			Reflective Role Organisation	Can influence internal processes at a mindset level (Normalizing budgenting for assessments within project feasibility practices)
		Development Process	Guiding Role Process	Set goal through the assessment By meeting the requirements best practices are enhanced
			Guiding Role Process	Influences the team coordination process Potential high utility in terms of process and discussion
		Project Scope	Evaluative Role Product	Prescription of certain materials and technical solutions can lead to efficient decisions
			Evaluative Role Product	Possitively influences decision related to sustainable drainage, water sensitive urban design, CPTED Crime prevention thorough environmental design provisions

AUS CASE 2 - WATERLOO METRO QUARTER DEVELOPMENT				
RESEARCH SUB-QUESTION	CONCEPT	SUB-CONCEPT	CATEGORY	RESULT
RsQ3 **To what extent does the developers' implementation of USASs lead to a more sustainable urban redevelopment project?**	**Sustainable Urban Redevelopment**	**Perceived Added Value**	Benefit Financial	Improve service based provision of the assessment as a market product Source of highest residential market premiums based on urban facilities
			Benefit Organisational External	Reputational gain to differentiate the company from other market actors as field leaders
			Benefit Organisational External	Competitiveness for project development applications
		Sustianability Drivers	Benefit Organisational Internal	Internalize experience Lesson learning process can be socialized around the company
			Imapct Product	Positive impact over all three pillars of sustainability
			Imapct Organisational Internal	Partial allignment as means to stimulate develoepers drivers for sustainable urban development
			Imapct Product	Secondary effects in terms of wellbeing and community that go beyond the assessment metrics
		Organisational Drivers	Incentive Legislative	Increses the maturity of the industry and raises awareness of how to handle more sustainable procedures.
			Incentive Organisational External	Enhances better outcomes in terms of community facilities
			Incentive External	The implemention fo the assessment within the State Significant Development Approval (SSDA) can lead to speedier planning permits
			Organisational External	Lack of market knowledge
			Organisational Solution	Suggested solutions: Implementation of scope optimisation and urban development principles to weight out increase in costs

Fig. 59
Results for RsQ2 from interviews 7,10,12.

Fig. 60
Results for RsQ3 from interviews 7,10,12.

Appendix I

International Case Studies vs Dutch Base Case

RQ1		INTERNATIONAL CASE STUDIES	NL BASE CASE	
		CONCLUSIONS PARALLEL CASE-STUDY ANALYSIS	DUTCH CURRENT PRACTICES	NL CASE 1 WISSELSPOOR REDEVELOPMENT
CONCEPT	SUB-CONCEPT	COMMON PATTERNS	RESULT	RESULT
Sustainability Assessment System Implementation	**Assessment Scope**	High emphasis on framework utility for urban scale sustainability features	Reliable Metrics	Perceived as a reliable methodology but relative low awareness of its utility in relation to urban scale sustainability features by market marties
		Allignment between assessment scope and corporate strategy	Reputational Business Strategy	Planning Requirement for change in Land Use Plan Partial alignment between corporate strategy and assessment scope
		Voluntary USAS implementation as means to achieve their organisational goals (reputation, long-term vision & competitiveness)	Not Clear vision whether Means or End Scope	End to proof high sustianability standards Scepticism about the assessment scope depending on voluntary or enforced implementation
	Assessment Drivers	Implementation driven by a growing tendency to involve USASs as sustainable development criteria	Local Authorities Procurement	Driven by a regulatory requirement
		Implementation driven by active demand for the assessment	Attract Investors Attract Clients / End Users	No demand from investors
		Implementation driven by corporate ambitions and organisational scope	Helpful Methodology for sustainability assessment	Scepticism about methodology
		Impementation driven by the willingness to attract investors for funding and tenants for premiums	Initiatives of Process Optimisation	Pilot Project: Opportunity for local authorities to learn
	Assessment Barriers	Resource intensive Assessment Process	High Workload and Time Consuming	High Workload and Time Consuming Work Scope Limitations
		Moderate Implementation Costs	High Indirect Cost	High Indirect Cost
		Limited Internal knowledge associated with limited expertise	Low Internal Knowledge Low Initial Ambition	Low Internal Knowledge
		Challenge in terms of coordination, work scope and market knowledge	Low Demand Low Knowledge Transfer	Low Municipal Knowledge and Hesitance (Limited Internal Capabilities)
		Emphasis on early implementation, integral team training, assessment enablers and more efficient information management practices	Misalignment with Technical Requirements	Non comparability with municipal standards Limitations to collect long term evidence due to uncertanty

Fig. 69
Comparison International Case Studies vs. Dutch Base Case on Sustainability Assessment System Implementation

RQ2		INTERNATIONAL CASE STUDIES	NL BASE CASE	
		CONCLUSIONS PARALLEL CASE-STUDY ANALYSIS	DUTCH CURRENT PRACTICES	NL CASE 1 WISSELSPOOR REDEVELOPMENT
CONCEPT	SUB-CONCEPT	COMMON PATTERNS	RESULT	RESULT
Decisión Making	Organisational Scope	Positive perception of the assessment's reflective role with a potentially high influence on organisational scope (developers ambitions)	Potential redefinition of Sustainability Ambitions and Goals	Can potentially enhance a more ambitiuos company vision through repetition
		Positive influence as a catalyst to rise awareness (developers mindset and industry maturity)		Can potentially enhances a broader perspective of Area vs. Building (circularity and biodiversity)
		-		
	Development Process	High emphasis on the assessment's guiding role based on strategic planning goals and long-term urban development approach	Potential Improvement of Planning Process Predictability	Low influence in terms of development process guidance
		High utility as communication enabler for discussion, coordination, and advice	Improve Management Practices	Implementation as an obstacle in terms of coordination and time
		-		
		Positive influence as an evaluative practice Project decisions mostly influenced through technical knowledge acquisition,	Assist Potential Trade-Offs	Low inlfiuence in potential Trade-Offs
	Project Scope	Potential influence on the proyect scope and decision weighting is limited by the organisational scope (developers ambitions)	Appraise Different Options	Enhances Appraisal of Different Options (evaluative response)
		-		
		Limited Internal knowledge associated with limited expertise	Low Internal Knowledge Low Initial Ambition	Low Internal Knowledge
		Challenge in terms of coordination, work scope and market knowledge	Low Demand Low Knowledge Transfer	Low Municipal Knowledge and Hesitance (Limited Internal Capabilities)
		Emphasis on early implementation, integral team training, assessment enablers and more efficient information management practices	Misalignment with Technical Requirements	Non comparability with municipal standards Limitations to collect long term evidence due to uncertanty

Fig. 70
Comparison International Case-Studies vs. Dutch Base Case on Decision-Making

RQ3		INTERNATIONAL CASE STUDIES	NL BASE CASE	
		CONCLUSIONS PARALLEL CASE-STUDY ANALYSIS	DUTCH CURRENT PRACTICES	NL CASE 1 WISSELSPOOR REDEVELOPMENT
CONCEPT	SUB-CONCEPT	COMMON PATTERNS	RESULT	RESULT
Sustainable Urban Redevelopment	Perceived Added Value	Experienced financial benefits vary	Possible Access to Financing Attract Investors and Tenants	No financial Incentive
		High emphasis on reputational benefits	Possible Procurement Eligibility Possible Regulation Predictability	Future Competitiveness in procurement elegibility (Tender) Ahead in regulation for long term quality (sustainable energy and heatstress)
		High emphasis on competitiveness and marketing benefits	Possible Reputation Possible Marketing	High reputation as a frontrunner (First mixed-use Project NL)
	Sustianability Drivers	High emphasis on internal learnings as benefits	Internal Awareness Potential Retrofit Corporate Strategy	Internal learning process
		Positive impact of the assessment as sustainability driver mostly enhances process and innovation	Can potentially help overcoming existing barrier associated to sustainability measures	It can potentially help at early stages due to the awareness of sustainability requirements
		Partial allignment as means to stimulate develoepers drivers for sustainable urban development	Intrinsic motivation as main driver	Low acknowledgement of as sustainability driver empowerer
		Positive impact of the assessment as a sustainability driver in hardly quantifiable	Positive influence is not quantifiable	Positive influence is not quantifiable
	Organisational Drivers	Implementation acts as a positive incentive for developers to be more sustainable (organisational internal awareness)	Rises Awareness and Discussion Catalyst for a change in mindset	Rises Awareness and Discussion
		Implementation of the assessment can lead to strive for mor sustainable urban outcomes as part of the value creation strategy	Goals and negotiables in terms of sustainability are taken at a strategic level	High intrinsic motivation is the main factor for sustaiable developments
		Implementation can act as means for potential external incentives as part of a policy trend (planning incentives or GFA concessions**)	Could potentially act as means to get external incentives	Not active role as means to get incentives besides the compulsory impementation for spatial planning benefits (Change in land use plan)
		Challenge in terms of coordination, work scope and market knowledge	Low Demand Low Knowledge Transfer	Low Municipal Knowledge and Hesitance (Limited Internal Capabilities)
		Emphasis on early implementation, integral team training, assessment enablers and more efficient information management practices	Misalignment with Technical Requirements	Non comparability with municipal standards Limitations to collect long term evidence due to uncertanty

Fig. 71
Comparison International Case-Studies vs. Dutch Base Case on Sustainable Urban Redevelopment