

# Improving sustainability in business parks

The role of public-private partnerships in the Netherlands



Master thesis Spatial Planning

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## Abstract

This thesis examines how PPPs can contribute to the sustainability of existing business parks in the Netherlands. The central aim of the research is to determine to what extent PPPs can enhance the sustainability of business parks, with particular attention to financial, social, and ecological aspects of sustainability. Business parks play a crucial role in the Dutch economy but face significant challenges due to climate change. These changes have various consequences, as business parks were not designed for the changing weather conditions, which can adversely affect business operations and continuity.

For this research, three business parks in the Netherlands were selected: Marssteden, Borculo, and Eekterveld. A qualitative approach was chosen, involving in-depth interviews and policy analyses to investigate the dynamics and effectiveness of PPPs in promoting sustainability. Ten interviews were conducted with public and private stakeholders, including municipal officials, entrepreneurs, park managers, and experts in sustainable spatial planning of business parks.

The results indicate that collaboration between public and private parties can lower financial barriers through joint investments and subsidies. This increases the willingness of parties to invest in sustainable initiatives. Furthermore, trust and shared goals are crucial for successful collaborations. Transparency and consistent regulations strengthen the trust between parties, which is essential for long-term collaboration. Risk-sharing between public and private parties reduces financial pressure and promotes investments in sustainable projects. Innovation and cooperation in environmentally friendly technologies and practices contribute to reducing the ecological footprint of business parks. PPPs stimulate the implementation of sustainable energy solutions and the use of natural resources.

The conclusions of this research demonstrate that public-private partnerships can significantly contribute to the sustainability of business parks through joint investments, shared goals, and risk-sharing. To maximize the effectiveness of these collaborations, it is essential to build trust between parties, follow clear and consistent policy lines, and continuously invest time and attention in maintaining these partnerships. These insights underscore the necessity of integrated approaches and close cooperation between government and business to promote the sustainability of business parks in the Netherlands.

*Keywords:* Sustainability, Business parks, Public-private partnerships, financial sustainability, social sustainability & environmental sustainability.

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## List of abbreviations

<b>CBS</b>	Centraal Bureau voor de Statistiek (Statistics Netherlands)
<b>EIP</b>	Eco-Industrial Park
<b>IBIS</b>	Integrated Business Park Information System
<b>LISA</b>	Landelijk Informatiesysteem van Arbeidsplaatsen (National Information System of Employment Places)
<b>MEZK</b>	Ministerie van Economische Zaken en Klimaat (Ministry of Economic Affairs and Climate Policy)
<b>PBL</b>	Planbureau voor de Leefomgeving (Netherlands Environmental Assessment Agency)
<b>PPP</b>	Public-Private Partnership
<b>Rli</b>	Raad voor de leefomgeving en infrastructuur (Council for the Environment and Infrastructure)
<b>SDG</b>	Sustainable Development Goal
<b>TNO</b>	Nederlandse Organisatie voor toegepast-natuurwetenschappelijk onderzoek (Netherlands Organization for Applied Scientific Research)
<b>UNIDO</b>	United Nations Industrial Development Organization



## Chapter 1 – Introduction

In an era where the effects of climate change are increasingly evident, business parks face the pressing challenge of becoming more sustainable to ensure continuity (Hamers et al., 2021). Business parks in the Netherlands, with their concentrated economic activities, offer a unique opportunity to promote sustainability on a large scale. However, these concentrated activities also make business parks particularly vulnerable to the impacts of climate change (Reudink et al., 2023).

Climate change increases the likelihood of heavy rainfall, drought, heatwaves, and storms. Business parks are particularly affected due to extensive paving and densely packed large-scale buildings (Hamers et al., 2021). The Netherlands has 100,000 hectares of business parks, of which only 1 percent consist of natural elements (Ministerie van Economische Zaken en Klimaat [MEZK], 2023). Consequently, 87 percent of the 3,500 business parks are vulnerable to flooding during heavy rainfall events. Without intervention, it is estimated that the average summer day temperature at a business park will reach 40.8 degrees Celsius within 30 years (MEZK, 2023). These climate changes endanger the continuity of business operations.

Business parks play a crucial role in the Dutch economy, generating approximately 210 billion euros in added value, accounting for about 30% of the total added value in the Netherlands (de Kort & Gradussen, 2023a). This underscores the economic significance of these areas and highlights the need to integrate sustainability into their operations to maintain this economic contribution (Centraal Bureau voor de Statistiek [CBS], 2024). However, the average Dutch business park is between 30 and 40 years old. At the time of their construction, no consideration was given to current climate change-related issues. The aging of these parks is closely linked to sustainability challenges, such as higher energy consumption, lower energy efficiency, and limited green space (Raad voor leefomgeving en infrastructuur [Rli], 2023). In addition to the significant ecological and economic impact, climate change's effects on business parks substantially impact those working there. Millions of employees enter business parks daily, accounting for 28% of employment in the Netherlands (de Kort & Gradussen, 2023a). The scarcity of natural elements in business parks increases the impact on the health and well-being of employees, especially during heatwaves and heavy rainfall, thus creating a social problem.

The impact of climate change on business parks is multifaceted, affecting all three pillars of sustainability: profit, people and planet. Therefore, the sustainability of these areas requires not only spatial interventions but also social measures (Hamers et al., 2021). Collaboration between public and private parties is essential in this regard. However, this collaboration is lacking in many business parks (Reudink et al., 2023). In recent years, the government has paid little attention to sustainability in business parks (Fainstein & Defilippis, 2016). They primarily focused on the areas for which they were responsible, such as public spaces (MEZK, 2024). Entrepreneurs themselves struggle to implement significant sustainability measures independently. They manage their own plots and focus primarily on their business, therefore finding it difficult to make joint investments (Fainstein & Defilippis, 2016). Consequently, they spend less time and money on sustainability efforts. When entrepreneurs neglect sustainability efforts, business parks deteriorate and age over time (Louw et al., 2004).

The increasing urgency of climate change has led to greater awareness of sustainability issues. This has resulted in a rise of collaborative initiatives and projects aimed at accelerating the sustainability of business parks (Van Den Berghe, 2023). These efforts between public and private parties are leading to more collaboration (de Kort & Gradussen, 2023b), known as public-private partnerships. These will be called PPPs. However, the question remains to what extent this collaboration can contribute to the sustainability of business parks.

Several studies have been conducted at the global level regarding sustainable business parks. The Sustainable Development Goals (SDG) program emphasizes that developing businesses should commit to

ecological protection and reducing waste with a demonstrable impact on the environment (United Nations, 2015). Research by Chou & Pramudawardhani (2015) analyzed and evaluated PPPs in different countries, focusing on what influences the success of PPP projects. This study also examines these factors, but with a specific focus on PPPs within business parks. Van Beers et al. (2020) conducted a comparative study focusing on business parks, analyzing 10 different business parks across 8 different countries. In contrast, this study focuses on the Netherlands. Although extensive studies have been conducted on sustainable business parks and PPPs at the global level, there remains a significant knowledge gap regarding the specific context of Dutch business parks. Most existing research focuses on broad international comparisons or specific national policy frameworks, such as in the case of Belaud et al. (2019) did with French policy and such as Heeres, Vermeulen & de Walle (2004), who compared sustainability and climate adaptation approaches of various business parks in the Netherlands and America. These approaches provide valuable insights but do not account for the unique challenges and opportunities within the Dutch context.

The aim of this research is to contribute to the knowledge by focusing on the unique circumstances and needs of Dutch business parks, and to investigate how collaboration between companies and governments can be effectively utilized to promote sustainability. To achieve this, the following main and sub-questions have been formulated:

***'To what extent can public-private partnerships contribute to increasing the sustainability of existing business parks?'***

To answer the main question, there are some sub-questions that need to be answered;

- *What makes a business park sustainable?*
- *What are the financial conditions and instruments for successful collaboration in sustainability?*
- *Which social factors promote effective collaboration for sustainability in business parks?*
- *How can environmental sustainability be integrated into public-private partnerships in business parks?*
- *How does the organizational structure affect the sustainability of a business park?*

To achieve this goal, three comparable business parks in the Netherlands will be studied. These business parks host small and medium-sized enterprises with mixed-use activities, have a similar age, and show signs of aging associated with sustainability challenges. Finally, they have previously engaged in collaborative partnerships. Through interviews with municipal officials, entrepreneurs associated with the business association, and park managers, if present, the extent of collaboration will be examined, along with their perspectives on the necessary conditions for successful collaboration and whether they believe collaboration can contribute to the sustainability of their business parks. Additionally, interviews will be conducted with two experts who have extensive experience in developing future plans for business parks. The insights gained from these interviews will be supported by policy documents, providing context.

The Dutch national government aims to emphasize the importance of spatial quality in the future development of the Netherlands. To achieve this, they have identified eight key programs, one of which focuses on business parks (Mooi Nederland, 2024). This emphasis underscores the critical role of business parks in Dutch society and how their enhancement can improve the overall quality of the country. Although the program outlines proposed changes, it does not detail the implementation process. Effective collaboration between the public and private sectors is essential for realizing these changes. This research examines how such cooperation can be facilitated, providing insights into how the government and the business sector can jointly implement these design principles.

In the next chapter the theoretical basis for this research will be laid through a critical review of relevant literature on business parks, sustainability in business parks, public-private partnerships and collaborations within the three dimensions of sustainability. Next, the methodological basis for this research will be



described (chapter 3). The research design, methodology and data collection methods used to investigate the impact of PPPs on sustainability of business parks. The results of the analysis conducted based on the theoretical and methodological underpinnings are then presented (chapter 4). This will first discuss the findings within the three dimensions of sustainability and then the influence of an organizational structure. It will critically discuss the process and implications of the study and the conclusions drawn (chapter 5). Conclusions on the influence of partnerships on the sustainability of business parks will be discussed in the final chapter (chapter 6).

## Chapter 2 – Theoretical framework

To determine the extent to which public-private partnerships can contribute to the sustainability of existing business parks, this chapter will lay the foundation through a critical review of relevant literature. First, the concept of a sustainable business park will be examined. Therefore, it is essential to define what a business park is. This involves exploring the history of business parks, outlining the different types, describing the development process, and identifying the responsible entities (2.1). The definition of sustainability used in this research will be explained, along with the characteristics that contribute to the sustainability of a business park (2.2). The components of a well-functioning public-private partnership will then be outlined (2.3). Finally, these components will be combined to explain how collaboration can strengthen a business park in each dimension of sustainability (2.4).

### § 2.1 - The emergence of business parks

In the 20th century, spatial planning evolved with a focus on function separation, where work and living spaces were distinct (Weterings et al., 2008). This shift was driven by concerns about the adverse effects of factories within city centers on residents' health. Addressing this issue, planners advocated for separating functions rather than adopting mixed-use approaches (Stijnenbosch, 2012). Until the 1970s, the areas on the edges of cities still offered plenty of space for business parks. During the 1970s and 1980s, due to lack of space on the edges of cities, highway locations came into the picture or development sites shifted to the edges of small towns and villages (Louw & Bontekoning, 2007).

Until the 1970s, the name business park did not exist. Until then, it was referred to as industrial estate. The reason for this transition in naming lies in the character of the sites. At the time, the activities on the sites were mainly industrial in nature. From the 1970s on, this started to change. More and more types of business activity found their way to the sites, which offer space to entrepreneurs looking for a place to set up their business (Weterings et al., 2008). Throughout the years, various definitions of business parks have emerged from different sources. According to the Great Dictionary of the Dutch Language, a Business Park is defined as "an area where several businesses can be established" (Van Dale Netherlands, n.d.). In this study, using the definition of The Integrated Business Parks Information System (IBIS), they describe it as "a densely occupied terrain used for trade, industry, and commercial services." It is worth noting that this definition encompasses sections within business parks that are specifically designated and suitable for office space. However, it excludes areas designed for hospitals, sewage plants, schools, municipality buildings, and police stations (IBIS, 2017).

Business Parks manifest in various forms, categorized by the activities they host. Stijnenbosch (2012) identifies five distinct types of business parks:

1. Heavy industrial areas
2. Seaport sites
3. Mixed business areas
4. Distribution parks
5. High-quality business parks



Figure 1: 5 types of business parks

Source: Ter Pelkwijk, 2022.

Heavy industry locations are reserved for industries that have significant environmental impacts. Seaport sites are places with a loading/unloading quay along deep waterways accessible to large sea-going vessels. Mixed business areas have a mix of different business activities but have a lower environmental impact and predominantly hosting small and medium-sized enterprises. Distribution areas are specifically intended for transport and distribution. High-quality business parks are specifically intended for companies with high-quality industries, such as technical companies. Apart from the aforementioned five types, one can also identify thematic business parks like science parks (Stijnenbosch, 2012). In the Netherlands, a substantial 90 percent of business parks fall under the classification of mixed business parks, which is the third category (Landelijk Informatiesysteem van Arbeidsplaatsen [LISA], 2021). This research will exclusively focus on mixed-use business parks.

The Dutch government has focused its policy on ensuring that the same types of business activity settle together on the business park. This approach is described by Louw & Bontekoning (2007) using the concept of path dependency, which in this context refers to how previous policies shape current practices. Policies created years ago to separate the functions of living and working so that they do not interfere with each other have survived the 20th century and the early 21st century (Fainstein & DeFilippis, 2016). Policies on business parks still view a business park as a monofunctional concept (Louw & Bontekoning, 2007). It is important to look at history to understand today's business parks, because about a third of the real estate on regular sites was built before 1985, and an average mixed-use business park is 30 to 40 years old (de Kort & Gradussen, 2023a).

Despite the path dependency of business parks, business parks go through a more or less fixed process during their existence (Figure 2). This process is known as the business park life cycle, in which four phases can be distinguished; introduction, growth, consolidation and decline (Louw et al., 2004).

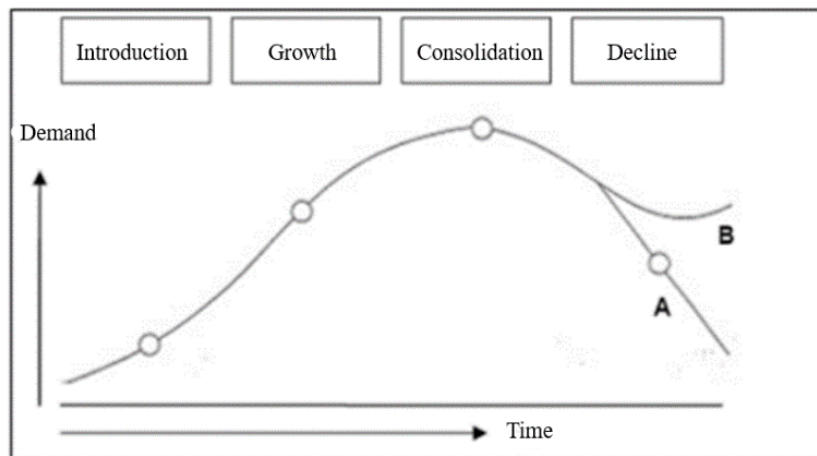


Figure 2: The life cycle of a business park  
Source: Louw et al., 2004.

**1. Introduction phase:** During this phase, the government, usually the municipality, designates a certain area as a business park. If there is high market demand for a business park, the land in question will be made ready for building. Subsequently, land allocation for businesses takes place (Louw et al., 2004).

**2. Growth phase (expansion):** There is an increase in demand due to the opportunities on the site: for example, to high-quality housing and expansion possibilities. The result is an increase in the number of business establishments on the site (Spit & Zoete, 2005).

**3. Consolidation phase (maturity):** In this phase, both demand and the number of established businesses stabilize. Virtually no more land is available for issuance on the site. Initially, the quality of the site remains

the same, but over time it declines (Louw et al., 2004). The demand of businesses changes over time, today's society places different demands in business parks than at the time that they were built (Spit & Zoete, 2005). Aging problems can be remedied with relatively simple measures so that the quality remains up to standard, this happens in the consolidation phase (Geurs, 2004). In this phase gains can be made. If the business park's maintenance takes place in a sustainable manner, it is possible to grow the site level beyond the previous peak. If intervention takes place later, in the decline phase, it will firstly cost more resources, as a more thorough way of restructuring is required. Second, it is less possible to achieve a growth in level (Spit & Zoete, 2005).

**4. Decline phase:** Finally, a phase of decline sets in, according to Stijnenbosch (2012), the decline of a business park is mainly caused by a lack of attention to sustainability in phase 3 (consolidation). In the decline phase there are two possible scenarios. Scenario A; companies move away from the business park and establish their business at a site that suit their needs. This will cause the business park to decline. This does not happen often because when housing problems arise, entrepreneurs are highly risk-averse (Louw et al., 2004). When companies do not have insurmountable problems at their location, they do not consider relocation (Geurs, 2004). Moreover, the Netherlands Environmental Assessment Agency (Planbureau voor de Leefomgeving, 2023) considers a possible expansion of the current business park area undesirable (Reudink, et al., 2023). In their study on the future of business parks, they point out that the establishment of new business parks is often accompanied by complaints about disruption of the landscape and loss of open green space. Therefore, to limit the development of new business parks, it is important that existing business parks remain attractive for business establishments and their employees (Veleva et al., 2015). Scenario B is therefore the usual solution; business parks are restructured (Louw et al., 2004). Aging is defined by IBIS (2017) as, 'The process that precedes restructuring'. Restructuring counteracts aging business parks by utilizing one-off interventions to combat the aging of the site. These are interventions that are not counted as regular maintenance (Spit & Zoete, 2005).

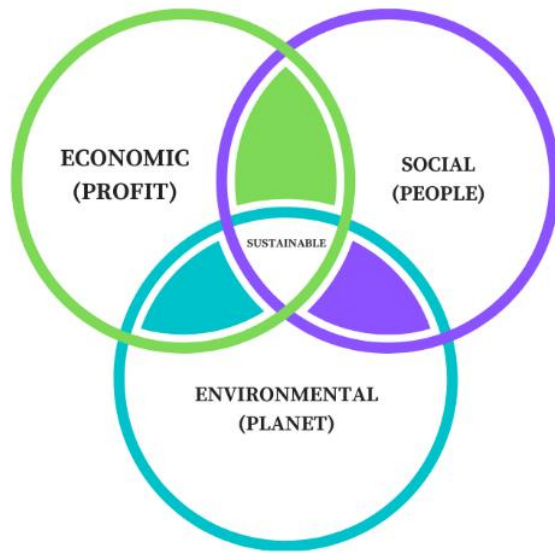
Understanding the historical development and inherent challenges of business parks is essential for addressing their future sustainability. The transition from industrial estates to diverse business parks and the influence of policy decisions have shaped their current state. With many parks aging and facing sustainability issues, targeted interventions and public-private partnerships are crucial for ensuring their continued viability. This paves the way for the next section to explore sustainability definitions and the role of these partnerships.

## § 2.2 – Conceptualizing sustainability of business park

The term 'sustainability' originated as a policy concept in the Brundtland Report (1987). The report emphasizes the dual focus of promoting human well-being through economic growth and concurrently addressing environmental preservation. The intention behind this concept is to ensure the fulfilment of the needs of future generations (Brundtland 1987). An average business park in the Netherlands was built around 1988 (De Kort & Gradussen, 2023a). When the sites were built, much thought was given to creating a sustainable business park. The concept of industrial ecology, introduced in 1989, offered a new perspective on industrial development (Frosch & Gallopoulos, 1989). Local and regional initiatives led to the creation of Eco-Industrial Parks (EIP), where companies collaborated with each other and the local community to replicate a natural ecosystem. This approach aims to optimize the use of energy and resources while minimizing waste (Belaud et al., 2019). Governments and planners primarily integrate these concepts when developing new business parks. It was suggested that a well-planned, operational EIP could strengthen the economy and significantly alleviate environmental pressures in and around the development site (Heeres, Vermeulen & de Walle, 2004). Support was particularly strong in the Netherlands (Veleva et al., 2015).

Urban plans and designs are reflective of the prevailing societal norms and ideals during their construction (Haarstad & Oseland, 2017). Experienced feedback from EIP projects underscores the decisive role of temporality in implementation (Veleva et al., 2015). In the historical context, industrial ecology focused primarily on material and energy flows, grappling with challenges when developing EIPs restricted to the limited scope of physical exchanges between neighboring firms. Barriers to EIP development encompass technical, economic, informational, organizational, and legal aspects, as identified in studies (Gibbs & Deutz, 2007). The contemporary knowledge-based economy increasingly ties business success to human capital, innovation, and infrastructure. Lombardi and Laybourn (2012) advocate for an expanded EIP definition, incorporating "the exchange of knowledge, information, and expertise", influencing not only physical flows but also serving as an innovation source. Acknowledging the interdisciplinary nature of EIPs, a comprehensive approach is necessary to surmount barriers and ensure successful implementation, as noted in recent research (van Beers et al., 2020). The challenge lies in establishing and sustaining trust and collaborative dynamics over an extended period (Belaud et al., 2019).

The triple bottom line (Figure 3), introduced by Elkington (1994), originated as an accounting framework that sought to incorporate environmental and social dimensions alongside the conventional financial metrics used to measure business performance (Elkington, 1994). Also known as the 3Ps (profit, people and planet), this framework has reshaped perspectives on comprehensively assessing sustainability performance (Goh et al., 2020). Economic sustainability pertains to financial gains (Shimomura & Matsumoto, 2010). Social sustainability involves building trust within and between parties by being transparent, sharing information, working towards clear goals, and sharing risks (Runde, 2006). Environmental sustainability emphasizes respect for nature and ecological balance, seeks to restore and maintain harmony between the natural and built environments, and focuses on the efficient use of natural resources to minimize impacts on the earth and improve the quality of the environment (Grierson, 2009; Goh et al., 2020). Emphasizing the efficient use of natural resources, it aims to minimize the built environment's impact on the Earth and enhance the quality of the surrounding environment (Grierson, 2009). Goodland (1995) argues that sustainability is rooted in the interaction and balance of these three dimensions. This research will look at it the same way as the triple bottom line provides businesses with clear and well-developed strategies and action plans, making a meaningful contribution to a sustainable future.



*Figure 3: Triple bottom line  
Source: Goodland, 1995.*

According to the United Nations Industrial Development Organization (UNIDO) (2019), a sustainable business park is defined as "a group of firms working together in a demarcated area with strategic objectives of achieving economic, environmental, and social benefits by taking advantage of business opportunities based on the notion of sustainable development, both at the park level and the resident companies." This definition of a sustainable business park is maintained in this thesis. The triple bottom line is evident here because it states that economic, environmental, and social benefits must be achieved at a business park.

The significance of a sustainable business park is now clear. There must be sustainability in all three aspects of the triple bottom line. The implementation of sustainable changes in the landscape is frequently undertaken by governments (Mees et al., 2012). The definition of UNIDO implies that sustainable business parks can play a crucial role in the process of fostering inclusive and sustainable industrialization when planned and effectively implemented using a contextual and feasible governance model (Van Beers et al., 2020). A good governance model can thus enhance sustainability within the three dimensions. Given the unclarity surrounding responsibilities, it is crucial to seek the appropriate blend of public and private involvement, as sustainability cannot be shouldered by one sector alone (Termeer et al., 2011). Therefore, collaboration must take place, underscoring the increasing need for governance.

### § 2.3 – Public-Private Partnership

As mentioned in the preceding section, future strategic decisions ought to focus on the transition towards a sustainable society. This transition encompasses behavioral changes and institutional adjustments (Reudink et al., 2023). Selecting the appropriate governance model facilitates institutional adaptations, which, in turn, can drive behavioral modifications (Termeer et al., 2011).

Governance provides a central framework for selecting and harmonizing resources to implement sustainable actions (Stoker, 2018). Governments choose the best governance approach at the national level based on



their country's specific context at that time. Glass and Newig (2019) emphasize the need for effective governance arrangements at the national level for achieving sustainable development goals, because the successful implementation of sustainability measures depends on using the right governance model (Glass and Newig, 2019). Effective governance is thus the cornerstone for the successful development of business parks, as it enhances community-based industrial development, fosters alliances, raises local community awareness, improves infrastructure, and addresses environmental concerns. There are three models of governance approaches for business park development (Monkelbaan, 2019);

- Public
- Private
- Public-Private Partnership

Nowadays, governments try to collaborate with the private sector, but they have the authority to implement or reject policies (Louw & Bontekoning, 2007). Dutch municipalities must align their policies for business parks with those of the national and provincial governments. The national government provides the instruments with which decentralized authorities can work. The provinces are responsible for elaborating the national policy frameworks and reviewing municipal policy, insofar as it is elaborated in zoning plans. The municipalities should take an integrated approach to restructuring and new construction of business sites and ensure coordination at regional level (Olden, 2010). The relationship between the various authorities on this point is not hierarchical in the sense that the national government determines the policy, the province elaborates it, and the municipality implements it. Such a relationship would mean that the national government takes the initiative to develop a business park and the municipality acts as the executor. However, it is the other way around. The municipality takes the initiative within the frameworks set by the higher authorities (Louw et al., 2004).

In the introductory phase of the business park life cycle, the municipality takes the lead. As mentioned in section 1.1, the municipality buys raw building land and prepares it for construction (Louw et al, 2004). They decide where this is done and divide the land into plots and public spaces. The plots are sold to the private sector, often to companies that have business premises built on them. The public space remains the property of the municipality (Louw & Bontekoning, 2007). The municipality is responsible for managing the public space; private parties are responsible for the maintenance of their purchased plots (Louw & Bontekoning, 2007). Because parties are each responsible for their own land, cooperation between them is not encouraged. This is also reflected in EIPs. Despite initially making good progress by building EIPs, by the end of the last century, the government did not prioritize the maintenance of business parks (Gibbs & Deutz, 2007). Partly because they did not have enough financial resources at their disposal. The low priority given by Dutch municipalities to the maintenance and management of business parks is seen as one of the causes of the accelerated ageing of business parks (Olden, 2010; Louw et al., 2004). And because of the lack of cooperation between the government and the business community, everyone let the degradation happen.

PPPs enable public entities to access extra capital from private sector sources, such as equity, debt, and other financial resources that might not be accessible through conventional public funding methods (Monkelbaan, 2019). Access to private sector financing allows for the realization of large-scale projects that would otherwise exceed the financial capacities of public sector budgets alone (Glass & Newig, 2019). Since the beginning of this century, a shift has been noticeable in the way society is organized. In the development of this governance model, the boundaries between the public and private sectors are blurred (Stoker, 2018). The private sector has gained more influence, and the role of PPPs in implementing spatial policy is increasing. Governance revolves around the process of societal direction and coordination (Fainstein & DeFilippis, 2016) and thus focuses on control mechanisms that do not rely solely on government authority and sanctions (Stoker, 2018).

PPPs refer to a collaborative arrangement where public and private entities work together, leveraging shared resources and expertise while jointly managing risks, costs, and benefits to achieve mutually beneficial outcomes (Klijn & Teisman, 2003; Runde, 2006). Effective PPPs can be evaluated in various ways. Firstly, effectiveness is often defined as the degree to which pre-defined objectives are achieved, also known as goal attainment (Bovens, Hart & Twist, 2012). Effectiveness can be defined as the extent to which an organization or policy programme is able to achieve its desired goals (Monkelbaan, 2019). When considering this definition, an effective PPP is one that successfully realizes its set goals. However, since goals may evolve during collaboration and parties may have different objectives, assessing satisfaction becomes essential to determining effectiveness. To achieve effective PPP, it is crucial to understand the factors that influence satisfaction (Chertow, 2007). This involves examining whether the collaboration yields benefits, progresses as intended, and fosters positive relationships between parties. By understanding why and to what extent parties perceive the collaboration as effective, a broader range of goals can be evaluated (Warsen, Klijn & Koppenjan, 2019). In this study, a PPP is considered effective when, in addition to cooperation and resource sharing, synergy is also created and there is industrial symbiosis.

The meaning of a synergy as it is listed in the Dutch dictionary is a situation in which the effect of cooperation between (groups of) people is greater than what each of the collaborating parties could achieve individually (Van Dale Nederland, n.d.). This meaning also applies to synergy within a business park. This contrasts with the traditional hierarchical approach, characterized by managerialism, which did not fully recognize the benefits of partnerships (Shimomura & Matsumoto, 2010). Industrial symbiosis is an outcome of effective PPP, in which traditionally separate industries collaborate to pursue a competitive advantage by sharing information, material flows, or infrastructure. Pooling resources and fostering collaboration minimize duplication and achieve outcomes greater than the sum of individual parts. This perspective is widely endorsed by scholars and policymakers (Chertow, 2007; Heeres, Vermeulen & de Walle, 2004; Gibbs & Deutz, 2007).

Thus, the outcome of effective PPP can achieve greater sustainability goals than when individual groups work on sustainability goals, but there are several crucial conditions for building a successful industrial symbiosis. It is important that partnerships not only coordinate externalities, but also contribute to overarching benefits for all parties involved (Shimomura & Matsumoto, 2010). For this, different stakeholders need to come together and share their ideas and contribute expertise. When companies share ideas and bring in expertise, parties can make better informed collective decisions. It also increases the legitimacy of a decision, which can bring procedural benefits (Chertow, 2007). Literature on EIPs indicates that such collaboration initiatives bring benefits to companies (Veleva et al., 2015). In this way, collaboration becomes an instrumental tool that can be used to identify opportunities for establishing an industrial symbiosis network (Yong et al., 2015). But private sector cooperation and interaction are not a given. The plots of a business park are issued per company, which creates fragmentation in land ownership. This affects the ability to manage and maintain the overall site. If the companies are not all equally responsible, the so-called 'free rider problem' quickly arises (Monkelbaan, 2019). Therefore, effective PPP should be sought within a collaboration. Another crucial condition for building a successful industrial symbiosis is to consider the synergetic opportunities offered by geographical proximity during the cooperation. This can be done by looking at a business park to see how adjacent companies can help each other (Chertow 2007). Time is also important; parties must have something to offer each other at that moment, which increases their interest in participating in a partnership (Mees et al., 2012). Realizing potential synergies thus depends on the ability of companies to establish and promote appropriate patterns of collaboration and exchange and effective PPP encompasses not only goal achievement and satisfaction but also process and outcome measures such as benefits, the course of collaboration, and inter-party relations (Belaud et al., 2019).

In conclusion, the synergy resulting from a partnership yields significantly more impactful outcomes compared to individual efforts. By merging the expertise and resources of the private partner with the

administrative and political authority of the governmental partner, synergistic outcomes can be achieved (Warsen, Klijn & Koppenjan, 2019). A synergistic PPP generates broader economic, social, or environmental benefits, and can accelerate innovation (Shimomura & Matsumoto, 2010). Similar to other PPPs, business parks gain advantages from the support, leadership, and financial backing provided by both the public and private sectors (Belaud et al., 2019). Creating synergy in business parks is creating a situation that would not have existed without a PPP (Klijn & Teisman, 2003). This synergy must take place in all three dimensions of sustainability.

## § 2.4 – Partnerships for sustainability

Cooperation brings numerous benefits to both companies and governments, significantly contributing to the sustainability of business parks. Achieving optimal sustainability requires collaboration across all three areas of the triple bottom line. Within each component, the nature of the partnership varies, and this is explored across the three dimensions of the triple bottom line. Financial sustainability is addressed by examining the roles that public and private parties play in the process. Trust and shared goals are crucial for social sustainability, contributing to benefits such as risk sharing. Lastly, resource sharing is discussed in the context of environmental sustainability, highlighting how it supports sustainable practices.

### § 2.4.1 – Financial sustainability

Financial sustainability is one dimension of sustainability that is needed to obtain complete sustainability, which is why it is desirable to create financial sustainability. As with the pursuit of overall sustainability, collaborations also enhance financial sustainability more effectively than individual efforts by the parties involved (Shimomura & Matsumoto, 2010). Public and private parties achieve financial benefits or business opportunities based on the notion of sustainable development by working together (UNIDO, 2019). Despite the benefits described in section 2.3, parties are not immediately inclined to cooperate. Effective financial collaboration comes with certain conditions.

One of the conditions for cooperation is that parties must have time or money to invest in a collaboration. It is apparent that parties that possess expertise and capacity are more inclined to act, primarily because they can conduct comprehensive risk assessments and evaluate potential adaptation strategies (Chou & Pramudawardhani, 2014). Research by Agrawala et al. (2011) reveals that companies capable of financing adaptation are more proactive in initiating adaptation measures. Conversely, organizations lacking expertise or internal capacity may lag in implementing adaptation options (Agrawala et al., 2011). Parties with limited financial capacity often rely on financial support from private investors and governmental bodies (Chou & Pramudawardhani, 2014). The magnitude of these challenges influences the willingness of both public and private parties to invest (Agrawala et al., 2011). Therefore, the availability of financial capacity and knowledge within an organization can facilitate seamless adaptation and risk assessment (Mees et al., 2012).

The public and private sectors can use policy to implement measures to bolster industrial symbiosis performances, aiming to encourage stakeholders to engage more actively in these initiatives. Policy instruments, categorized by Van der Doelen (1991), fall into three main categories: economic, communicative and juridical instruments. These policy instruments are tools employed by stakeholders to achieve objectives. Alternatively, these instruments can influence individual behavior (Mees et al., 2014) or serve as a means of governmental control over societal issues (Bovens, Hart & Twist, 2012). These instruments, broadly classified as either stimulating or repressive measures, offer stakeholders different ways of achieving specific goals, see Table 1. Policymakers face challenges in selecting the appropriate instrument, a decision influenced by the dynamic interplay among stakeholders. The policy influences and drivers vary based on developmental situations (Haarstad & Oseland, 2017).

	Stimulating measures	Repressive measures
Economic instruments	Subsidy	Charges
Communicative instruments	Information / Education	Propaganda
Juridical instruments	Agreement	Command/Prohibition

Table 1: Examples of stimulating and repressive measures

Source: Van der Doelen, 1991.

So, policies are established with specific motivations, either endorsing or hindering behaviors (Mees et al., 2014). This study investigates the extent to which cooperation can contribute to making business parks more sustainable, looking at the incentive that cooperation can give to creating sustainability. During a cooperation, parties work together towards a common goal. This can be done with stimulating measures because then parties help each other achieve the common goal. With repressive measures, one party imposes mandatory goals on the other party, there is no common goal here therefore no cooperation can occur. For example, repressive measures, such as economic charges, are intended to deter behavior rather than incentivize it. They involve limited input from individuals on the implementation of the policy measure, with the government holding decision-making authority regarding enforcement. Also, repressive measures such as propaganda and prohibition do not go into cooperation but have a limiting factor on the other side (Van der Doelen, 1991). Therefore, this study only looks at stimulating measures. Good cooperation leading to synergy requires both parties to join forces to achieve a better result (Buso & Stenger, 2018). With stimulating measures, the party contributes to the result, allowing a synergy to emerge. Economic instruments such as subsidies encourage financial sustainability and are therefore discussed in this section. The communicative instruments and legal instruments such as information, education and agreement encourage social sustainability and are therefore discussed in the next section 2.4.2 Social Sustainability.

Stimulating economic instruments typically encounter less resistance within society while leading to behavioral changes and offering utility (Van der Doelen, 1991). By providing subsidies, governments can remove or reduce financial barriers for private parties. Grants are an incentive to start projects. Using planning guidelines that are often based on environmental standards and regulations. They prescribe what the private sector must meet before they can use financial resources, they can also use tax breaks (Wang & Ma, 2021). Private parties receiving subsidies tend to be more involved in adaptation efforts (Agrawala et al., 2011), this creates a competitive production environment and facilitates partnership formation (Buso & Stenger, 2018). Participating in a PPP allows the financial burden of a project to be spread over an extended period, thus easing the immediate strain on public funds. This approach also allows limited public funds to be redirected towards investment in areas where private investment is not feasible or suitable. However, it is essential to recognize that PPPs should not be seen as a panacea for public-sector budget constraints or financing gaps. Instead, they should be considered a tool for delivering more efficient and cost-effective projects and related services (Beckers & Stegemann, 2021). Conversely, projects also get off the ground faster when the private sector has extra money available and puts in a sustainable project, this makes public actors agree faster (Warsen, Klijn & Koppenjan, 2019).

In summary, achieving financial sustainability in business parks relies heavily on the collaborative efforts of both public and private parties. By sharing financial responsibilities and aligning their roles, these partnerships can effectively support and sustain the economic viability of business parks.

### § 2.4.2 – Social sustainability

The second dimension of sustainability is social sustainability. Partnerships are rooted in social relationships (Warsen, Klijn & Koppenjan, 2019). Before parties are willing to cooperate with each other, they must show each other that they can rely on each other and that they are working towards the same goals. When this is the case, there can be a benefit for both parties; for instance, the parties can share risks.

This section will discuss the conditions for good cooperation and the outcomes that lead to social sustainability.

Before parties are willing to enter an alliance, for instance to achieve an economic gain, it is important to build trust (Gibbs & Deutz, 2007). This trust must be present within the party. For instance, municipal officials should trust other municipal officials in making good policies and entrepreneurs in a business park should trust the other entrepreneurs when they join forces and negotiate as one party. Trust must also be built up between public and private parties. The perception of companies regarding the importance of sharing information varies widely. While some companies may not immediately consider shared information useful, for others, it may be of strategic importance due to its direct impact on business performance (Warsen, Klijn & Koppenjan, 2019). In a business landscape where some companies are reluctant to even disclose their waste streams to protect their competitive strategies, encouraging information exchange poses a challenging task (Yong et al., 2015).

It is essential to demonstrate to stakeholders how information sharing can be advantageous. Such trust and collaboration can create interaction between business members and governments to meet and share ideas, this is a positive effect given the limited time and resources of business managers (Lombardi & Laybourn, 2012). The best-known example of a successful PPP on a sustainable business park is Kalundborg in Denmark. There, entrepreneurs cooperated with each other by exchanging products and knowledge. To exchange even more products, the entrepreneurs sought cooperation with the municipality so that additional infrastructure could be built, and prosperity grew. Through good cooperation between public and private parties, the business park in Kalundborg grew into a large prosperous park, with the sharing of products and information promoting symbiosis (Chertow, 2007). In Kalundborg, the initiative for sustainability came bottom-up, there was already strong trust between companies and the government saw the added value of this and started to support the project (Jacobsen, 2006). With stimulating communicative instruments, the entrepreneurs from Kalundborg showed the municipality what their ideas were. The information sharing gave the government a sense of confidence in the project and thus got the government's support to put their sustainable ideas into practice (Chertow, 2007). Initiatives can also come from the government. By using a stimulating communicative measure, such as providing extra information or education, individuals can gain more confidence in a project, or they can use a stimulating juridical instrument (Van der Doelen, 1991). In the example of Kalundborg the municipality agreed with the sustainable plans of the entrepreneurs and made it legally possible to continue the plans (Jacobsen, 2006). So communicative and juridical measures can stimulate the social sustainability of a business park (Van der Doelen, 1991). However, when governments use legal measures, it is important to be consistent in the choices they make. If the future of regulation is uncertain and regulations are inconsistent, this can affect the trust of businesses and hinder businesses from implementing adaptation options. Thus, maintaining consistency and uniformity is crucial to promoting adaptation (Agrawala et al., 2011).

Transparency is also essential as it holds both the public and private sectors accountable and ensures alignment with the public interest. It promotes stakeholder participation, public trust and helps prevent negative public perceptions and corruption (Chou and Pramudawardhani, 2015). Therefore, transparency is crucial for the success and sustainability of PPPs. Partnerships have a multi-actor character, which can lead to differing views on PPP performance. In sustainability projects, it might first appear that the main goal is to achieve sustainability. However, each partner enters the PPP with their own interests and perspectives on the project's goals. These goals may differ among partners and can sometimes even be conflicting (Warsen, Klijn & Koppenjan, 2019). Financial viability is often a crucial aspect of a project, meaning financial motives also play a significant role. Public and private parties frequently have different approaches to financing, leading to disagreements and increased risks when they do not share the same financial urgency to recoup their investments (Leväinen & Altes, 2005). Private organizations tend to be focused on making profits and survival, while government agencies focus on meeting societal needs and complying with legal obligations (Edelenbos, Klijn & Steijn, 2011). Private parties are therefore often



criticized for focusing too much on profit optimization and, according to researchers, this can hinder the success of a PPP (Fainstein & Defilippis, 2019). When parties fail to achieve their goals in cooperation, there is a risk of hindering, neglecting, or even leaving the partnership (Edelenbos, Klijn, & Steijn, 2011). Yet this does not have to be the case, if the different financial goals can be bridged, the collaboration can continue and the public sector can contribute to this by making projects more affordable and assisting with subsidies, for example (Buso & Stenger, 2018). This emphasizes the importance of aligning individual goals with joint goals to sustain collaboration and achieve the desired results.

Achieving consensus in the early stages can be challenging because partners may hold stereotypical views of each other (Demirag et al., 2011). There are several effective ways to address these challenges; Clear and well-defined contract documents help avoid misunderstandings between the public and private partners and increase transparency (Warsen, Klijn & Koppenjan, 2019). The contract document can enforce an agreement and protect the rights and interests of the involved parties. The content of a contract can vary in detail and formality based on the preferences of the partners. Key factors to include are objectives, responsibilities, and risk allocation (Bult-Spiering and DeWulf, 2006; Demirag et al., 2011). The mutual interdependency between partners requires them to take these various goals into account (Warsen, Klijn & Koppenjan, 2019). So, negotiating and setting goals together can change perceptions and build mutual trust (Porter & Kramer, 2011). Setting clear goals can help create a well-functioning PPP (Warsen, Klijn & Koppenjan, 2019), ensure that expectations are aligned and foster a shared understanding of the objectives to be achieved (Bult-Spiering & DeWulf, 2006). Clear mutual goals also facilitate accountability, transparency, risk management and social support, which are crucial for project success (Agrawala et al., 2011).

When trust is built during the process and parties have the same shared goals, social sustainability can emerge and that offers the opportunity to share risks. Risk sharing is an important advantage for parties pursuing common goals (Runde, 2006). Risk sharing means agreeing on mechanisms to address specific risks. For example, parties can share risks, such as getting fined (Danielle, 2020). This risk sharing facilitates a more balanced management of uncertainties and reduces the financial burden on parties (Yong et al., 2015). Moreover, stakeholder cooperation can help mobilize the participation of new actors (van Beers et al., 2020), allowing new opportunities to be identified (Yong et al., 2015). By allocating risks appropriately based on each party's ability to manage them, PPPs can ensure a more efficient use of resources and expertise (Bult-Spiering and DeWulf, 2006; Chou and Pramudawardhani, 2015). Risk allocation should be tailored to the context and characteristics of the project and the strengths of each party involved (Danielle, 2020). The way risks are allocated has a direct impact on the financial success or failure of a PPP project. Proper risk allocation can lead to lower overall project costs and better value for money compared to traditional procurement options. PPPs that fail to properly allocate risk and make use of the private sector's risk management capabilities are unlikely to achieve the intended results (Beckers & Stegemann, 2021).

For example, municipalities can choose to share and transfer risks to the private sector due to their own budget constraints and strong confidence in private sector involvement in the effective integration of sustainability measures (Ten Brinke, 2021). This is reflected by the government adopting an accommodating role rather than a commanding role. PPPs show diversity in terms of structure, organization and risk allocation (Danielle, 2020). There is no universal approach; each PPP project will have its own unique method of documenting risk allocation (Danielle, 2020). Each party brings different capabilities and strengths to the partnership (Beckers & Stegemann, 2021). But sharing risks between the public and private sectors can spread the financial burden, reducing the potential impact on one party. This can benefit investment (Bult-Spiering and DeWulf, 2006; Demirag et al., 2011). Over time, these partnerships help form better relationships, lowering the costs of finding exchange partners and reducing transaction costs (Wang & Ma, 2021). Additionally, partnerships offer stability and continuity, which can help secure investments from both the public and private sectors (Shimomura & Matsumoto, 2010).



In conclusion, building trust, creating shared goals and minimizing risks are important tasks best addressed through collaboration between the public and private sectors. When this is created, benefits such as risk sharing can emerge.

#### §2.4.3 – Environmental sustainability

Finally, the dimension of environmental sustainability also contributes to creating overall sustainability. Environmental sustainability shares many of the social values mentioned in the previous section, thus cooperation within this dimension is also crucial. In addition, it emphasizes respect for nature and ecological balance as values in themselves (Fainstein & Defilippis, 2019) and seeks to restore and maintain harmony between the natural and built environments throughout the entire lifecycle of a structure. It emphasizes the efficient use of natural resources to minimize the built environment's impact on the Earth and to enhance the quality of the surrounding environment (Grierson, 2009; Goh et al., 2020).

Without striving for a sustainable environment as a foundation, there can be no sustainable development. This requires a fundamental change in mindset that prioritizes the preservation of an environment that can provide an acceptable quality of life for all (Grierson, 2009). The Sustainable Development Goals (SDGs) were created to initiate this fundamental change in mindset and encourage everyone worldwide to consider environmental sustainability. The SDG program emphasizes that businesses in development must commit to ecological protection and reduce waste with a demonstrable impact on the environment (United Nations, 2015). These present new challenges to governments and other development actors. Environmental goals are closely integrated with social and economic issues in these SDGs, which means that ecological sustainability must also be considered in all new social and economic developments (Mokelbaan, 2019). At all levels of development (local, national and international), decisions must be made, and policies developed that address environmental sustainability, including in business parks (Grierson, 2009).

Achieving environmental sustainability in a business park can be the primary goal. Parties that are socially responsible and want to prevent damage to the environment and nature will focus on environmental sustainability. But environmental sustainability can also be a secondary goal. When companies have previously experienced negative ecological impacts, such as the effects of climate change, this serves as motivation to adapt to their surroundings. This leads to greater commitment to the adaptation process, as companies want to avoid future damage and associated costs (Agrawala et al., 2011).

Another goal may be sustainable innovation. Sustainability has become a key driver of innovation in companies of all sizes. By working together on sustainability challenges, parties can reduce environmental impact while also achieving other benefits. These are benefits that are greater than if parties had only invested in environmental sustainability (Veleva et al., 2015). Private sector involvement in PPPs introduces innovation, advanced technologies and specialized expertise, which can improve service delivery (Runde, 2006). PPPs can increase project effectiveness, reduce operating costs for each party, increase park share, and accelerate progress (Beckers & Stegemann, 2021; Runde, 2006). This promotes greater stakeholder involvement, including those who were previously less involved in climate adaptation. Increasing self-efficacy within the collaborative network can enhance business competitiveness (Porter & Kramer, 2011).

Whether environmental sustainability is the primary goal, or the secondary goal of parties does not matter, parties today, due to imposed goals such as the SDGs, and the complete interconnectedness of the three dimensions of the triple bottom line, cannot ignore environmental sustainability anymore. It must be considered in all plans today.

## § 2.5 – Framework

The concepts discussed in the previous chapters help answer the main and sub-questions of this study. These concepts are linked to each other to make them more understandable, see figure 4.

The left column of figure 4 indicates effective public-private partnerships. This study looks at the governance model of public-private partnerships, in which the parties work together in managerial interactions to achieve win-win situations. Here the aim is to achieve effective public-private cooperation, where the goals are successfully achieved and both synergy and industrial symbiosis can occur; the effect of cooperation is greater than what each party could achieve separately. To achieve sustainability in business parks, it is important to have effective partnerships in all areas of sustainability.

The middle column of figure 4 shows the triple bottom line. The triple bottom line consists of three dimensions: financial sustainability, social sustainability and environmental sustainability. Together, these dimensions form complete sustainability, as sustainability is rooted in the interaction and balance of these three dimensions (Goodland, 1995). This is also evident in the framework, where the three dimensions fall within complete sustainability. Financial sustainability includes available resources and enabling financial policy instruments. Parties' willingness to invest in sustainability is contingent on the resources available to them. In addition, parties can stimulate financial sustainability with policy instruments. Creating social sustainability requires trust between parties. This trust can be created by parties having the same clear goals in mind, so that they work towards the same goal. When this is the case, parties can also share risks with each other and social sustainability is created. Finally, environmental sustainability can be promoted by parties changing their thinking and prioritizing environmental conservation to ensure an acceptable quality of life for all. In addition, they can initiate sustainable innovations that enhance environmental sustainability.

If effective public-private partnerships are established for all three components of sustainability, a business park will become more sustainable.

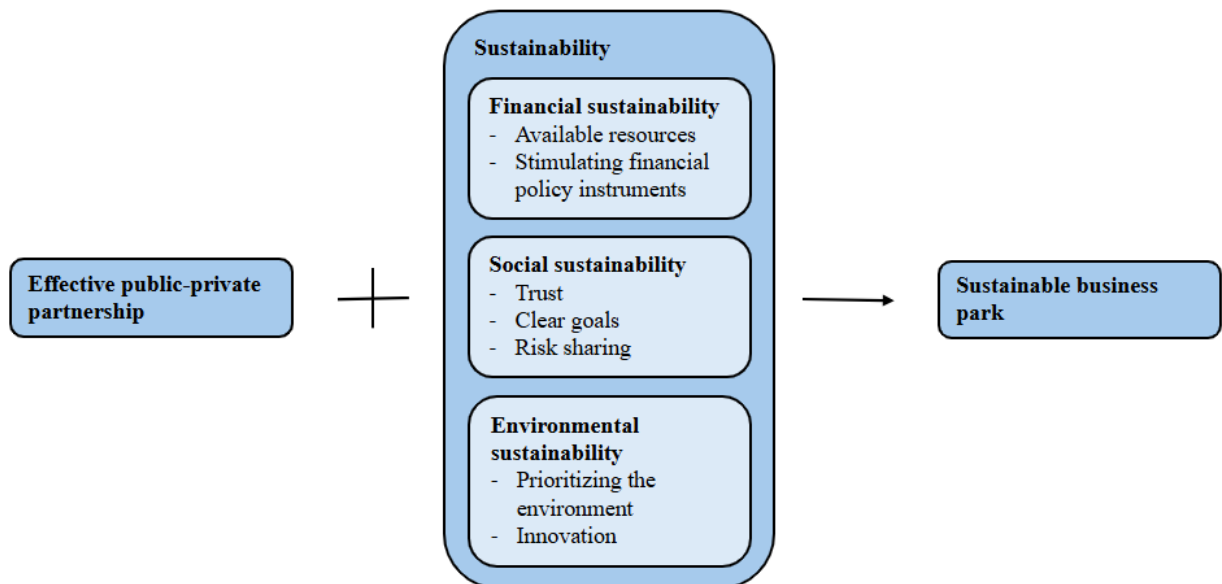


Figure 4: Framework

Source: Author's own work

## Chapter 3 – Methodology

This chapter outlines the methodology used to investigate how PPPs can enhance the sustainability of existing business parks. A qualitative approach was employed, focusing on case studies to gain in-depth insights. Data was collected through semi-structured interviews with key stakeholders and the analysis of relevant policy documents. This comprehensive approach ensures a robust understanding of the dynamics and effectiveness of PPPs in promoting sustainability.

### § 3.1 – Data collection

To investigate the extent to which cooperation between public and private parties can contribute to making business parks more sustainable, a qualitative study was conducted. A qualitative research approach was chosen because of its ability to deeply understand the actions of different stakeholders (Swanborn, 2010). Within this research, case studies were studied in which cooperation, a social phenomenon, was examined using various data sources to make statements about the patrons and processes underlying the phenomenon. Within the case study, the major forms of qualitative data collection come together. Combining methods of data collection is called triangulation of methods (Bleijenbergh, 2015). This makes it possible to investigate a phenomenon in depth and to compare various observations, which can increase the quality of your observation.

Interviews were used as the main method for collecting empirical data because they provided direct access to first-hand information and allowed for detailed questions. This makes it possible to explore and compare the underlying motivations, opinions, desires and needs of the interviewees (Swanborn, 2010). Semi-structured interviews were conducted. These give respondents the freedom to introduce new topics, ideas or examples, eliminating the need for a predefined list of questions (Clifford et al., 2016). This approach encourages a more informal interview style, where topics deemed relevant by both parties can be included (Longhurst, 2010). The informal and conversational nature encourages open-ended responses and allows for nuanced exploration of insights that need clarification (Clifford et al., 2016). Because respondents all have different roles in relation to business parks, the open structure provides respondents with the opportunity to raise issues that are important to them. Participants are encouraged to express themselves in their own words, which facilitates inferring explanations and context (Longhurst, 2010).

For this study, ten people were interviewed: four from the public sector, including officials within the municipalities of the case studies, and three from the private sector, including entrepreneurs who are members of a business association. In addition, one park had a park manager whose role is to stimulate collaboration between public and private parties, and thus was interviewed. Additionally, two experts who work extensively on sustainability projects in business parks, involving cooperation between public and private parties, were also interviewed. These respondents were chosen because they can give a view on what cooperation in a business park is like. In addition, a qualitative interview gives a good picture of how the person under investigation experiences a social phenomenon themselves (Bleijenbergh, 2015).

Because interviews reflect individual experiences of a social phenomenon, they do not provide a general picture (Bleijenbergh, 2015). To achieve a broader understanding of cooperation in business parks across the Netherlands, the interview findings are complemented by a policy analysis. This policy analysis provides an extensive overview of policies regarding sustainability collaborations in business parks in the Netherlands. As discussed in section 2.3, the effectiveness of a PPP can be evaluated by examining the extent to which an organization or policy program meets its stated objectives. Therefore, it is essential to assess the national targets for enhancing the sustainability of business parks and the goals set for cooperation within these projects. The policy documents reviewed were authored or commissioned by (semi-)governmental bodies, indicating their policy intentions. Below is an overview of the policy documents studied and their primary focus areas.

[Raad voor de leefomgeving en infrastructuur \[Rli\]. \(october 2023\). Samen werken, kiezen voor toekomstige bedrijventerreinen.](#)

The first policy document, titled *Working together, choosing sustainable business parks*, was published by the Rli. The Rli is an independent strategic advisory body for the government and parliament, focusing on sustainable development of the living environment and infrastructure. It provides solicited and unsolicited advice on long-term issues. The main line of the report is that business parks can play a major role in the national sustainability goals, but this requires more support and cooperation. Additionally, the report highlights that sustainability not only benefits the environment but also offers advantages for businesses, such as addressing resource scarcity and improving energy efficiency.

[de Kort, E.-J., & Gradussen, M. \(2023a\). Feiten en cijfers bedrijventerreinen in Nederland. Stec Groep.](#)

This is a report conducted by researchers from spatial consultancy and research firm Stec Group on behalf of the Environment and Infrastructure Council. Some of the findings of this research were used to prepare the Environment and Infrastructure Council's 2023 report. The title of the report is *Facts and Figures Business Parks in the Netherlands*. The report provides insight into the current state and sustainability potential of regular business parks in the Netherlands. It highlights the need for policies aimed at saving energy, greening mobility, promoting circularity, climate adaptation and biodiversity. Although business parks generate considerable economic value and employment, there are great opportunities for further sustainability. The report calls for better monitoring and stimulation of sustainable initiatives to increase the positive impact of business parks on Dutch society and the economy.

[de Kort, E.-J., & Gradussen, M. \(2023b\). Governancemodellen op bestaande bedrijventerreinen in Nederland. Stec Groep.](#)

This is a report conducted by researchers from spatial consultancy and research firm Stec Group on behalf of the Environment and Infrastructure Council. Some of the findings of this research were used to prepare the Environment and Infrastructure Council's 2023 report. The report examines the various governance models applied to existing business parks in the Netherlands. The aim is to provide insight into how these parks can be made more organized and sustainable. The paper describes the roles of different parties, such as entrepreneurs, governments, developers and investors, and highlights the need for cooperation between these parties. It also discusses several examples and models of successful cooperation initiatives, with a focus on promoting sustainability, energy efficiency and climate adaptation. The report makes recommendations for a more integrated and area-based approach to sustainable business parks.

[Nordkamp, L., Bakker, J., Schutte, R., Strijker, B., & Bosma, J. \(2021\). Versnellingsprogramma Verduurzaming Bedrijventerreinen \(VPVB\). TNO, Transitmakers, Stichting CLOK. Geraadpleegd van Ministerie van Binnenlandse Zaken en Koninkrijksrelaties.](#)

This program was prepared by the Netherlands Organization for Applied Scientific Research (TNO) on behalf of the Ministry of the Interior and Kingdom Relations. The report on the accelerating program for the sustainability of business parks describes an initiative to make business parks in the Netherlands more sustainable. It focuses on reducing CO<sub>2</sub> emissions by implementing energy-saving measures and sustainable energy solutions. The report identifies bottlenecks such as a lack of knowledge and high costs and proposes a program-based approach to overcome them. By improving cooperation between governments, companies and knowledge institutions, the program aims to make business parks sustainable and environmentally friendly.

[Hamers, D., Kuiper, R., van der Wouden, R., van Dam, F., van Gaalen, F., van Hoorn, A., van Minnen, J., Pols, L., & Ritsema van Eck, J. \(2021\). Grote opgaven in een beperkte ruimte: Ruimtelijke keuzes voor een toekomstbestendige leefomgeving. Planbureau voor de Leefomgeving.](#)

The report by the Netherlands Environmental Assessment Agency examines the spatial challenges that the Netherlands must face to create a sustainable living environment. The paper highlights the need for a new balance between economic use, ecological sustainability and citizens' perception. Major themes are housing

construction, energy transition, climate adaptation and biodiversity conservation. The report calls for a more integrated approach and stronger central government direction to manage spatial pressures and realize sustainable solutions. The recommendations focus on better coordination between layers of government and involving citizens in policymaking.

### § 3.2 – Case studies

In this study, a case study research approach has been chosen. A case study is a robust research method designed to conduct in-depth investigations in the field of social sciences (Swanborn, 2010). Other studies that have investigated PPPs or sustainability in business estates have also conducted case study research. For instance, van Beers et al, (2020) conducted research on 50 business parks located in 8 different countries, looking at the degree of sustainability of the parks. In this research the focus is on depth rather than breadth, achieved through various intensive data generation methods. Additionally, a case study approach allows for gathering data from multiple sources to strengthen the research findings. Evidence from multiple case studies is often considered more convincing, enhancing the overall robustness of the research (Bleijenbergh, 2015). Heeres, Vermeulen & De Walle (2004) also researched EIPs using two case studies, one in the USA and one in the Netherlands and looked at how these parks functioned. Leväinen & Altes (2005) examined PPPs through case studies. They examined case studies in Finland and the Netherlands to look at the functioning of PPPs. These studies show that using case studies works well to examine the functioning of PPPs or the sustainability of a business park. In this research, case studies will also be used.

The theoretical framework elaborates on the characteristics of a business park. This also indicates the characteristics of the business parks in this study. This study looks at existing mixed-use business parks in the Netherlands, which means that they are home to different types of businesses, mainly small and medium-sized companies, that have a low to medium environmental impact (LISA, 2021). The sites have existed for at least three decades and are in the consolidation or decline phase of the life cycle, meaning that they face age-related issues (Louw et al, 2004).



**BUREAUBUITEN**  
economie & omgeving

*Figure 5: Logo of Bureau BUITEN*

*Source: Bureau BUITEN, 2024*

Based on these characteristics, an attempt was made to select three similar business parks to be used as a case study in this research. One of the selection criteria was that there should already be some form of cooperation between the public and private sectors. This way it is possible to examine the extent to which such cooperation contributes to making the park more sustainable. It is difficult to investigate whether cooperation exists in a business park, as no data is kept on this. What data does have on it is whether a park has a business association or not. In this study, business parks with an association of entrepreneurs are investigated, so that contact can be made with the directors of this association. The directors bring the entrepreneurs together, know well what is going on in the park and can give more information about the level of organization within the park.

This research was conducted with an internship at consultancy and research agency Bureau BUITEN. This agency focuses on spatial economics and specializes in developing future visions for business parks. They have carried out assignments for several municipalities in recent years, engaging in discussions with the



municipality and entrepreneurs to draw up a suitable future vision for the business park. These business parks have involved cooperation during the preparation of future visions, which makes them interesting for this study. Therefore, three business parks were chosen for this study where Bureau BUITEN carried out assignments.

Several criteria were established to select the case studies. The vision for the business park, developed by Bureau BUITEN, must have been formulated within the last three years to ensure its relevance and future orientation. A participation process between the municipality and entrepreneurs must have occurred during this vision's formulation to ensure effective collaboration. The business park should also have an average age of approximately 30 to 40 years. Additionally, the selection process considered the type and size of the business park. Three business parks were chosen, each housing a similar number of businesses and featuring comparable mixed-use companies. The size of the municipality where the business park is located was also considered. To investigate whether the size of the municipality influences the organizational structure within business parks, one large municipality and two smaller ones were selected. The business parks chosen as case studies in this study are Marssteden business park, located in the municipality of Enschede; Borculo business park, located in the municipality of Berkelland; and Eekterveld business park, located in the municipality of Epe. These locations are indicated in figure 6.



*Figure 6: Map of the locations of the 3 business parks  
Source: Author's own work*

The characteristics of each business park will be briefly named to get a better understanding of the parks;



## Marssteden

Business Park Marssteden is in the town of Enschede and in the municipality of Enschede. The municipality has 161,741 inhabitants (CBS, 2024). To give a better picture of this, this is a large Dutch municipality, it ranks fifteenth as the largest municipality in the Netherlands by population. The park is home to 226 companies, generating 5006 jobs for the municipality (Bureau BUITEN, personal communication, 2021). The park was created in the 1990s (Bureau BUITEN, personal communication, 2021), so it has an average age for a Dutch business park. Marssteden has a business association, with mandatory membership for all companies that own their premises. In addition, the park is well organized; in the past, for instance, the park had an active park manager. Nowadays, the park manager still performs administrative jobs for Marssteden but is no longer active (Bedrijvenpark Marssteden, n.d.).



Figure 7: Map of business park Marssteden

Source: Author's own work



Figure 8: Map of business park Borculo

Source: Author's own work

## Borculo

Business Park Borculo is in the town of the same name Borculo, which is located in the municipality of Berkelland. Municipality Berkelland has 43,928 inhabitants, making it a relatively small municipality nationally, but it is a large municipality in the region (CBS, 2024). Nearly 100 companies are in the park, providing 2,000 jobs (Bureau BUITEN, personal communication, 2022). Borculo business park consist of two business parks that were merged in 2020. The separate parks have existed since the 1990s (Borculo Business Park, 2024). Since 2013, the park has had a business association, and membership is not mandatory. The business association aims to involve as many entrepreneurs as possible in the association (Bureau BUITEN, personal communication, 2022).

## Eekterveld

Eekterveld is located in the village of Vaassen, which lies in the municipality of Epe. The municipality has 33,168 inhabitants, making it the smallest municipality of the three case studies (CBS, 2024). There are over 100 companies located in the park. The park has existed since 1972, making it several years older than the above business parks (Energiekring Eekterveld, n.d.). Since 1991, entrepreneurs have joined forces in a business association, membership is not mandatory and there is no park management (Bureau BUITEN, personal communication, 2022).



Figure 9: Map of business park Eekterveld

Source: Author's own work

In the three case studies, ten people were interviewed. Following Clifford et al. (2016), participants for semi-structured interviews were selected based on their experience with the topic and their involvement in the cases. The respondents were contacted via email to schedule their interviews, with options for either face-to-face or video interviews. The interviewees included municipal officials, members of business park associations, a park manager (where applicable), and experts in business park sustainability. Experts were engaged to leverage their insights and expertise, enriching the understanding of the subject matter. Municipal officials and park managers were interviewed first to utilize their input for subsequent interviews with experts. Originally, the plan was to interview a municipal official, a representative from the entrepreneurs' association, and a park manager from each case study. However, due to changes in staffing at the municipality of Enschede, two officials were interviewed: one former and one current employee. Additionally, the entrepreneurs' association in Enschede indicated they were too busy for an interview. Consequently, an entrepreneur who is a member of the association and plays an expert role in facilitating cooperation between the municipality of Enschede and entrepreneurs at business park Marssteden was interviewed instead.

After all key individuals were interviewed, information saturation was reached, and the decision was made not to approach additional participants for interviews. All interviews were conducted in Dutch, as it is the native language of both the respondents and the interviewer. Subsequently, all information was translated into English to suit the requirements of this research. Table 2 provides an overview of the respondents and their global function descriptions. Appendix 1 provides an overview of the specific function descriptions and the date and duration of the interviews.

<b>Respondent</b>	<b>Function</b>
Respondent 1	Municipality Enschede, Marssteden
Respondent 2	Park manager Marssteden
Respondent 3	Municipality Berkelland
Respondent 4	Chairman business association Eekterveld
Respondent 5	Municipality Enschede, Marssteden
Respondent 6	Expert
Respondent 7	Member business association Marssteden and expert
Respondent 8	Municipality Epe, Eekterveld
Respondent 9	Expert
Respondent 10	Chairman business association Borculo

*Table 2: Respondent number and function*

From the theoretical framework, it became evident that sustainability comprises three dimensions. Building upon the theoretical framework and the main and sub-questions, the important concepts for this research were operationalized per theme in this section. Kallio et al. (2016) developed a framework for using qualitative semi-structured interviews to enhance the reliability of qualitative research. They outlined phases for developing a qualitative semi-structured interview, which were followed in this study. Phases 1 and 2 involved determining whether the main and sub-questions could be answered using data analysis, semi-structured interviews, or mapping pre-existing knowledge through literature review. This is evident in the theoretical framework and section 3.1. Phases 3, 4, and 5 will be discussed in this operationalization.

After gathering and mapping pre-existing knowledge, the third phase involved creating the preliminary topic list. During this stage, efforts were made to strike a balance between the main themes and follow-up questions. The main themes provide structure to the interview, while follow-up questions are used to gain further insight and approach various nuances of the concept (Kallio et al., 2016). This phase also addresses ethical considerations related to the research process. Respondents' data was handled carefully during this study. Before the interview, the purpose and method of the interview were explained through email contact. Respondents were then asked to voluntarily cooperate with this study. No personal data about the respondents, such as name or age, was included in this study. Only the function of the respondents was mentioned so it is clear to what extent the respondent is involved. In the introduction, the purpose of the interview is reiterated, the expected duration is communicated, and consent is sought to record the interview. The three dimensions of sustainability form the main themes of the topic list. To gather more information on each dimension, different questions are posed to provide insight into the degree of collaboration within each sustainable dimension. An overview of the main themes and sub themes of the preliminary topic list is provided in Table 3. The extensive topic list, with questions is attached in Appendix 2.

Main themes	Sub themes
General	<ul style="list-style-type: none"> <li>- Introduction</li> <li>- Project</li> </ul>
Financial sustainability	<ul style="list-style-type: none"> <li>- Collaboration between public and private sector</li> <li>- Available resources</li> <li>- Economic policy instruments</li> </ul>
Social sustainability	<ul style="list-style-type: none"> <li>- Trust</li> <li>- Shared goals</li> <li>- Risk sharing</li> </ul>
Environmental sustainability	<ul style="list-style-type: none"> <li>- Prioritizing the environment</li> <li>- Innovation</li> </ul>
Closure	<ul style="list-style-type: none"> <li>- Final question</li> <li>- Thanks</li> </ul>

*Table 3: Main themes and subthemes of the preliminary topic list*

In the fourth stage, the preliminary topic list was tested. The first interview was conducted, with respondent 1. After the interview, the topic list was evaluated again, and several changes were made. Several questions were framed slightly differently or worded differently, but no questions were removed, nor new ones were added, so the results of the first interview are still useful and relevant.

Finally, in the last phase, the finalized interview questions are presented (see Appendix 2), and the research findings were evaluated in relation to previous knowledge from the theoretical framework and data analysis. The evaluation of the research findings is presented in Chapter 4.

**§ 3.3 – Data analysis**

For this study, a cross-case analysis was conducted. This method, as described by Miles and Huberman (1994), is used to identify common patterns and differences between multiple case studies. This helps in gaining deep insights. Cross-case analysis is particularly suitable for investigating the effectiveness of PPPs in making business parks more sustainable. The main advantage of cross-case analysis is that it provides a structured approach to collecting and analyzing data from multiple sources, such as interviews and policy documents. This enhances the transparency and reproducibility of the research, which are essential for scientific validity (Eisenhardt, 1989). By systematically comparing different cases, common factors and unique characteristics can be identified. This helps understand which elements of PPPs are universally effective and context-specific (Cruzes et al., 2015).

The cross-case analysis in this study follows three main activities: data reduction, data display, and conclusion drawing/verification (Miles & Huberman, 1994). Data reduction involves identifying and extracting relevant information from the primary studies. This process includes both thematic analysis and policy analysis. Thematic analysis is used to identify and analyze recurring themes within qualitative data, such as interviews. Common topics or ideas mentioned by the interviewees are examined to gain deeper insights into the experiences and perspectives of the various stakeholders involved in the business parks (Cruzes et al., 2015). Policy analysis focuses on studying policy documents to understand which policy measures and goals are relevant for the sustainability of business parks. By analyzing this policy context, insight is gained into the external factors influencing collaboration and sustainability in the business parks (Miles & Huberman, 1994).

The next step in data analysis is to organize the collected data to draw meaningful conclusions. For this, the technique of "coding" is used. According to Eisenhardt (1989), analyzing data is fundamental to

constructing theories from case studies. The audio recordings of the interviews were transcribed and uploaded to NVivo. The coding process is crucial for analyzing interview data and involves assigning codes to various data elements (Boeije, 2014). The coding of qualitative interviews involves the phases of open, axial, and selective coding. The process begins with open coding, where all collected data is broken down into fragments to determine their relevance to the research. All relevant fragments are then assigned a code, resulting in a list of different fragments with corresponding codes. Following open coding, axial coding is conducted. This involves consolidating related codes to form categories. Subsequently, codes are further subdivided to create 'main codes' and 'subcodes' (Boeije, 2014). After axial coding, selective coding is performed to examine recurring categories and their interrelationships. This entails assessing which categories are consistently present or absent under different circumstances (Boeije, 2014).

This process ultimately leads to the creation of a code tree, where fragments from the transcripts are thematically coded (see Appendix 3). Based on this, connections are made between various responses, and conclusions are drawn. Respondents' quotes are then used to support the results chapter. These quotes, originally in Dutch, have been translated into English by the author to the best of their ability.



## Chapter 4 – Results

The results of this study provide valuable insights into the role of PPPs in enhancing the sustainability of business parks. These findings are structured based on the coding framework developed during the data analysis, with main themes and subthemes identified in the coding tree (see Appendix 3). The results derive from extensive interviews with respondents from both the public and private sectors, as well as an analysis of policy documents. Each section discusses specific codes and their connections, providing insights into the effectiveness of PPPs in making business parks more sustainable. Quotes are included to illustrate key points. The research questions regarding the factors influencing PPP effectiveness and the specific roles of stakeholders are systematically explored in this chapter. This thematic structure ensures a clear and comprehensive presentation of the study's findings, highlighting the relationships between different factors and their impact on sustainability.

### §4.1 - Key characteristics, interests, and goals for sustainability

Effective sustainability practices at business parks depend on the dynamics between various stakeholders. This section presents the insights gained from interviews with respondents from both the public and private sectors, along with findings from policy document analysis. The aim is to understand how the characteristics, interests and goals of these parties influence their collaborative efforts towards sustainability. Interviews highlight the varied perspectives and priorities of stakeholders, revealing the motivations that drive their actions. Policy documents, such as those from TNO (2021) and Stec Groep (2023), provide a framework for understanding the roles and interactions of key players like municipalities and business collectives. These documents underscore the importance of understanding the differences between parties so that they can be considered in collaborations.

To comprehensively address the complexities of sustainability, the key characteristics, interests, and goals are divided into three dimensions: financial, social, and ecological sustainability. This approach allows for a detailed examination of each dimension, recognizing that sustainability is multi-faceted. It follows the same order as in the theoretical framework.

#### § 4.1.1 – Financial goals and collaborative investments

Interviews and policy documents indicate that parties like to cooperate because it increases their chances of achieving their goals. This is consistent with theory (Shimomura & Matsumoto, 2010; Chertow, 2007). Respondents tell in the interviews that clear agreements about the purpose of a collaboration must first be made before they are willing to invest in a collaboration. For a good collaboration, a goal that benefits both parties must be sought. This is evident in the following quotes;

*"The project only starts when everyone is on the same page" (Respondent 6).*

*"You need to create a kind of dream vision from the municipality, but also with entrepreneurs, so that you can work towards that" (Respondent 5).*

*"If you want to set up a collaboration, it is important to make it clear to entrepreneurs; what is in it for me" (Respondent 7).*

Policy documents also emphasize the importance of shared goals;

*"A common goal that entrepreneurs are willing to work towards can lead to support and organizational capacity. Demand-driven working and connecting to what entrepreneurs are concerned about is essential" (Nordkamp et al., 2021).*

In the case of business park cooperation, the common goal is the functioning of the park. Both public and private parties benefit if the business park functions well. As respondent 9 said:

*"A business park should be clean, intact, safe, and sufficient. Well, nobody can disagree with that" (Respondent 9).*

The policy documents showed that there is a desire to invest in the business park when the park is no longer functioning properly (de Kort & Gradussen, 2023a). Interviews showed that entrepreneurs' business



activities are jeopardized when the park no longer meets society's demands. Entrepreneurs, municipal officials and experts mentioned protecting business continuity as a reason to invest in partnerships during the interviews. Respondent 9, who supervises partnerships between public and private parties, said the following;

*"What we often see is that they are concerned about one of these points (clean, intact, safe & sufficient). So, a business park that is no longer functioning sufficiently, and therefore they are willing to participate in collaboration and research" (Respondent 9).*

What resources parties need to protect continuity varies by respondent. No clear distinction can be made between public and private parties because interests and goals continuously change. Examples mentioned during the interviews include achieving economic profit, focusing on climate adaptation, doing good for society, and innovation. Respondent 7 mentions these;

*"Companies that participate either have significant financial capacity and want to grow it further, or because they have a problem that needs solving, such as net congestion, or they want to engage in corporate social responsibility. I think, these are the three reasons for entrepreneurs to enter into a collaboration" (Respondent 7).*

Respondents' willingness to invest depends on the results they can achieve. Once there is a clear shared goal, parties must decide how much to invest in the collaboration. That investment takes different forms. Respondent 3 described this process as follows;

*"You have to see it this way, a project essentially has two forms; on the one hand, the form of the activities, the actions you want to undertake. And on the other side the funding for those actions" (Respondent 3).*

The report on facts and figures about business parks in the Netherlands confirms that investment has multiple forms. Initiating cooperation and setting up an organization takes a lot of time and effort. An investment can be in knowledge, time, money, or resources, and the investment need not be the same for both parties. The different characteristics of parties influence investment behavior and willingness to invest (de Kort & Gradussen, 2023a). Municipalities are extra dependent on goal setting because there has to be administrative agreement on and project before funding can go to a project (RLi, 2023). Respondent 1 described this process within his municipality;

*"We can't just allocate a hundred thousand euros without having a plan with an assignment. So let's just work together on a plan, get support for it, also with the council and the alderman, and I think it's stronger if it's not just a plan thought up by the municipality" (Respondent 1).*

Once the goals are established, an assessment can be made of how much money should be invested. All 10 respondents indicated that a collaboration only works when both parties invest in it. The degree of willingness to invest in sustainability measures is related to the size of the company or municipality. In general, larger companies and municipalities have more money and expertise, making them more willing to invest in adaptation strategies such as sustainability, according to the policy documents (RLi, 2023; Nordkamp et al., 2021). The municipality of Enschede is considerably larger than the municipalities of Berkelland and Epe. The interviews show that the municipality of Enschede is much further advanced in setting up partnerships and has a great willingness to invest. The municipality has co-financed the deployment of a park manager and there is structural money for making business parks more sustainable. The two smaller municipalities lack this. The interviews show that the willingness to invest is also greater among large companies, municipal official respondent 1 said the following;

*"The large companies, the frontrunners in sustainability, have already started from the urgency they feel. They have the people and the knowledge in-house" (Respondent 1).*

This study looked at business parks housing small and medium-sized enterprises. Their resources are more limited than those of large companies, making their willingness to invest lower. The capital that business collectives can invest is also lower due to the tighter private resources of small and medium-sized enterprises (Nordkamp et al., 2021). The narrower resources result in the need for collaboration. Resources can be bundled to achieve the goal. Respondents do this through co-financing;

*"Where we can free up resources, we will. But it will always be co-financing, so together with the entrepreneurs or the business park association" (Respondent 3).*

Despite partnerships, parties often still lack resources. All four municipal officials indicated that this is why they look for grants to finance projects. Policy documents strongly recommend looking for other ways to finance sustainability projects (Reudink, et al., 2023). Parties can use incentive financial instruments; in the case of sustainability projects in business parks, this usually involves subsidies. In all three case studies, subsidies have been or are being used to get sustainability projects off the ground. Policy documents show that seeking subsidies increases the success rate of projects by providing a positive outlook that makes private parties more committed to adaptation efforts (Rli, 2023; Nordkamp et al., 2021). TNO's acceleration report recommends supporting local stakeholders in identifying the most promising projects and finding suitable funding, such as incentive funds, subsidy schemes and fiscal measures (Nordkamp et al., 2021). The interviews show that this is happening in practice;

*"At the start of projects, we look at whether there are resources available at the municipality, or whether we should jointly look at whether we can apply for a subsidy at the province or through a regional deal" (Respondent 1).*

What is highlighted in all interviews is that investments in the sustainability of a business park can only be made if they are financially viable. Therefore, for each goal it is necessary to consider how the goal will be financed. In addition, it becomes more attractive to invest in a goal if part of the investment can be recouped. This is why investments such as solar panels, wind turbines, LED lighting, and insulation are popular. These are practical adaptations where the investment can be recouped immediately. Respondent 5 sees these benefits reflected in the willingness of entrepreneurs in his municipality to invest. They are more inclined to invest in sustainability measures that save money in the long run;

*"Well, you do have different types of investments. Solar panels and insulation are good for sustainability and companies can save money with that. Anything that benefits companies, entrepreneurs are more interested in that than, say, replacing parking lots with lots of greenery" (Respondent 5).*

Policy documents show that an investment can be seen as a policy economic benefit this way (Rli, 2023).

To conclude, financially successful collaborations in sustainability are driven by clear mutual goals, shared investments, and leveraging financial incentives like subsidies for project funding.

#### § 4.1.2 – Trust and shared social goals

Social factors play a crucial role in promoting effective collaboration for sustainability in business parks. Understanding the varying interests and goals of different parties and fostering trust through clear communication and shared successes are key elements in achieving successful sustainable outcomes. This section explores the social dynamics that facilitate collaboration, highlighting how these factors can bridge gaps and align efforts towards common sustainability goals.

This research showed that the characteristics of parties play a role in cooperation. Policy documents show that parties adopt different roles, and this led to an automatic division of roles between parties with corresponding responsibilities (Rli, 2023). This division of roles is not fixed, but changes over time and varies by location. Because companies and municipalities are organized differently, differences arise. The difference in goals between companies and municipalities clearly shows the difference in organization (de Kort & Gradussen, 2023b). Identifying the specific interests and goals of the parties involved and responding to them helps to overcome barriers to sustainability (Nordkamp et al., 2021). This is consistent with the theory on cooperation from section 1.3, which shows that for good cooperation, it is essential to know the goals of the other party (Porter & Kramer, 2011; Warsen, Klijn, & Koppenjan, 2019). The

different characteristics were confirmed and clarified during the interviews. Below, the most fundamental differences that resulted from the interviews and policy documents are described, along with how these differences are bridged.

The private party consists of a group of entrepreneurs. One of the main characteristics of entrepreneurs is that despite being united in a business association, they are mainly focused on their own businesses operations. The primary goal for these individual entrepreneurs is to keep their own business running, as noted in the report by Nordkamp et al. (2021), which states that entrepreneurs in a business park are primarily concerned with their own operations. Respondent 4 and the Stec Groep document also clarify this;

*"An entrepreneur wants to do business; that is the main goal, keeping the business running" (Respondent 4).*

*"Starting a collaboration and setting up an organization takes a lot of time and effort. Entrepreneurs often cannot free up space for this because they are busy with their daily operations" (de Kort & Gradussen, 2023b).*

The primary goal of the government is to represent societal interests. Regarding business parks, social interest is served by applying sustainability measures. For instance, the Raad voor Leefomgeving en Infrastructuur (2023) recommends that the government implement climate-proof measures and facilitate a healthy working environment that benefits current and future generations (Rli, 2023). This is in line with the meaning of sustainability described in the theoretical framework, section 2.2; sustainability means ensuring that future needs are met (Brundtland, 1987).

The examples above illustrate that the primary interests of private and public parties differ, yet there is also common ground. Interviews revealed that while entrepreneurs consider sustainability important, it is not their main focus. Conversely, governments prioritize ensuring that business operations run smoothly but concentrate more on broader sustainability issues. Since these interfaces are not immediately clear, finding common goals is challenging in practice. Interviewees described this as municipalities and entrepreneurs figuratively speaking different languages. Respondent 7, an entrepreneur who frequently collaborates with other entrepreneurs, commented on this cooperation;

*"We can work better with entrepreneurs than the municipality can. The companies have also expressed this. The municipality speaks a different language and is organized differently" (Respondent 7).*

Expert, respondent 9 explained that parties have different reasons for reaching the same goal, which makes it seem that they are not striving for the same goal. This complicates the formulation of common goals. For the three case studies, a spatial economic consultancy firm, Bureau BUITEN, was engaged to create a future vision for the business park. The agency identifies the different reasons and goals of the parties and formulates a common goal. Park manager, respondent 2, illustrated this process with an example;

*"In the future vision for business parks, we almost never talk about climate adaptation and biodiversity but about livability. Because if you talk about livability, it resonates with the entrepreneur. They think; hey, this concerns my staff who need a livable working environment. But if you talk about climate adaptation and biodiversity, the entrepreneur thinks; has my staff ever asked for this? No, I don't think so. Staff don't come to the manager saying; it's 40 degrees, and I can't handle it; and when I walk outside, I don't see any flowers. But they do say; I'm leaving because I'm going to work in a city center, in an office near a station and terraces" (Respondent 2).*

This example shows that both the municipality and the entrepreneurs would like the business park to become greener. They have different reasons for this; the municipality aims to improve climate adaptation and biodiversity, while entrepreneurs want to make the working environment more attractive. By employing a mediator, both parties can work towards the same goal.

*"It's a kind of skill game to put together a future vision in such a way that the programs are integrated" (Respondent 2).*

*"Ensure connectors and structured coordination between entrepreneurs and policymakers at various levels" (Rli, 2023).*

This is in line with the theory from section 2.4.2, which showed that collaboration is fostered by listening to each other which creates a basis of trust and understanding (Yong et al., 2015).

In addition to having different reasons for achieving a goal, parties also vary in the time they are willing to dedicate to achieving it. Interviews with entrepreneurs revealed that running their business operations smoothly takes a significant amount of time. A board member of the entrepreneurs' association, who is also a company director, mentioned that he has been handling tasks himself due to staff shortages, leaving little time for his other responsibilities (Respondent 4). This additional focus on business operations detracts from their attention to sustainability. Policy documents acknowledge that entrepreneurs generally already have their hands full with their core activities, making sustainability efforts an added burden. The challenges they face are often too significant to tackle alone (Rli, 2023; de Kort & Gradussen, 2023a). On the other hand, governments prioritize sustainability more highly because they must comply with laws and regulations, such as the United Nations' Sustainable Development Goals (SDG) program, making them more willing to invest time in achieving sustainability goals (Reudink, 2023).

In the interviews, entrepreneurs indicated that when they are willing to spend time to achieve sustainability goals, they are flexible and can react quickly to changing market conditions and technological developments, enabling them to make decisions and implement changes quickly. Policy documents show that this is possible because they are less bound by bureaucratic processes and regulations than government agencies, allowing them to make and implement decisions faster (Rli, 2023; Nordkamp et al., 2021). In all 10 interviews, respondents mentioned the difference in decision-making speed between entrepreneurs and municipalities, concluding that this difference complicates cooperation. Municipal officials from all three municipalities indicated that the difference in decision-making speed is an obstacle to cooperation with entrepreneurs. Municipal official respondent 5 said the following:

*"It is true that the speed at which entrepreneurs operate and that of the government is always different. Entrepreneurs always want to go faster than the government can or wants to" (Respondent 5).*

Entrepreneurs find it difficult to understand the slow decision-making process within the municipality. Respondent 10, in his role as a board member of the entrepreneurs' association, reminds fellow entrepreneurs that the collaboration process is slower than they are used to. He emphasizes this because he fears entrepreneurs will lose patience and understanding:

*"They don't understand that because entrepreneurs are used to switching quickly" (Respondent 10).*

In addition to the difference in operational speed, the policy documents showed that there is also a difference in the duration of plans. Governments make long-term plans to promote the continuity of sustainability plans (Nordkamp et al., 2021). Entrepreneurs make plans for the short and/or medium term. The reason for this is also continuity but they are focused on their own business operations. The financial resources of small and medium-sized enterprises do not extend beyond the short/medium term (de Kort & Gradussen, 2023b). Park manager respondent 2 sees this with the entrepreneurs he supports:

*"An entrepreneur needs to keep their business running; continuity must be maintained; that is the goal of businesses, right? If your cash flow is not in order, your continuity is at risk, and then you have nothing left. So, in that sense, you need to quickly translate it financially. And that is challenging but also very exciting" (Respondent 2).*

Policy documents recommend that parties accommodate each other's differences in duration. By jointly defining short-term, medium-term and long-term actions, the plans match the working methods and ambitions of both parties (Rli, 2023). Short-term plans help build trust between parties, because they are financially simple and easy to implement (de Kort & Gradussen, 2023a). Respondents in the interviews refer to these actions as "low-hanging fruit", the actions that are easiest to implement (Respondent 1, 2 & 3). This low-hanging fruit immediately shows the result of the cooperation and gives confidence in the

cooperation. This is consistent with the theory discussed in section 1.4.2; when both parties adjust their goals, trust is created, which improves cooperation (Runde, 2006).

Trust in collaborative projects is enhanced by communicative incentives. This can be done by communicating success stories. The successful example of the business park Kalundborg in Denmark was mentioned in the theoretical framework, section 2.4.2 (Jacobsen, 2006). The interviews revealed that entrepreneurs and municipalities look to neighboring business parks and municipalities for successful examples. Interviews 1, 2 and 5 revealed that the municipality of Enschede looks to the municipality of Deventer for successful examples because Deventer has successful pilots regarding cooperation in a sustainability project and the municipality is of similar size to Enschede. Enschede hopes to learn from the successes of this pilot and apply them in its own municipality. The municipalities of Berkelland and Epe do not yet have direct examples in mind. Interviews 3 and 10 indicate that the municipality of Berkelland wants to learn from the success factors of the pilot at business park Borculo and apply them to other business parks in the municipality:

*"Borculo is our pilot, and we hope to use the success factors of this project to also make our other business parks more sustainable" (Respondent 3).*

Policy documents also emphasize the importance of communicatively stimulating instruments. The "acceleration program for sustainable business parks" by Nordkamp et al. (2021) calls for successful approaches to be highlighted and brought to the attention of other initiatives. This way, the wheel does not have to be reinvented, and people can learn from the challenges they face (Nordkamp et al., 2021). The governance models report shows that successful examples enhance trust in projects. It cites an example of a sustainability initiative in business parks focusing on a circular economy:

*"These kinds of successes can inspire other entrepreneurs and eventually create a momentum, especially when an active entrepreneurs' association organizes meetings about it" (de Kort & Gradussen, 2023b).*

In addition to successful projects, successful parties also have a stimulating role in sustainability projects. Section 2.4.2 showed that when a large party with a lot of knowledge, money or time participates in a project, this creates trust among other parties. As a result, other entrepreneurs or governments are more likely to join in (Warsen, Klijn, & Koppenjan, 2019; Hamer et al., 2021). This was confirmed during the interviews. Respondent 7's company is working on a sustainability project at the Marssteden, and the participation of several large companies built trust among other entrepreneurs:

*"As a result, a nice group of entrepreneurs is participating, and together with this group, we can focus on the sustainability assignment" (Respondent 7).*

In the three case studies, trust was strengthened by investing in knowledge. Policy documents see investing in and aligning knowledge as essential for the success of projects and partnerships, especially when it comes to sustainability and addressing large spatial tasks (Hamers et al., 2021). Parties can use their own knowledge when they have it, but if they do not, parties such as a park manager or a consulting firm can be called upon. In the three case studies, Bureau BUITEN used its knowledge to draft the sustainable future visions for the business parks. The different reasons that parties have were merged into a common goal and the goals are being implemented on different timelines. The agency ensured organized cooperation;

*"Making business parks more sustainable often requires joint efforts at different levels. Organized cooperation is essential here" (Rli, 2023).*

According to the Rli (2023), growing confidence increases the willingness to invest further in sustainability and time investment can lead to quality improvement. The interviews show that the investment of time in collaborations is very important. The municipal official, respondent 3, sees that his contact with entrepreneurs goes much better when he invests time in contacting entrepreneurs himself. Expert, respondent 7, sees that collaborations go much smoother the more time they have put into building that relationship.

*"When I help entrepreneurs speed up their processes, I see that they are also much more willing to help us when it comes to implementing new things" (Respondent 3).*



*"You see that those entrepreneurs are much more willing to cooperate, simply because they already know you, we have been there many times" (Respondent 7).*

In conclusion, this research has highlighted several social factors that promote effective collaboration for sustainability in business parks. The key social factors for effective collaboration in sustainability projects are aligning goals, leveraging successful examples, and committing time and knowledge to strengthen mutual trust and cooperation. By addressing these factors, collaborations can overcome barriers and achieve shared sustainability goals that benefit both entrepreneurs and municipalities. The following section will delve into the environmental sustainability practices that further support these collaborative efforts.

#### § 4.1.3 – Environmental sustainability in partnerships

In recent years, the necessity of making business parks more sustainable has become increasingly clear. Policy documents emphasize the growing urgency of this transition, partly due to the increasingly tangible negative effects of climate change (Hamers et al., 2021). According to Grierson's (2009) theory, parties need to adjust their behavior to promote sustainable development. This realization is also shared by the respondents, who acknowledge that sustainability is essential for the future of business parks. Municipal official Respondent 8 said the following about the sustainability projects in their municipality:

*"Well, we see that over the course of the project, companies have become more open to it because they realize that sustainability cannot be ignored. Therefore, they look at it more positively, and the willingness to invest has grown" (Respondent 8).*

These adverse effects bring the goals of the parties closer together. Everyone wants to prevent the negative consequences of climate change. The increasing urgency of climate change forces governments and companies to act more quickly. Municipal official respondent 5 also observed this;

*"The business operations of companies in Enschede are at risk, which has accelerated things. Also, within the municipality, more is possible, and action can be taken more quickly. I think this is a good effect. On the other hand, this also provides companies with more room for offered support. So, the interests may have been further apart at the start of the project but have really converged due to the current situation" (Respondent 5).*

Respondents noted that businesses with local roots are more inclined to participate in sustainability projects because they feel a stronger connection to the area and are therefore more willing to contribute to a better environment. The three entrepreneurs indicated that a large part of their staff lives in the neighborhood, as do they themselves. This is an additional incentive for them to be socially responsible businesses. Policy documents also suggest that this is because locally rooted companies feel a greater responsibility for social issues and are therefore more likely to support initiatives that contribute to the sustainability and livability of the area (Rli, 2023). These companies often have better relationships and networks within the local community and with other companies in the business park, which promotes cooperation and collective investments (de Kort & Gradussen, 2023b).

The results indicate that climate change has driven parties to pursue a common goal of mitigating its negative effects. Parties collaboratively implement solutions to reduce or address these issues. Respondents and policy documents acknowledge that not all problems currently have solutions, underscoring the importance of innovation. Innovation is deemed essential for making business parks sustainable, encompassing technological advancements such as the development and implementation of new energy solutions and circular business models (Rli, 2023).

A pressing issue in 2024 for which innovative solutions are urgently needed is grid congestion. This problem was highlighted by all 10 respondents. The overloaded electricity grid poses significant challenges for many entrepreneurs in business parks, hindering their ability to expand, adopt sustainable practices, or avoid additional electricity costs. In summary, it threatens business continuity. Policy documents emphasize



the critical need for innovative solutions to address grid congestion (Rli, 2023; de Kort & Gradussen, 2023a; Nordkamp et al., 2021). Municipal official respondent 3 indicated how an innovative solution is sought with cooperation;

*"Entrepreneurs face a net congestion problem, which is an entrepreneurial problem, but we also look at where we as a municipality can help. Yes, we actually look for cooperation to come up with good solutions and that doesn't always have to involve money. It can also involve many hours of manpower that you invest" (Respondent 3).*

Entrepreneur respondent 4 revealed that with a partnership, they want to invest in an innovative solution, the Smart Energy Hubs;

*"Collectivity is now being sought. Companies want to invest through a Smart Energy Hub. We see that especially directly involved companies are motivated, because if we do nothing, we just lose money economically" (Respondent 4).*

However, innovation remains challenging because new inventions and ideas are bound by existing laws and regulations. These laws and regulations are determined at the national level, which entrepreneurs and municipal officials cannot directly influence. They all see this as an obstacle. Expert respondent 6 said the following about this;

*"Energy exchange with neighboring companies is not simply allowed; well, these kinds of problems play a role. They are preventing some sustainability measures. Measures which, from the outside, let's say, seem logical. but do not get off the ground" (Respondent 6).*

Policy documents show that the obstruction of laws and regulations makes it even more important to collaborate;

*"There is a clear need for better alignment between regulation and technological progress. Innovation can be hampered by outdated regulations, but through collaboration and dialogue they can be more quickly adapted to new developments." (de Kort & Gradussen, 2023a).*

Addressing climate change has become a pressing priority, prompting stakeholders to intensify efforts to integrate environmental sustainability into business park initiatives. By fostering collaboration and innovation, stakeholders aim to navigate challenges and drive positive change.

In summary, the key characteristics, interests, and goals of stakeholders involved in business park sustainability are crucial for the success of these initiatives. Financial sustainability requires clear mutual goals and investment from both public and private parties, with subsidies playing a significant role. Social sustainability is driven by trust and effective communication, facilitated by business associations and park managers. Environmental sustainability necessitates innovation and collective action, particularly from locally rooted businesses. A large municipality like Enschede has more financial resources and more time to invest in sustainability, allowing initiatives to take off faster than in municipalities that do not have this. However, despite the extra resources, municipalities remain dependent on entrepreneurs' commitment and the search for additional resources that will help the project succeed. The level of cooperation thus depends on the willingness of both the entrepreneur and the municipality to invest, this varies by municipality so there is no clear difference between large and small municipalities. In general, a well-structured organizational framework and cooperation are essential for achieving sustainable results.

## § 4.2 – Organizational structures and their impact on sustainability

The interviews and policy documents show that the way a business park is organized has a significant influence on the level of cooperation for sustainability. This chapter describes the results on the importance of organizational structure.

In the interviews, the organizational structure of the case studies was discussed. The theoretical framework and policy documents show the importance of understanding how an organizational structure is created. The policy document of Reudink et al., (2023) shows that the way in which business parks are developed affects the current division of roles between parties in a business park. This is consistent with the theory that showed that policy and business park development are path-dependent; previous measures have contributed to current policy (Louw & Bontekoning, 2007). Sections 1.1 and 1.3 discussed the creation of business parks, the roles of public and private parties, and the effects of fragmentation on their sense of responsibility (Louw et al., 2004; Louw & Bontekoning, 2007). During the interviews with experts, parcellation and its effect on the sense of responsibility were mentioned directly. Even before a question was asked, the experts themselves brought up the development of business parks in the Netherlands and the institutional governance model that led to parcellation. They indicated that this affects current collaborations. Expert respondent 6 said the following about this;

*"You could almost say that the most common public-private role allocation around business parks in the Netherlands is fundamentally the problem behind the slow progress of sustainability and sustainability initiatives in business parks" (Respondent 6).*

By the most common public-private division of roles, respondent 6 refers to the division of roles resulting from the Dutch governance model in which land is fragmented. In this case, fragmentation leads to a change in the sense of responsibility. Policy documents show that it changes behavior because the owners of a piece of land on an industrial estate only feel responsible for their own land and no longer for the whole (Rli, 2023; Nordkamp et al., 2021). The theoretical framework also showed that parties adapt their behavior to the current governance model (Termeer et al., 2011). Respondent 6 said the following about this;

*"You end up in a situation where nobody feels responsible for the whole. So, everyone is responsible for a part, but no one feels responsible for the whole" (Respondent 6).*

The old development structure of business parks has a negative impact on the collective sense of responsibility. Park manager respondent 2 described the past process where governments made plans and only informed entrepreneurs once the plans were finalized and explained how he thinks the process should look today;

*"It is much more fitting these days to put the companies at the center and ask them what they need" (Respondent 2).*

The experts argue for more cooperation because, together you can achieve more and bear the responsibility together. This is also evident in the policy documents and theory. When parties feel jointly responsible for the business park, they invest more quickly and more in cooperation, which brings additional benefits (Rli, 2023; Monkelbaan, 2019).

Policy documents stated that business associations play a key role in promoting collective responsibility by encouraging cooperation and joint initiatives (Reudink et al., 2023). The business parks used as case studies in this research all have an entrepreneurs' association. Not all business parks in the Netherlands are equally well organized, park manager respondent 2 observes in his work;

*"We assume that everything is well organized in all business parks, but that's not the case. I think more than half of the business parks in the Netherlands are not organized or hardly organized. So, it's just a social gathering once a year, and that's it" (Respondent 2).*

Without organization, it is difficult to implement plans. This is why park manager respondent 2 recommends investing first in professionalizing the business association to improve the organizational structure of a business park. Municipal official, respondent 1, also indicates that having an organizational structure is an important prerequisite, saying;

*"Because holding individual entrepreneurs accountable... you can do that, you should do that, but it has proved difficult to mobilize entrepreneurs" (Respondent 1).*

All policy documents reviewed recommend using entrepreneurs' associations to organize cooperation in business parks. They organize collective facilities and coordinate joint initiatives (de Kort & Gradussen, 2023b). A strong entrepreneurs' association can serve as a point of contact for both entrepreneurs and

authorities. This facilitates communication and coordination of joint projects, including sustainability initiatives (Rli, 2023). Interviews also revealed the importance of entrepreneurs' associations;

*"An organizational structure in a park is a breeding ground for innovation because if you don't know each other, you can't innovate" (Respondent 2).*

*"Approaching collectively and making collective plans also relieves the workload and complexity from individual entrepreneurs" (Respondent 8).*

*"The better the business park is organized, the easier it is for people to look beyond their own shadow or personal problems and reason from the general interest" (Respondent 1).*

At the Marssteden, membership in the entrepreneurs' association is mandatory, while at Borculo and Eekterveld, it is voluntary. Making membership mandatory prevents free-rider behavior, similarly, respondent 6 observes;

*"You want to prevent free riders, they cause a situation where the well-meaning also pays for the ill-meaning, so to speak. That is, of course, an undesirable situation, right?" (Respondent 6).*

Mandatory membership, or high participation ensures that all companies contribute to and benefit from collective facilities and initiatives, preventing free-rider behavior. Municipal policies on requiring membership vary, and no clear correlation can be established in this regard (Rli, 2023; de Kort & Gradussen, 2023b).

Business associations also have disadvantages, resulting in the absence of such associations in some business parks or varying levels of activity. Initiating cooperation and establishing an organization demand considerable time and effort.

*"The initiative must come from the companies themselves; in practice, this often proves difficult" (Respondent 5).*

*"On smaller business parks, you noticed that entrepreneurs have less time for collaborations. There is a small board that already finds it difficult to get people to come to the annual barbecue" (Respondent 2).*

Policy documents corroborate this, indicating that entrepreneurs often have to bear the costs of setting up and maintaining the association themselves, which can be particularly challenging for smaller companies (de Kort & Gradussen, 2023b). These disadvantages also play a role in all three business parks investigated in this research. The Marssteden entrepreneurs' association indicated by email that they did not have time for an interview because they were too busy with their own business operations and the activities of the entrepreneurs' association on top of that. However, people from the entrepreneurs' associations of Borculo and Eekterveld were interviewed. They indicated it is difficult to involve entrepreneurs in the activities organized by the association because everyone must invest their own time, which is scarce.

To get sustainability initiatives off the ground without relying too much on the time investment of business associations, a park manager can be brought in. A park manager has a coordinating role to ensure that sustainability initiatives are implemented efficiently and effectively, removing obstacles and monitoring progress. Policy documents recommend hiring a park manager. Park management refers to the organized management and coordination of business parks by a professional manager or management organization (Rli, 2023; Nordkamp et al., 2021). At the Marssteden business park, a park manager had been in place for some time, explaining the importance of his work;

*"As park managers, we are very good at creating a foundation so that entrepreneurs know each other. Once that foundation is in place, they often collaborate on other fronts as well, and it becomes very easy to realize plans. You need to organize something because otherwise, entrepreneurs don't come into contact with each other" (Respondent 2).*

A park manager has the knowledge and time to invest in the business park, benefiting its organizational structure and sustainability. However, it costs a lot of money to hire a park manager, and small municipalities and business parks do not always have these resources. The municipalities of Berkelland and Epe indicated that this is also a limitation for them.

Additionally, entrepreneurs and the municipality must continue to invest energy in the collaboration. Municipal official respondent 5 also saw this;

*"But I notice that it is also useful as a municipality to go to the entrepreneurs themselves instead of going through an intermediary. ... Those short lines are important" (Respondent 5).*

From each interview, it was concluded that a business park only has a well-structured organization when there is investment in it. This investment can be in money, time and/or knowledge. Without investment, a business park cannot be properly organized, and this will be at the expense of the public-private cooperation on the park and the ability of this cooperation to contribute to making the park more sustainable.

*"Yes, it is actually mainly about giving that attention; that is the basis" (Respondent 1).*

When the basis is established, the challenge of maintaining the time and energy invested begins. This is why public and private parties make future plans. These plans are complemented by implementation steps. So that it is clear to all parties what is required to achieve the desired outcome and that the intermediate steps produce visible results immediately.

*"You have to see the collaboration as a plan of; well, step 1, 2, 3, 4, 5, and then you achieve your result. It's more process-oriented work. Eventually it can be made into a project" (Respondent 1).*

Effective organizational structures in business parks enhance sustainability by fostering collaboration, reducing fragmentation, and ensuring shared responsibility among all parties. Business associations and park managers play crucial roles in coordinating these efforts.

## Chapter 5 – Discussion

The research results were analyzed and interpreted in relation to the research questions and the existing literature within the theoretical framework. According to Elkington's (1994) Triple Bottom Line approach, sustainability in business parks is determined by the balance between financial, social and environmental aspects. The results show that a sustainable business park is indeed characterized by the integration of these three dimensions. The interviews show that this integration is essential to achieving overall sustainability, as respondents always mentioned all three dimensions and the connection between them.

Financial cooperation is one of the dimensions that is crucial to the implementation of sustainable measures. This was evident in both the theory and the results, as the key conditions and instruments for successful financial collaboration were highlighted. Respondents indicated that clear agreements and mutual benefits are necessary for cooperation, which is consistent with the perspectives of Shimomura and Matsumoto (2010) and Chertow (2007). Both authors stress the importance of clear agreements and mutual benefits. In addition to common goals, the importance of subsidies and other stimulating economic instruments was emphasized in the results. These are essential for lowering financial barriers. The respondents said in the interviews that the government can provide subsidies to reduce financial barriers for private parties (Respondent 3). This aligns with the findings of Buso and Stenger (2018) and Van der Doelen (1991), who emphasize the importance of stimulating economic instruments. Wang and Ma (2021) argue that subsidies can remove financial barriers and promote adaptation efforts. Respondent 1 cited this as a reason for applying for subsidies at the start of projects, which is also consistent with the recommendations from TNO's acceleration report (Nordkamp et al., 2021).

In addition to subsidies, respondents find investing in sustainability more appealing if a portion of the investment can be recovered. This aligns with Beckers and Stegemann (2021), who state that public-private partnerships can result in more efficient and cost-effective projects by sharing financial burdens and promoting long-term investments. Chou and Pramudawardhani (2014) argue that parties with expertise and capacity are more likely to take action because they can conduct extensive risk assessments. Interviews and policy documents reveal that larger companies and municipalities, such as Enschede, have more financial resources and expertise, increasing their willingness to invest in sustainability (Rli, 2023; Nordkamp et al., 2021). This confirms the theory.

Besides important financial conditions, trust appears to play a crucial role in collaborations; parties must show that they can rely on each other and work toward the same goals (Gibbs & Deutz, 2007; Warsen, Klijn & Koppenjan, 2019). Both theory and results showed that there are several requirements for creating trust. Information exchange is essential for building trust and promoting cooperation (Yong et al., 2015; Chertow, 2007). The different goals of parties are overcome by setting common goals and building trust (Edelenbos, Klijn & Steijn, 2011). Respondents accomplish this by setting goals with multiple timelines. This way, results are quickly visible, increasing trust in cooperation.

The theory showed that effective communication, such as citing success examples, is crucial to formulating common goals and building trust (Chertow, 2007; Jacobsen, 2006). The interviews revealed that municipalities also use success examples for effective communication and accelerating projects. Policy documents also strongly recommend this (Nordkamp et al., 2021; Rli, 2023). In addition, transparency and consistency in regulations are essential for building trust, as respondent 4 confirms, "If the future of regulations is uncertain, it can affect business confidence." This is consistent with Agrawala et al. (2011) and Warsen, Klijn and Koppenjan (2019), who emphasize the importance of shared goals and transparency for successful collaboration. Finally, the theoretical framework emphasizes the importance of time and personal investment for building trust (Hamers et al., 2021). Respondents admitted that they are more willing to help the other party when they know each other and for this they need to stay in touch.



The need to make business parks more sustainable has become more apparent due to the negative effects of climate change. Policy documents emphasize the urgency of this transition (Hamers et al., 2021). According to Grierson (2009), parties need to adjust their behavior to promote sustainable development. Respondents confirm this, saying that companies are becoming more open to sustainability because of its inevitability. This increasing urgency is forcing governments and businesses to act more quickly, increasing their willingness to cooperate.

Innovation plays a key role in making business parks more sustainable. Results highlight the need for innovative solutions such as smart energy hubs to address grid congestion (Rli, 2023; de Kort & Gradussen, 2023a; Nordkamp et al., 2021). The theory by Runde (2006) and Beckers & Stegemann (2021) emphasizes that innovation is crucial for sustainability, especially through the development and implementation of new energy solutions and circular business models. Respondents indicate that sustainable innovations are often driven by collaboration: "Collaboration promotes innovation and reduces environmental impact" (Respondent 7). This is consistent with Veleva et al. (2015), who state that collaboration between public and private parties leads to innovative solutions that reduce environmental impact. Porter and Kramer (2011) also emphasize that cooperation can increase firms' self-reliance and competitiveness. In addition, theory shows that geographic proximity promotes industrial symbiosis because neighboring firms can better support each other (Chertow, 2007). Interviews and policy documents confirm that locally rooted firms can cooperate more effectively and strengthen community ties, which benefits sustainable initiatives (Rli, 2023; de Kort & Gradussen, 2023b).

The organizational structure of a business park plays a crucial role in promoting sustainability (Louw & Bontekoning, 2007; Weterings et al., 2008). Experts emphasized this importance during the interviews. Other respondents also emphasized the effectiveness of a well-organized structure: "An organized structure helps to effectively implement sustainable initiatives" (Respondent 10). Chertow (2007) supports this finding by stating that a well-organized structure within a business park is crucial for successful sustainable implementations. Louw and Bontekoning (2007) further emphasize the importance of an organized approach to promote cooperation and sustainability. According to policy documents, business associations and park managers can help create this structure by coordinating sustainable initiatives (Rli, 2023). Respondent 2 confirms that a well-organized structure, in which business associations and park managers are actively involved, strengthens collective responsibility and reduces free-rider behavior. Van Beers et al. (2020) also emphasize that public-private partnerships and a contextual and feasible governance model are essential for sustainability in business parks.

The life cycle of business parks, described by Louw et al. (2004), shows that interventions in the consolidation phase are crucial to prevent decay and promote sustainability. Timely implementation of sustainable measures in the consolidation phase can extend the life of business parks and increase their attractiveness (Geurs, 2004; Spit & Zoete, 2005). Respondents and policy documents emphasized the importance of continuous attention to sustainability throughout the life cycle of a business park and that cooperation and a well-organized structure are essential to achieving these goals.

## Chapter 6 – Conclusion

This research aims to investigate the extent to which PPPs can contribute to increasing the sustainability of existing business parks. Through the qualitative analysis of three case studies in the Netherlands, several key findings have emerged. The findings from the case studies provide valuable insights into the effectiveness of PPPs in promoting sustainability in business parks in the Netherlands. The findings from interviews and policy documents highlight the importance of joint efforts and the specific roles that different stakeholders play in achieving sustainability goals. Furthermore, the integration of the three dimensions of sustainability is critical to the overall success of PPPs in improving business parks' sustainability.

First, financial sustainability is critical to the success of sustainability initiatives. For successful collaboration in sustainability, clear goals, financial capacity and incentive economic instruments such as subsidies are essential. These conditions and instruments promote the willingness of both public and private parties to invest in sustainable projects, leading to more effective and cost-efficient outcomes (Chou & Pramudawardhani, 2014; Agrawala et al., 2011; Mees et al., 2014). Second, social sustainability within business parks is driven by trust and shared goals among stakeholders. Building trust through transparency, consistent communication and risk-sharing mechanisms enhances social sustainability (Gibbs & Deutz, 2007). Effective risk allocation based on each party's ability to manage uncertainties ensures balanced risk management and promotes a cooperative culture. This trust-based collaboration is crucial; with it, collaborations can overcome obstacles and achieve shared sustainability goals that benefit entrepreneurs and municipalities alike (Chertow, 2007; Jacobsen, 2006). Finally, environmental sustainability is an integral part of the triple bottom line and is closely linked to social and financial sustainability. The case studies highlight that environmental goals are often pursued alongside financial and social goals. This integrated approach is necessary to address the complex challenges caused by climate change and resource depletion (Grierson, 2009). Sustainable innovations, efficient use of natural resources and alignment with the SDGs are key drivers of environmental sustainability. Joint efforts in implementing energy-saving measures and renewable energy solutions contribute significantly to the environmental performance of business parks (United Nations, 2015; Veleva et al., 2015; Grierson, 2009).

The organizational structure of a business park significantly influences sustainability. Historical policy decisions and resulting fragmentation have led to challenges of collective responsibility and cooperation (Louw & Bontekoning, 2007). Business associations and park managers are important for coordinating sustainable initiatives and promoting cooperation. Public-private partnerships are essential for promoting sustainability in business parks. Through proactive interventions and continued attention to sustainability throughout the life cycle of a business park, the challenges of fragmentation and decay can be effectively addressed (Louw & Bontekoning, 2007; Heeres, Vermeulen & de Walle, 2004).

The findings of this study contribute to the broader academic debate on the role of PPPs in sustainable development. While existing literature emphasizes the importance of collaboration and structured cooperation (Porter & Kramer, 2011; Warsen, Klijn & Koppenjan, 2019), this study offers specific insights into the context of business parks. It highlights the unique dynamics and needs within this environment and also highlights the importance of integrated organizational structures and shared responsibility, echoing Louw and Bontekoning's (2007) findings on the impact of path dependency in policy. This research supports Goodland's (1995) idea that integrating these three dimensions of the triple bottom line can lead to more holistic and resilient sustainability outcomes. This is consistent with the broader discourse on sustainable development, which calls for balanced attention to financial viability, social equity and environmental protection (United Nations, 2015).

Further, the research highlights the importance of local and context-specific approaches within the broader framework of PPPs. While many studies emphasize the overall benefits of PPPs (Heeres, Vermeulen & de Walle, 2004), this research illustrates that the effectiveness of these partnerships is strongly influenced by

local conditions, stakeholder relationships and specific governance structures. This finding adds depth to the academic debate and suggests that a one-size-fits-all approach may not be adequate for achieving sustainability in diverse settings.

This research also addresses critical perspectives on the potential drawbacks of PPPs, such as trust issues, transparency and balancing different stakeholder interests. This research confirms that these challenges can significantly affect the success of PPPs and echoes concerns expressed in the literature about the complexity of managing such partnerships (Gibbs & Deutz, 2007). By addressing these challenges through structured governance and clear goal setting, the research contributes to the discussion of best practices for promoting effective PPPs. Thus, this research not only strengthens the established understanding of PPPs as vital mechanisms for sustainable development, but also provides detailed insights into how these partnerships can be effectively tailored to the specific context of business parks. This dual contribution enriches the academic debate and offers practical implications for policymakers and practitioners seeking to harness PPPs for sustainability.

While this study provides important findings, it also highlights several areas for future research. The focus on three case studies in the Netherlands may limit the generalizability of the results. Future research could expand the scope to include a broader range of business parks and geographic locations to provide a more comprehensive understanding of the impact of PPPs on business park sustainability. This study focused exclusively on mixed-use business parks in the Netherlands. Future research could include other types of business parks and case studies in other countries to identify best practices and contextual differences in achieving sustainability in business parks. The findings from the interviews and policy documents in this study were translated from Dutch to English, which may have introduced translation errors or altered interpretations. Future research could conduct the entire study in a single language to avoid such translation issues. Also, this research was conducted over five months. Future studies should conduct longitudinal research to assess the long-term impact of PPPs on the sustainability of business parks and the evolving dynamics of collaborative efforts.

In conclusion, the findings underscore the critical role of public-private partnerships in enhancing the sustainability of business parks. By addressing the financial, social, and environmental dimensions of sustainability in a holistic manner, PPPs can effectively contribute to the sustainable development of business parks. The integration of shared financial goals, trust-building mechanisms, risk-sharing strategies, and sustainable innovations is essential for achieving this objective. Continuous investment in and attention to these collaborations are crucial for maintaining and improving sustainability over time. The insights gained from the case studies provide a comprehensive understanding of the dynamics and effectiveness of PPPs, contributing to the broader academic debates on sustainability and collaboration in business parks.

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## Appendix

### Appendix 1 – Interview scheme

<b>Respondent number</b>	<b>Global function description</b>	<b>Specified function description</b>	<b>Date of interview</b>	<b>Duration interview in minutes</b>
<b>1</b>	Municipality Enschede, Marssteden	(Former) economic advisor, specializing economic projects at work locations, including business parks	12-4	45
<b>2</b>	Park manager Marssteden	Founder PM business parks, an independent park management agency, which does park management for several business parks including Marssteden	17-4	40
<b>3</b>	Municipality Berkelland	Economic Affairs and economic program manager	17-4	35
<b>4</b>	Chairman business association Eekterveld	Chairman business association Eekterveld	23-4	45
<b>5</b>	Municipality Enschede, Marssteden	Economic advisor, specializing economic projects at work locations, including business parks	26-4	30
<b>6</b>	Expert	Founder, partner, senior advisor Bureau BUITEN	2-5	35
<b>7</b>	Member business association Marssteden and expert	Member of business association Marssteden & Team manager and senior advisor to consultancy and engineering firm Binddd	3-5	35
<b>8</b>	Municipality Epe, Eekterveld	Business account manager, the contact for entrepreneurs	8-5	30
<b>9</b>	Expert	Senior advisor on spatial economy at Bureau BUITEN	13-5	35
<b>10</b>	Chairman business association Borculo	Vice chairman business park Borculo	15-5	30



## Appendix 2 – Topic list interview

Practical information	Name respondent: Function respondent: Date:
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Main themes	Sub themes	Questions
<b>Introduction</b>	Explanation about the interview	<ul style="list-style-type: none"> <li>- Introduction of myself</li> <li>- Introduction of the subject</li> <li>- The interview will last about 30 to 45 minutes.</li> </ul>
	Ethical questions	<ul style="list-style-type: none"> <li>- Can the interview be recorded? The recording will only be used to process the information accurately.</li> <li>- The data obtained from this interview will be handled with care. If desired, the statements will be made irreducible.</li> <li>- Do you have any questions before the interview?</li> </ul>
<b>General</b>	Introduction	<ul style="list-style-type: none"> <li>- Would you give a brief introduction of yourself; who are you, where are you employed and what is your function?</li> </ul>
	Project	<p>Bureau BUITEN helped (date) with a project that contributed to sustainability and cooperation in the (name) business park;</p> <ul style="list-style-type: none"> <li>- What has (been) your involvement in this project?</li> <li>- Which parties do you mainly deal with in your work around public-private partnerships?</li> <li>- In what way were all parties involved in this project?</li> <li>- How was cooperation during this project? And afterwards?</li> </ul>
<b>Financial Sustainability</b>	Collaboration between public and private sector	<p>Implementing sustainable measures requires financial resources, the following questions will address this;</p> <ul style="list-style-type: none"> <li>- Which parties provide the financial resources for the project to succeed?</li> <li>- What do you think about the distribution of the financial burden within the Public-Private Partnership?</li> </ul>
	Available resources	<ul style="list-style-type: none"> <li>- Do you think there is a link between the availability of financial resources and a party's willingness to contribute to the sustainability project?</li> </ul>
	Economic policy instruments	<ul style="list-style-type: none"> <li>- How do you feel about the financial contribution of each party to the project?</li> <li>- Governments can use incentive and repressive measures in policy measures, do you think the government has applied this appropriately in this project?</li> <li>- In your opinion, is the government taking an accommodating role or commanding role in the project?</li> </ul>
<b>Social sustainability</b>	Trust	<ul style="list-style-type: none"> <li>- Is there a fixed point of contact?</li> <li>- Is information shared, between parties or within parties? <ul style="list-style-type: none"> <li>o Do you feel that something is done with your comments?</li> </ul> </li> <li>- Do you feel there is a certain level of trust between parties?</li> </ul>
	Shared goals	<ul style="list-style-type: none"> <li>- What do you (and the party you work for) think is the purpose of this project?</li> </ul>

		<ul style="list-style-type: none"> <li>- In addition, are there other goals, which are not formulated as such, but which you hope are secondary outcomes?</li> <li>- Do you think the other parties have the same goal in mind? / Do you think parties have other secondary goals in mind?</li> </ul>
	Risk sharing	<ul style="list-style-type: none"> <li>- When agreements are made between parties, in what way is this agreed, verbally or is it established with a contract?</li> <li>- In your opinion, do contracts help with trust and sharing risks?</li> </ul>
<b>Environmental sustainability</b>	Prioritizing the environment	<ul style="list-style-type: none"> <li>- Is making the business park sustainable enough of a priority at the moment? <ul style="list-style-type: none"> <li>o What needs to be done to make it more of a priority?</li> </ul> </li> </ul>
	Innovation	<ul style="list-style-type: none"> <li>- Do you think improving collaboration can also create innovation opportunities?</li> <li>- Is resource sharing currently taking place? <ul style="list-style-type: none"> <li>o Do you think there are opportunities to develop this further? If so, what would be required for this?</li> </ul> </li> </ul>
<b>Closure</b>	Final question	<p>Finally, formulate small summary of the respondent's answers and then conclude with the question;</p> <ul style="list-style-type: none"> <li>- For you, what is the most important issue to make sustainability in business parks successful?</li> </ul>
	Thanks	<p>These were my questions. Thank respondent for the time and effort.</p> <ul style="list-style-type: none"> <li>- Are there any things you want to pass along, things that are important, that we haven't talked about now.</li> <li>- Do you have any more questions?</li> </ul>

Appendix 3 – Code tree

